AEROPULSE FS20

High power femtosecond fiber laser

RUGGED AND COMPACT OEM FIBER LASER

Industrial-grade femtosecond fiber laser

The aeroPULSE FS20 industrial-grade femtosecond fiber laser is based on our renowned photonic crystal fiber platform.

Developed for both demanding 24/7 OEM and academic applications, the aeroPULSE FS20 delivers high unit-to-unit consistency and up-time, low cost of ownership, and ease of integration.

Applications

- Micromachining
- Scribing
- Medical device fabrication
- Ophthalmic surgery
- Optogenetics
- OPA Pumping
- LIDAR

AEROPULSE FS20

Ultra-short pulses with long-term stability

This rugged and compact OEM fiber laser utilises state-of-the-art mode-locking technology to deliver ultra-short femtosecond pulses with outstanding long-term stability, superior pulse-to-pulse stability, low noise, and excellent beam pointing stability.

Developed for cutting-edge applications

The aeroPULSE FS20 is designed for a diverse range of applications including: Material processing, ophthalmic surgery, optogenetics, and LIDAR.

As standard, the aeroPULSE FS20 is available with output powers up to 20 W at 1030 nm in a clean near-pedestal free pulse. With tuneable pulse duration and single-shot to 50 MHz repetition rates, the aeroPULSE FS20 is a flexible, cost-effective femtosecond laser.

Get the dual wavelength second-harmonic module

The attachable second-harmonic generation (SHG) module makes it possible to switch between 10 µJ at 515 nm and 20 µJ at 1030 nm. The wavelength is selected via software.

Maintenance-free and OEM-ready

With no alignment required, the aeroPULSE FS20 guarantees high stability with 24/7 operation and is ideal for OEM integration.

The system configuration consists of a 19” rack-mountable control unit and a very low-profile laser head that can be mounted either horizontally or vertically.

The complete system is water-cooled supporting a high output power performance.

Features

- Average power 20 W @1030nm
- Average pulse energy 20 µJ @1030nm
- Average power 10 W @515nm w/ SHG
- Average pulse energy 10 µJ @515nm w/ SHG
- Variable pulse widths <500 fs - 3 ps
- Clean pulses with virtually no pedestal
- Single-shot to 50 MHz
- Excellent beam pointing stability
- All-fiber design, industrial reliability
- System monitoring via remote diagnostics
- Very quick warm-up time
- Plug and Play
- Maintenance-free 24/7 operation
- Burst mode capable

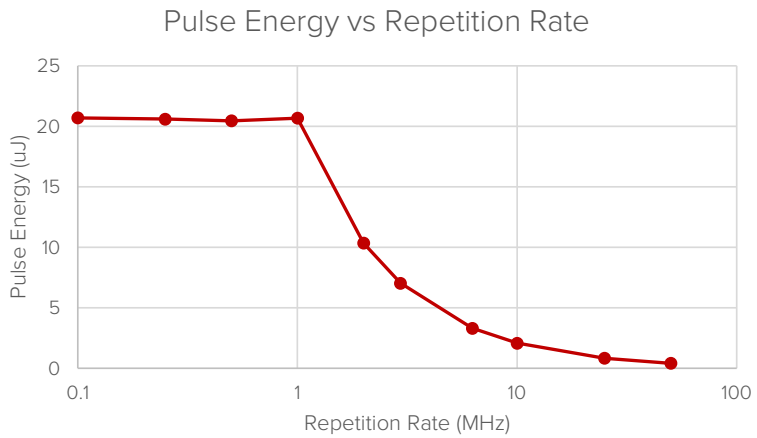
Support and warranty

The product is covered by a comprehensive warranty. Service options are available. For details, please enquire.

