

AIONIS | FEMTOSECOND LASERS

The Ultrafast Laser for Next Generation Material Processing



Outstanding Performance

Highest quality and outstanding performance for high precision laser manufacturing



Easy Integration

The Compact all-in-one design simplifies integration and makes the Aionis a rugged laser processing tool.



Durable Laser Source

Aionis femtosecond lasers are designed for 24/7 operation in the most demanding applications.

Excellent Performance

Reliable Performance for Your Laser Processing Systems

The all-fiber based Aionis ultrafast laser is engineered for demanding 24/7 applications that require outstanding performance. Laser head, power supply and control electronics are integrated into a rugged, compact all-in-one laser head made of strengthened aluminum for highest stability. The new design significantly reduces system costs without sacrificing quality or laser lifetime.

Benefits

New Ways of Laser Material Processing

The Aionis ultrafast lasers provide outstanding performance for high efficiency laser processes. Our 515, 1030 and 1950 nm models are the optimum choice for high-quality and precision laser manufacturing. Thanks to the short femtosecond pulses. The Aionis lasers do not generate heat affected zones (HAZ).

The 48 VDC operating voltage and the field proven laser control interface enable a simple and easy integration of the system. An integrated pulse picker/modulator is included for fast pulse and fast power control commands. Experience contactless and wear-free manufacturing on any type of material.

Applications

Aionis Lasers for High-Precision Manufacturing

The Aionis femtosecond lasers provides the unparalleled laser processing results the following applications:

- Diamond Tooling
- Medical / BioTech
- Photovoltaics
- Semiconductor

Advantages

Femtosecond - Engineered for 24 / 7 Industrial Applications

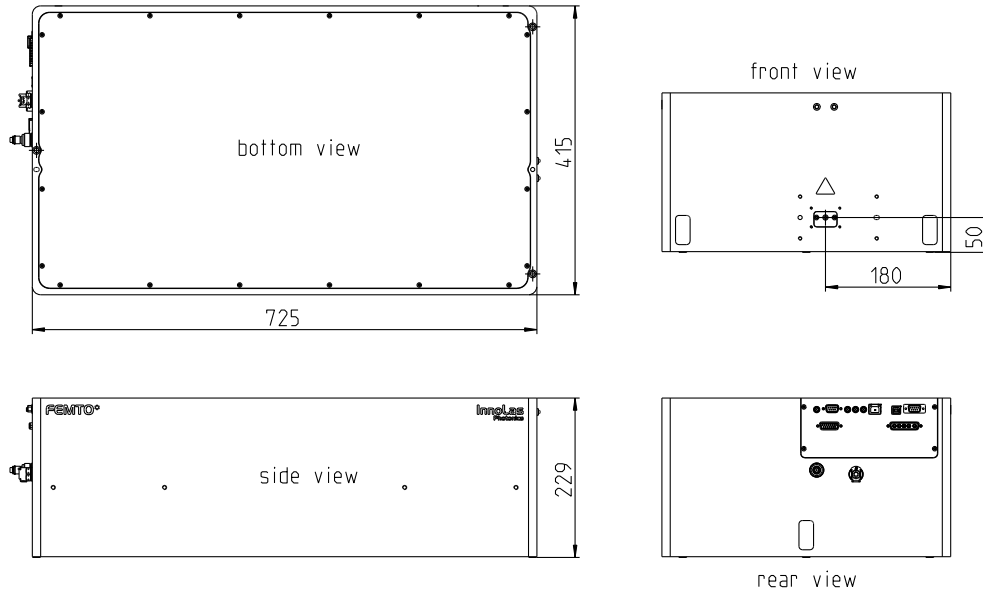
The Aionis ultrafast laser comes with an integrated pulse picker, pulse-on-demand and burst mode options. Combined with wavelengths of either 1950 nm, 1030 nm or 515 nm this builds a unique line-up in the laser industry.

It is designed for applications that require:

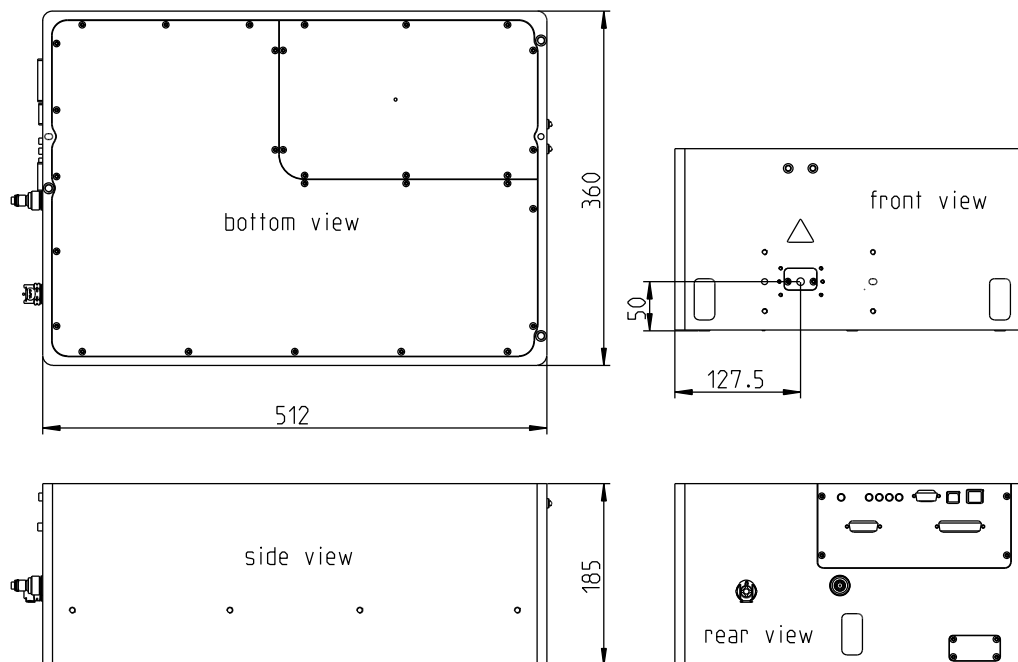
- Reliable 24/7 operation in industrial environments
- Tunable pulse duration from femtosecond to picosecond
- Excellent pulse-to-pulse and power stability

