ELEN™
THE FUTURE IN A BEAM

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Discover more about
Blade RF Self-Refilling 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 2µs to ∞ w.
VISIBLE LASER RADIATION - AVOID DIRECT EYE EXPOSURE	
CLASS 3R LASER PRODUCT	
LASER DIODE (aiming source)	4mW @ 635nm
	Classified by IEC 60825-1:2014

BLADE RF

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

Mid and High Power **RF CO_2 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 enhances 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 includes laser sources, scanning heads, galvanometric systems, and dedicated software control working synergistically together.
This versatile and harmonized integrablity empowers customers 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

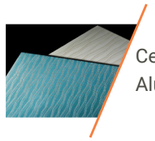
The Blade RF Self-Refilling technology offers excellent laser power stability, ensuring consistent process parameters even during long-term operations. The internal gas cartridge is cost-effective and easy to replace, typically twice per year. These industrial laser sources are the first that combine 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 / Label


Ceramic & Alumina


Fabrics & Denim

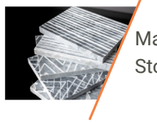

Food


Plastic Film


Glass & Quartz


Metals


Plastics


Marble & Stone


Rubber & Foam


Wood & Derivatives


Abrasive Materials


Cardboard & Corrugated

Processing


Laser Cleaning


Laser Cutting


Laser Micro Perforation


Laser Marking


Laser Drilling


Laser Kiss-Cutting


Laser Welding


Laser Ablation

RF 333 / RF 333 P / RF 555 / RF 777 / RF 888 / RF 899

RF 1222 / RF 1555

Laser Specifications

Model	RF 333 / P	RF 555	RF 777	RF 888	RF 899	RF 1222	RF 1555
Rated Power (W)[1]	320 ÷ 350	550	750 [1a]	850	850	1200	1500
Effective Peak Power (W)[2]	850 | 750	1650	1750	1800	1800	2400	2400
Power Stability (Long Term)[3]	±5%	±5%	±5%	±5%	±5%	±5%	±5%
Wavelength (µm)	10.6 ± 0.4 | 10.2 ± 0.2	10.6 ± 0.4	10.6 ± 0.4	10.6 ± 0.4	10.6 ± 0.4	10.6 ± 0.4	10.6 ± 0.4
Polarization	linear (parallel to base)	linear (perpendicular to base)	linear (perpendicular to base)	linear (perpendicular to base)	linear (perpendicular to base)	linear (perpendicular to base)	linear (perpendicular to base)
Beam Diameter (1/e² at The Exit)	7.0 ± 0.5	11.5 ± 0.5	11.5 ± 0.5	11.8 ± 0.5	10.5 ± 0.5	9.0 ± 0.5	9.0 ± 0.5
Beam Divergence (1/e² Full Angle) (mrad)	2.0 ± 0.2	0.9 ± 0.1	0.9 ± 0.1	1.0 ± 0.1	0.8 ± 0.1	2.0 ± 0.1	2.0 ± 0.1
Maximum Pulse Frequency (kHz)	100	100	100	100	100	100	100
Pulse Width Range (µs)	2 ÷ 150	2 ÷ 150	2 ÷ 150	2 ÷ 150	2 ÷ 150	2 ÷ 150	2 ÷ 150
Maximum Duty Cycle	60%	60%	70%	60%	60%	60%	60%
Mode Quality (M^2)	< 1.1	< 1.2	< 1.2	< 1.2	< 1.1	< 1.2	< 1.2
Beam Ellipticity	1.1 : 1	1.2 : 1	1.2 : 1	1.2 : 1	1.2 : 1	1.2 : 1	1.2 : 1
Optical Pulse Rise/Fall Time (Ms)	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Typical Gas Mix Consumption (Nl/Year)	24 (2 cartridges per year)	24 (2 cartridges per year)	24 (2 cartridges per year)	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)
Operating Ambient Temperature Range (°C)	5 ÷ 35	5 ÷ 35	5 ÷ 35	5 ÷ 35	5 ÷ 35	5 ÷ 35	5 ÷ 35
Storage Temperature Range (°C)	5 ÷ 50	5 ÷ 50	5 ÷ 50	5 ÷ 50	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	Non condensing at inlet water temperature	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	48 ± 0.5	48 ± 0.5	48 ± 0.5	48 ± 0.5
Max current (A)	100	140	180	200	200	400	400
Peak Current (A)	120 for 3 ms max	180 for 3 ms max	230 for 3 ms max	260 for 3 ms max	260 for 3 ms max	520 for 3 ms max	520 for 3 ms max
Coolant							
Heat Load (W)	5000	6800	9000	10000	10000	20000	20000
Coolant Temperature (°C)	23 ± 1	23 ± 1	23 ± 1	23 ± 1	23 ± 1	23 ± 1	23 ± 1
Water Cooling Input Pressure (Bar)	≤ 4	≤ 5	≤ 5	≤ 5	≤ 5	< 6	< 5
Water Cooling Flow Rate (L/Min)	12 ÷ 13	21 ÷ 23	21 ÷ 23	28 ÷ 23	28 ÷ 23	≥ 40	≥ 45
Dimensions / Weight							
Laser Dimensions (LxWxH) (Mm)	1327 x 420 x 309	1327 x 420 x 309	1327 x 420 x 309	1327 x 420 x 309	1327 x 420 x 309	1820 x 565 x 446	1820 x 565 x 446
Rf Power Supply Dimensions	integrated	integrated	integrated	integrated	integrated	integrated	integrated
Safety Shutter	optional	optional	optional	integrated	integrated	integrated	integrated
Laser Weight (kg)	105	110	110	110	119	300	300