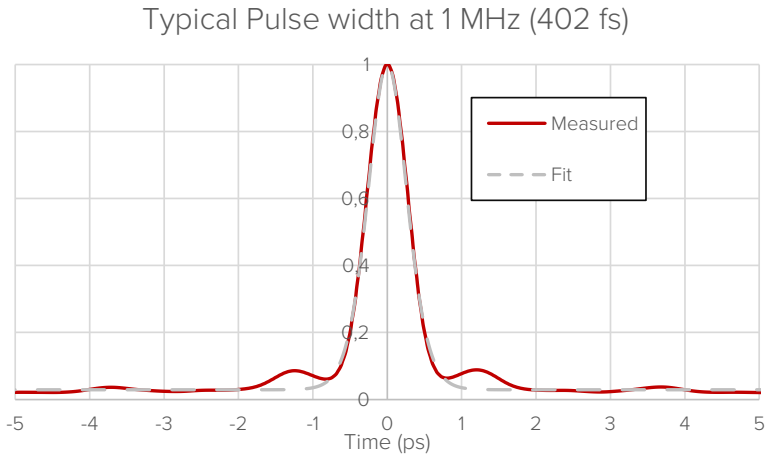
All aeroPULSE lasers are completely maintenance-free and have an expected lifetime of more than 20,000 hours.

TYPICAL PERFORMANCE

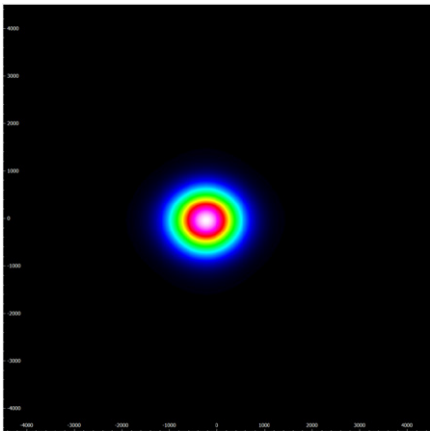
Pulse energy vs repetition rate



Pulse width trace



Beam cross-section



SPECIFICATIONS

Optical

		With SHG wavelength module
Model	**FS20**	**FS20-05**
Center wavelength [nm]	1030	515
Power [W]	20	10
Pulse duration [ps]	< 0.5 – 3	< 0.5
Pulse energy [µJ]	20 @ single shot – 1000 kHz	10 @ single shot – 1000 kHz
Repetition rate [1] [MHz]	Single shot – 50	Single shot – 50
Beam diameter [mm]	1.0	1.0
Beam divergence [mrad]	< 1.6	< 1.0
Spatial mode, fundamental	$M^2 \leq 1.2$	$M^2 \leq 1.3$
Beam asymmetry/ellipticity [%]	< 15	< 20
Power stability (8h), RMS [%]	< 0.5	< 1.0
Pointing stability (8 hours) [µrad]	< 50	< 50
Polarization - linear, PER [dB]	> 25	> 25