Technical Drawings

Aionis 515, Aionis 1030



Aionis 1950



Add-Ons

Customization Options for Individual Applications

Choose from the following options for Aionis ultrafast lasers:

- Customized pulse-on-demand mode
- Beam expander box
- Scan head adapter flanges
- Water-to-water or water-to-air chiller

Specifications

Aionis	515	1030
Model	515-15-Yb-2500	1030-25-Yb-2500
Laser Medium	Yb, all fiber	Yb, all fiber
Wavelength	515 nm	1030 nm
Nominal Power	15 W @ 2500 kHz	25 W @ 2500 kHz
Repetition Rate	Single Shot to 2500 kHz	Single Shot to 2500 kHz
Pulse Picker / Modulator	integrated	integrated
Pulse Width	500 fs – 4 ps, software adj.	500 fs – 4 ps, software adj.
Pulse Energy	15 µJ @ 1000 kHz	25 µJ @ 1000 kHz
Peak Power	30 MW	60 MW
Pulse-to-Pulse Stability (rms)	<5%	<3%
Power Stability (rms, 8h)	<5%	<3%
Spatial Mode	$M^2 < 1.5$, TEM ₀₀	$M^2 < 1.5$, TEM ₀₀
Nominal Beam Diameter (at waist)	0.8 mm	1.0 mm
Nominal Waist Location (from output)	-500 mm	-300 mm
Beam Divergence (full angle)	1.6 mrad	2.0 mrad
Nominal Beam Diameter (at output)	1.2 mm	1.5 mm
Polarization	linear, -45°, >100:1	linear, -45°, >100:1
Circularity	>90%	>90%
Warm-up Time	<20 min	<20 min
Operating Voltage	48 VDC	48 VDC
Laser Power Consumption	<700 W	<700 W
Cooling	Water	Water
Ambient Temperature	15-30 °C, non condensing	15-30 °C, non condensing
External Control	RS232, USB, TTL, Analog Modulation	RS232, USB, TTL, Analog Modulation
Dimensions Laser Head	725 x 415 x 229 mm ³	725 x 415 x 229 mm ³
Dimensions Power Supply	n. a.	n. a.
Weight Laser Head	70 kg	70 kg
Weight Power Supply	n. a.	n. a.

Specifications

Aionis	1950	
Model	1950-8-T-2500	1950-8-T-2500-LP
Laser Medium	Thulium, all fiber	Thulium, all fiber
Wavelength	1950 nm	1950 nm
Nominal Power	8 W @ 2500 kHz	8 W @ 2500 kHz
Repetition Rate	Single Shot to 2500 kHz	Single Shot to 2500 kHz
Pulse Picker / Modulator	integrated	integrated
Pulse Width	500 fs +/- 100 fs	4 ps +/- 1 ps
Pulse Energy	4 µJ @ 2000 kHz	4 µJ @ 2000 kHz
Peak Power	8 MW	1 MW
Pulse-to-Pulse Stability (rms)	<3%	<3%
Power Stability (rms, 8h)	<3%	<3%
Spatial Mode	$M^2 < 1.5, TEM_{00}$	$M^2 < 1.5, TEM_{00}$
Nominal Beam Diameter (at waist)	0.5 mm	0.5 mm
Nominal Waist Location (from output)	-300 mm	-300 mm
Beam Divergence (full angle)	4.0 mrad	4.0 mrad
Nominal Beam Diameter (at output)	2.0 mm	2.0 mm
Polarization	Horizontal, > 100:1	Horizontal, > 100:1
Circularity	>90%	>90%
Warm-up Time	<20 min	<20 min
Operating Voltage	48 VDC	48 VDC
Laser Power Consumption	<500 W	<500 W
Cooling	Water	Water
Ambient Temperature	15-30 °C, non condensing	15-30 °C, non condensing
External Control	RS232, USB, TTL, Analog Modulation	RS232, USB, TTL, Analog Modulation
Dimensions Laser Head	512 x 360 x 185 mm	512 x 360 x 185 mm
Dimensions Power Supply	n. a.	n. a.
Weight Laser Head	50 kg	50 kg
Weight Power Supply	n. a.	n. a.

Iradion follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 2.0, 05/2019.
Iradion Laser GmbH is DIN EN ISO 9001 certified.

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