

ELEN™
— THE FUTURE IN A BEAM —



Self-Refilling Series

BLADE RF

RF 333 / RF 555 / RF 777 / RF 888
RF 899 / RF 1222 / RF 1555

Mid and High Power **RF CO₂ Lasers**
350W to 1500W Power

Experience Rooted in Passion

BLADE RF Self-Refilling Laser sources are designed, developed, and manufactured at El.En.'s Italian facilities. 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 Self-Refilling Series

The BLADE RF Self-Refilling is a unique series of laser sources that brings innovation and efficiency to the field. This cutting-edge series comprises powers ranging from 350W to 1500W and offers different selections of wavelengths to meet all customers' needs. What sets the Self-Refilling Series apart is its unique embedded gas cylinder, designed to ensure a continuous

and automatic fresh gas refill. By eliminating factory reconditioning, we enhance productivity and minimize downtime. Operators can experience uninterrupted laser performance, maintaining optimal power stability.



Key features

- Self-Refilling technology
- Radio Frequency excited
- Low operating cost & easy integration
- High reliability & high beam quality
- Two sizes for all powers
- High electrical/optical conversion efficiency
- Integrated RF power supply
- TCP/IP connection for remote diagnostics and control
- Integrated shutter for safety certifiability
- On board HMI panel

Seamless integration

The BLADE RF Self-Refilling series offers both medium-power models (ranging from 350 to 850W) and high-power models (ranging from 1200 to 1500W) in two standardized sizes. This uniformity in dimensions enables seamless integration into a wide range of systems, providing flexibility to adapt to different power requirements and diverse operational scenarios.

The BLADE RF Self-Refilling 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 Self-Refilling series ensures compatibility with components other than those from El.En., offering added convenience for integration into existing setups.

Each model within the Self-Refilling Series has been accurately engineered to deliver exceptional performance and reliability.



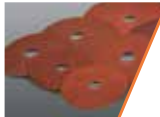



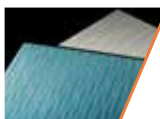





Never-Ending Power

The Blade RF Self-Refilling technology offers excellent laser power stability, ensuring consistent process parameters even during long-term operations. The internal gas cartridge is cost-effective and easy to replace, typically twice per year. These industrial laser sources are the first that combine the benefits of RF excitement technology, such as high peak power, high-frequency modulation and compactness, with the added advantage of not requiring laser refurbishing and cavity gas refilling. This is NEVER-ENDING POWER, a key feature to save time and resources, making the Blade RF Self-Refilling lasers a reliable and efficient choice for many applications.











Applications

The Blade RF Self-Refilling 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 high-speed cutting of paper and cardboard and labels kiss cutting, offering exceptional stability, precision and performance. With its adaptability and capabilities, the Blade RF Self-Refilling 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 & Labels	 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 333 / RF 555 / RF 777 / RF 888 / RF 899

Laser Specifications

Model	RF 333 / 333 P	RF 555 / 555 HP	RF 777
Rated Power (W) ⁽¹⁾	320	550	750 ^(1a)
Effective Peak Power (W) ⁽²⁾	850	1200 / 1650	1750
Power Stability (long term) ⁽³⁾	±5%	±5%	±5%
Wavelength (µm)	10.6 ± 0.4 / 10.2 ± 0.2	10.6 ± 0.4	10.6 ± 0.4
Polarization	Linear (Parallel to Base)	Linear (Perpendicular to Base)	Linear (Perpendicular to Base)
Beam Diameter (1/e ² at the exit) (mm)	7 ± 0.5	11,5 ± 1 / 11 ± 1	11 ± 1
Beam Divergence (1/e ² full angle) (mrad)	< 2	< 2	< 2
Maximum Pulse Frequency (kHz)	100	100	100
Pulse Width Range (µs)	2 ÷ 150	2 ÷ 150 / 2 ÷ 1000	2 ÷ 150
Maximum Duty Cycle	60%	60% / 35%	70%
Mode Quality (M ²)	< 1.1	< 1.2	< 1.2
Beam Ellipticity	1.1 : 1	1.2 : 1	1.2 : 1
Optical Pulse Rise/Fall Time (µs)	< 50	< 50	< 50
Typical Gas Mix Consumption (NL/year)	24 (2 Cartridges per Year)	24 (2 Cartridges per Year)	24 (2 Cartridges per Year)
Operating Ambient Temperature Range (°C)	5 ÷ 35	5 ÷ 35	5 ÷ 35
Storage Temperature Range (°C)	5 ÷ 50	5 ÷ 50	5 ÷ 50
Maximum Humidity	Non Condensing at Inlet Water Temperature	Non Condensing at Inlet Water Temperature	Non Condensing at Inlet Water Temperature

Electrical Power Requirements

Input Voltage (V _{DC})	48 ± 1	48 ± 0.5	48 ± 0.5
Max Current (A)	100	140	180
Peak Current (A)	120 for 3ms Max	180 / 260 for 3ms Max	230 for 3ms Max