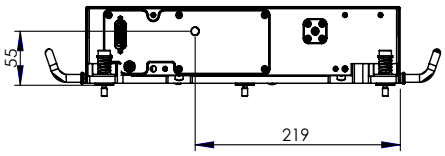
1) Up to 100 MHz available

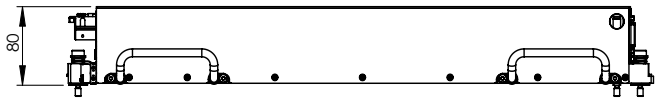
Mechanical/Electrical

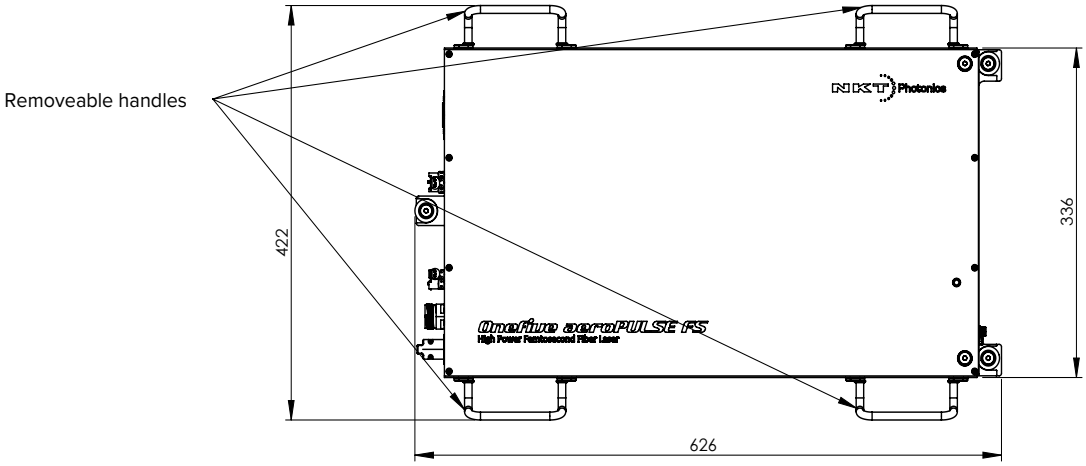
		With SHG wavelength module
Model	**FS20**	**FS20-05**
Computer interface	USB 2.0, RS-232	USB 2.0, RS-232
Operating voltage	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz
Power consumption [W]	< 250	< 330
Operation temperature [°C]	18 – 30	18 – 30
Storage temperature [°C]	-10 – 60	-10 – 60
Laser head dimensions (WxHxL) [mm^3]	336 (422 w/ handles) x 80 x 626	336 (422 w/ handles) x 80 x 763
Laser head weight [kg]	19	24
Controller dimensions (WxHxL) [mm^3]	442 x 168.5 x 375 (4U 19”)	442 x 168.5 x 375 (4U 19”)
Controller weight [kg]	< 15.5	< 15.5
Umbilical length [m]	4	4
Chiller dimensions (WxHxL) [mm^3]	483 x 310 x 570	483 x 310 x 570
Chillerweight [kg]	41	41
Cooling	Water-based	Water-based