(1) Typical with a pulse duration of 120µs and 60% duty cycle. Power reduction of 1% for °C with water cooling temperature above 20°C.
(1a) Typical with a pulse duration of 140µs and 70% duty cycle. Power reduction of 1% for °C with water cooling temperature above 20°C.
(2) Typical at 1kHz and 10% duty cycle. The effective power peak is defined as Average power /Duty Cycle.
(3) With constant water cooling temperature (23 ± 0.5). Stability is defined as S(%) = ±100*(Pmax-Pmin)/2Pmax.
* preliminary data

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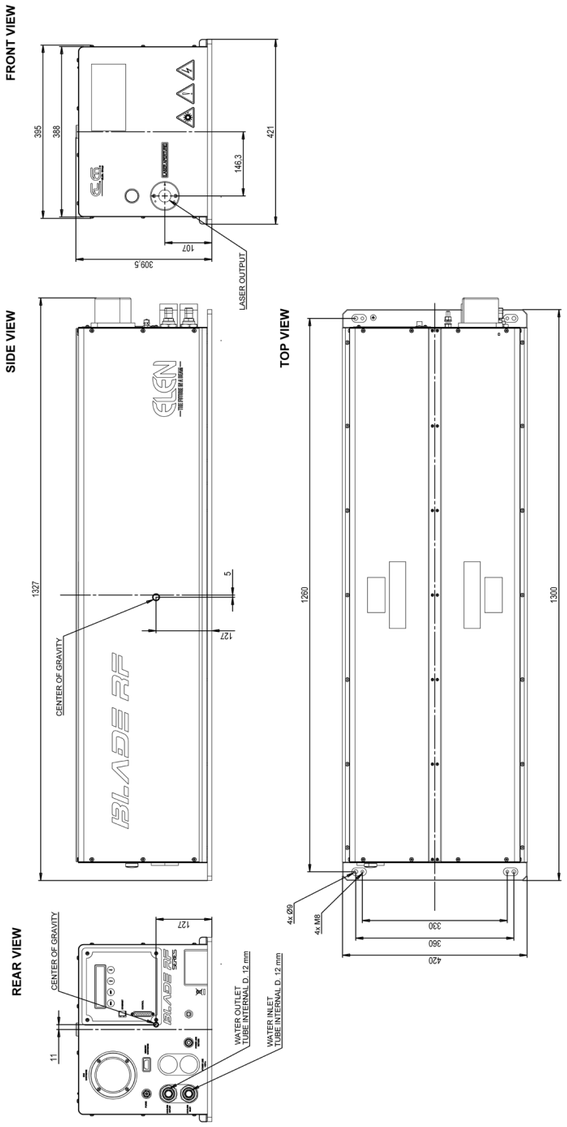
Technical Drawings*