Coolant

Heat Load (W)	5000	7000	9000
Coolant Temperature (°C)	23 ± 1	23 ± 1	23 ± 1
Water Cooling Input Pressure (bar)	≤ 4	≤ 5	≤ 5
Water Cooling Flow Rate (L/min)	12 ÷ 13	21 ÷ 23	21 ÷ 23

Dimensions / Weight

Laser Dimensions (LxWxH) (mm)	1327x420x309	1327x420x309	1327x420x309
RF Power Supply Dimensions (mm)	Integrated	Integrated	Integrated
Safety Shutter	Optional	Optional	Optional
Laser Weight (kg)	105	110	110

(1) Typical with a pulse duration of 120µs and 60% duty cycle. Power reduction of 1% for °C with water cooling temperature above 23°C.

(1a) Typical with a pulse duration of 140µs and 70% duty cycle. Power reduction of 1% for °C with water cooling temperature above 23°C.

(2) Typical at 1kHz 100µs effective pulse length. The effective power peak is defined as Average power /Duty Cycle.

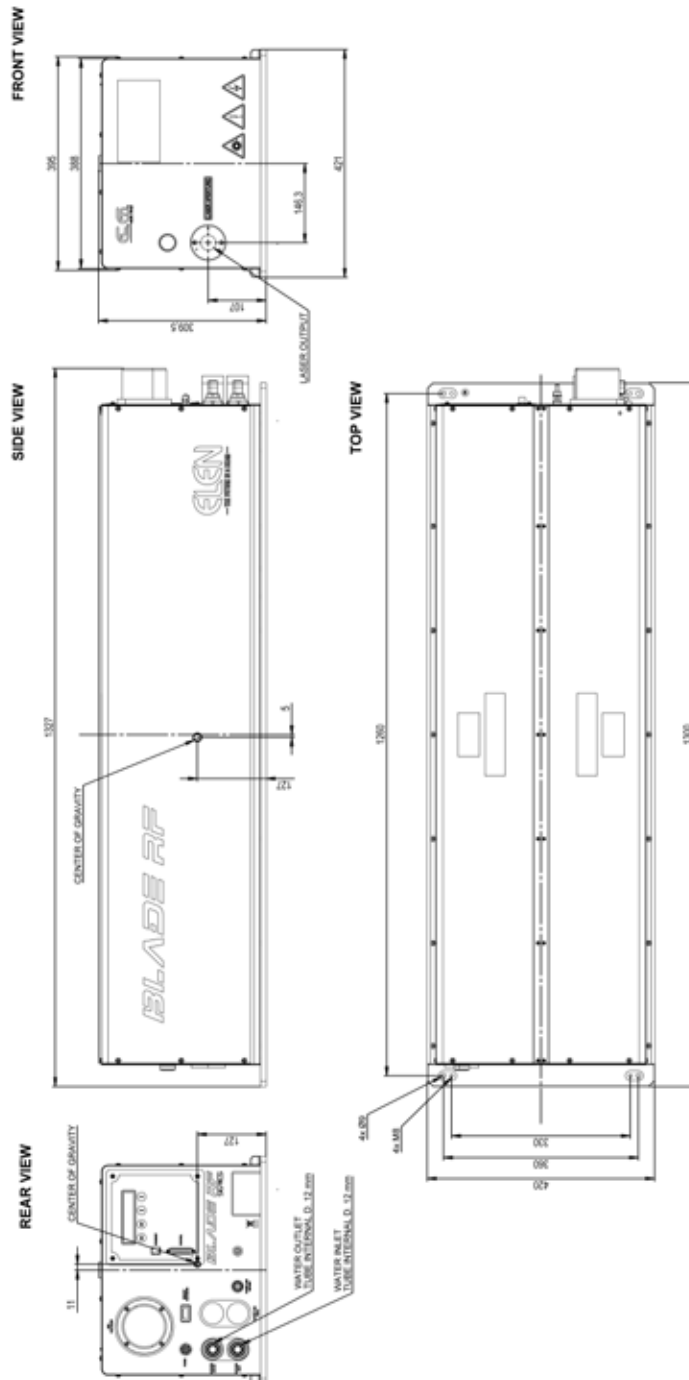
(3) With constant duty cycle and constant water cooling temperature (23±0.5 °C) measured during 30min after 10min of warm up. Stability is defined as S (%)=±100*(Pmax-Pmin)/2Pmax.