TECHNICAL DRAWINGS

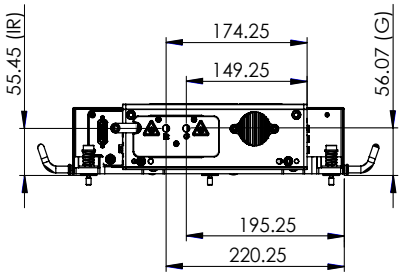
Laser head

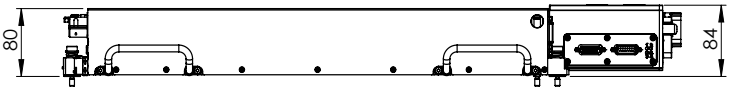


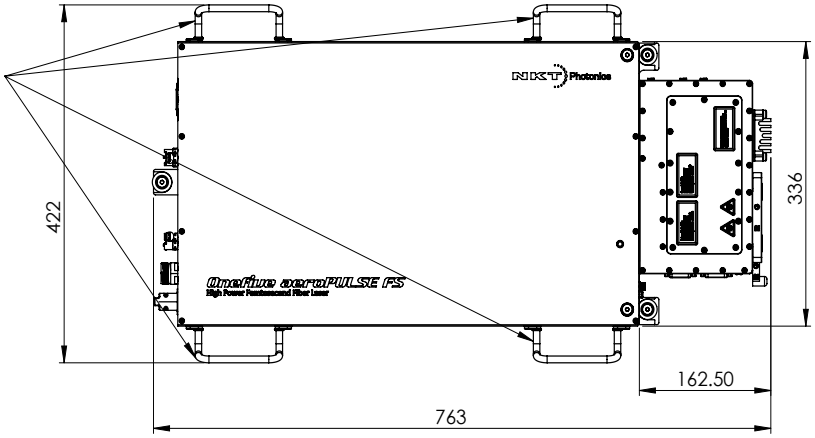




Laser head with SHG module

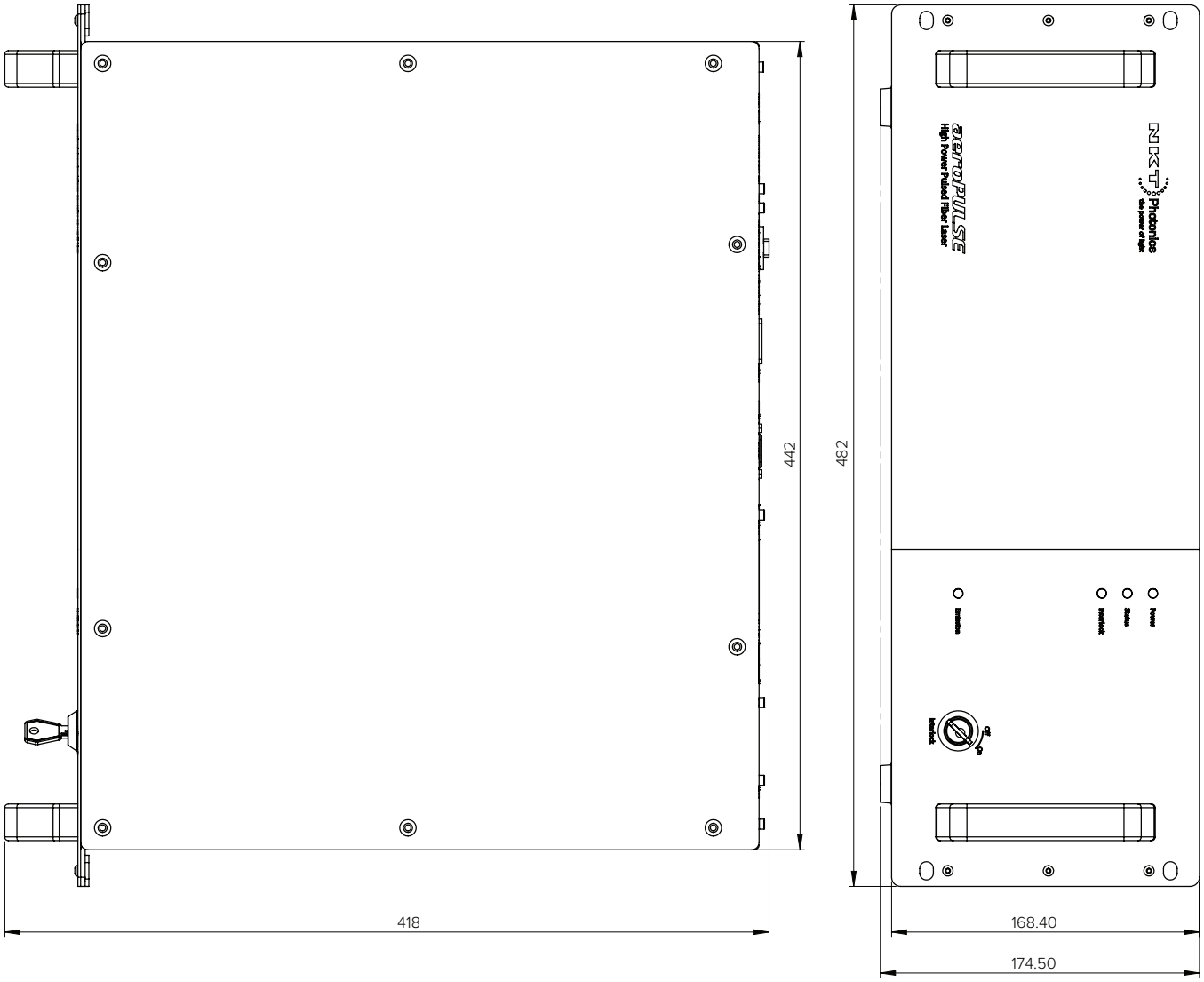






TECHNICAL DRAWINGS

Controller



All aeroPULSE FS20 products are produced under our quality management system certified in accordance with the ISO 9001:2015 standard.

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