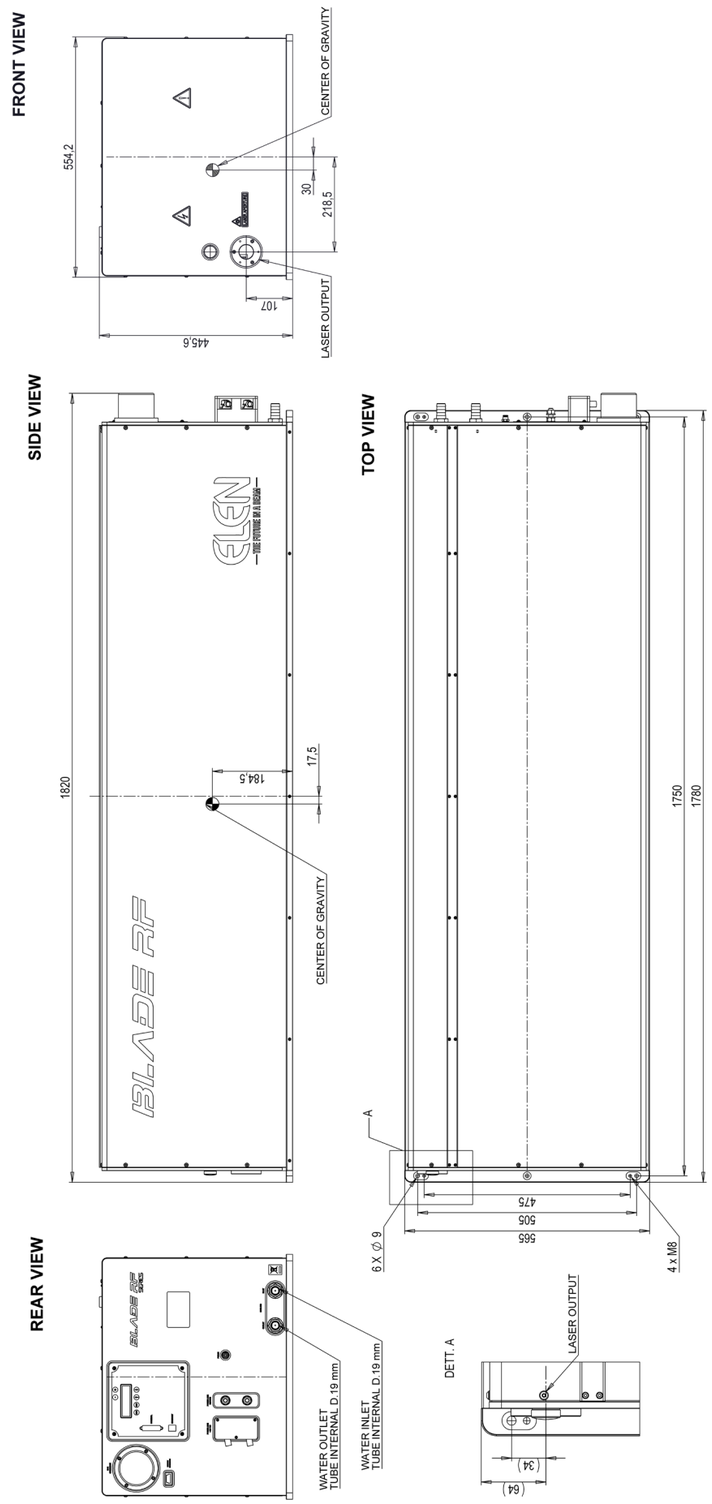
RF 333 / RF 333 P / RF 555 / RF 777 / RF 888 / RF 899



*Drowings not to scale

Technical Drawings*

RF 1222 / RF 1555



*Drowings not to scale