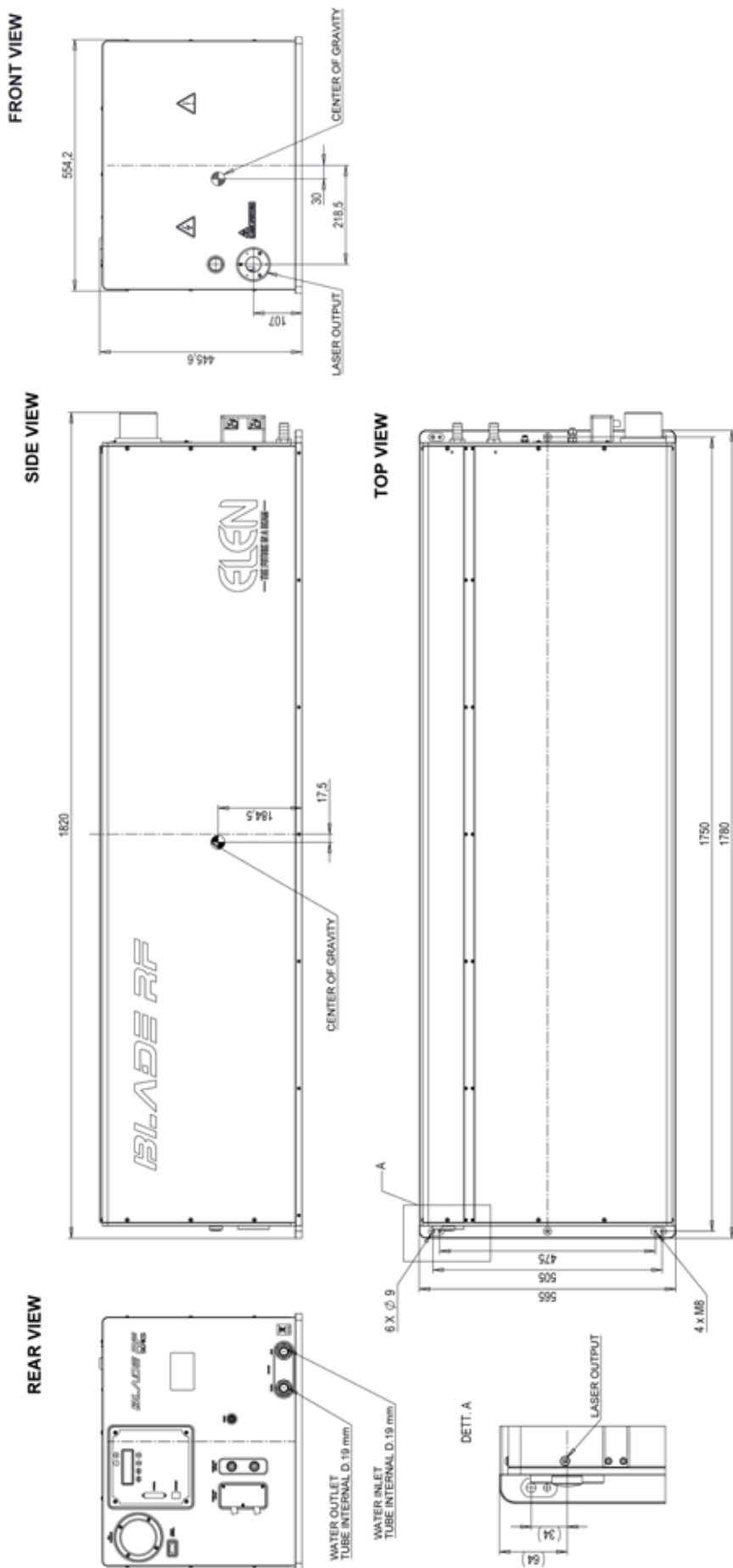
RF 1222 / RF 1555

RF 888	RF 899	RF 1222	RF 1555
850	850	1200	1500
1800	1800	3000	3000
±5%	±5%	±5%	±5%
10.6 ± 0.4	10.6 ± 0.4	10.6 ± 0.4	10.6 ± 0.4
Linear (Perpendicular to Base)	Linear (Perpendicular to Base)	Linear (Perpendicular to Base)	Linear (Perpendicular to Base)
11,5 ±1	10.5 ±1	9.5 ±1	10.7 ±1
< 2	< 2	< 2	< 2
100	100	100	100
2 ÷ 150	2 ÷ 150	2 ÷ 150	2 ÷ 150
60%	60%	60%	60%
< 1.2	< 1.1	< 1.2	< 1.2
1.2 : 1	1.2 : 1	1.2 : 1	1.2 : 1
< 50	< 50	< 50	< 50
24/36 (2/3 Cartridges per Year)	24/36 (2/3 Cartridges per Year)	65 (Almost 1 Cartridge per Year)	65 (Almost 1 Cartridge per Year)
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 ± 0.5	48 ± 0.5	48 ± 0.5	48 ± 0.5
200	200	400	400
260 for 3ms Max	260 for 3ms Max	520 for 3ms Max	520 for 3ms Max
10000	10000	20000	20000
23 ± 1	23 ± 1	23 ± 1	23 ± 1
≤ 5	≤ 5	< 6	< 6
28 ÷ 30	28 ÷ 30	≥ 40	≥ 45
1327x420x309	1327x420x309	1820x565x446	1820x565x446
Integrated	Integrated	Integrated	Integrated
Integrated	Integrated	Integrated	Integrated
110	119	300	300

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*Drawings not to scale




*Drawings not to scale





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Discover more about
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