

INTEGRAL™

PRO | 20 | 50 | 100

| sub-10 fs

| turn-key

| > 400 mW

| sub-10 fs

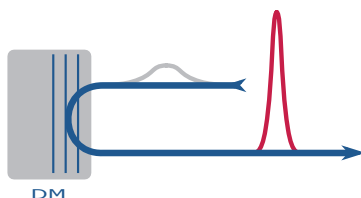
Applications

- Amplifier seeding
- Coherent THz generation
- Multiphoton microscopy
- Ultrafast spectroscopy
- Pump-probe measurements
- Materials processing
- Thin-film metrology



INTEGRAL™ is a sealed single box, hands-off femto-second oscillator. It provides a complete solution from the power outlet to the femtosecond laser output. The INTEGRAL™ is based on a low threshold femtosecond oscillator powered by an integrated diode pumped green solid state laser.

Generation of ultrashort pulses directly from a low loss laser oscillator is guaranteed by FEMTOLASERS™ patented Dispersive Mirror (DM) technology. Active feedback loops in combination with a compact design enable output parameters of unprecedented quality, stability, and reproducibility. Due to its turnkey operation, the INTEGRAL™ is best suited for everyday use in industrial, medical and scientific applications.



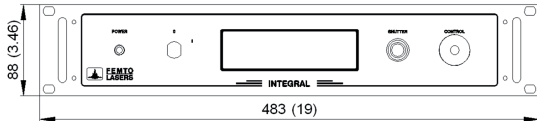
INTEGRAL™

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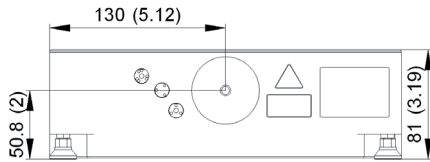
Extraordinary Features

- Turn-key operation | Sealed cavity
- Integrated diagnostics system
- Active system parameter stabilization
- Ultrashort pulses | Ultra low noise
- Temperature stabilized laser head
- Computer interface

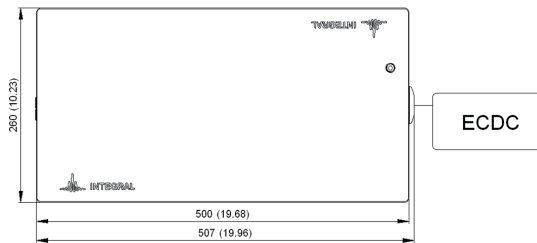
INTEGRAL™ - USER INTERFACE, Dimensions in [mm] ([in])



INTEGRAL™ - FRONT VIEW, Dimensions in [mm] ([in])



INTEGRAL™ - TOP VIEW, Dimensions in [mm] ([in])



Ultrashort Pulses

With DM technology, intracavity high order dispersion can be virtually eliminated, generating high quality, near bandwidth limited pulses down to sub-10 fs from a low threshold Ti:Sapphire oscillator. An Extra Cavity Dispersion Control unit (ECDC) provides precise control over dispersion outside of the oscillator in order to transmit pulses with extraordinary parameters to your application.

Compactness

DM systems contain no intracavity elements other than the gain medium resulting in an extremely compact and simple design.

Stability & Reliability

The intracavity dispersion is not sensitive to cavity alignment, in strong contrast to prism controlled systems. Hence the day-to-day reproducibility as well as the stability of the laser output parameters are excellent down to the sub-10 fs regime. Due to the compact DM resonator, the sealed cavity technology, as well as the active stabilization of system parameters, the INTEGRAL™ features the highest stability demonstrated down to the sub-10 fs regime to date.

Options

Custom bandwidth, pulse duration, SHG unit for frequency doubling and a fiber delivery module are optionally available. Higher power levels available on request.

SPECIFICATIONS	INTEGRAL™ PRO				INTEGRAL™ 20				INTEGRAL™ 50				INTEGRAL™ 100			
	100	200	300	400	100	200	300	400	100	200	300	400	100	200	300	400
Pulse duration	< 10 fs				< 20 fs				< 50 fs				< 100 fs			
Bandwidth (FWHM)	> 100 nm @ 800 nm				> 40 nm @ 800 nm				> 15 nm @ 800 nm				> 10 nm @ 800 nm			
Mode locked avg. output power (mW)	> 100	> 200	> 300	> 400	> 100	> 200	> 300	> 400	> 100	> 200	> 300	> 400	> 100	> 200	> 300	> 400
Pulse energy @ 85 MHz (nJ)	> 1.1	> 2.3	> 3.5	> 4.7	> 1.1	> 2.3	> 3.5	> 4.7	> 1.1	> 2.3	> 3.5	> 4.7	> 1.1	> 2.3	> 3.5	> 4.7
Peak power @ 85 MHz (kW)	> 110	> 230	> 350	> 470	> 55	> 115	> 175	> 235	> 20	> 46	> 70	> 94	> 11	> 23	> 35	> 47
Beam diameter (1/e ²)	< 2 mm															
Beam divergence	< 2 mrad															
Spatial mode	TEM ₀₀ (M ² < 1.3)															
Polarization	> 100:1 (horiz.)															
Noise (measured at 10 Hz - 100 kHz)	< 0.05 % rms															
Power stability ¹⁾	± 1%															

1) Measured over 100 hours after 5 min. warmup at constant environmental conditions

All specifications are subject to change without notice



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FEMTOLASERS' laser products are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by Center of Devices and Radiological Health on all systems ordered for shipment after October 1, 2003.