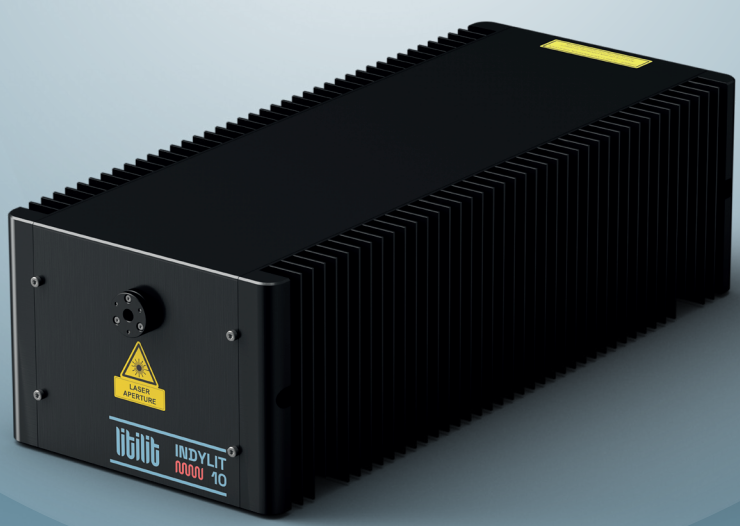
# INDYLIT 10 Vision

Compact, Robust, High Energy Femtosecond Laser for Medical Applications

1030 nm, 390 fs, 10 W, 80 kHz – 2MHz

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## PASSIVE, ROBUST AND HIGH PULSE ENERGY

### FEATURES

- Extremely robust and stable
- Compact and passively cooled
- Excellent beam and pulse quality
- Maintenance-free & turn-key
- Dust and water protection IP51

### APPLICATIONS

- Ophthalmology
- Fabrication of medical devices
- Stainless steel black and colour marking
- Semiconductor and electronics

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# INDYLIT 10 Vision

The Indylit 10 Vision is a compact, robust, passively air-cooled femtosecond laser designed for ophthalmology and other medical applications. The laser emits high-energy (up to 100 µJ) femtosecond pulses with very high temporal contrast. The beam has a Gaussian shape with excellent beam quality and roundness.

The laser is dust and water protected (class IP51) and is designed for 24/7 operation in any environment. These properties make Indylit 10 Vision a perfect choice for medical applications where exquisite optical quality and reliable long-term operation are required.

## SPECIFICATIONS

| Model | Indylit 10 Vision |
|---|---|
| Central wavelength | 1030 ± 2 nm |
| Average power [1)] | > 8 W @ 80 kHz<br>> 10 W @ 1 MHz |
| Max. pulse energy [1)] | > 100 µJ @ 80 kHz<br>>10 µJ @ 1 MHz |
| Pulse duration | < 390 fs |
| Pulse duration tunability | 390 fs – 5 ps |
| Internal pulse repetition rate | 80 kHz - 2 MHz<br>down to 30kHz in burst mode |
| Pulse picker | integrated |
| Triggering mode | Pulse picker control via TTL gate |
| Burst length | 1...12 pulses |
| Max. energy in burst | > 300 µJ |
| Power attenuation [2)] | 100 – 1% |
| Beam quality | $M^2$ < 1.2 |
| Beam circularity [3)] | > 0.90 |
| Beam diameter (at $1/e^2$ level) | 2.0 ± 0.3 mm |
| Polarization | Linear horizontal, > 200:1 extinction |
| Prepulse contrast | > 1:1000 |
| Post pulse contrast | > 1:100 |

# INDYLIT 10 Vision

## SPECIFICATIONS (continued)

| Model | Indylit 10 Vision |
|---|---|
| Beam divergence (full angle) | < 1 mrad |
| Beam pointing (RMS) [4] | < 20 µrad |
| Beam pointing vs temperature | < 15 µrad/° C |
| Power stability (RMS) [5] | < 1% |
| Pulse energy stability (RMS) [6] | < 1% |
| Warm-up time (cold start) | < 20 min |
| Warm-up time (warm start) | < 3 min |
| Laser control interface | CAN, USB |
| Operating voltage | 24V, 25A (100...240 V AC, 47...63 Hz to 24V AC/DC converter included) |
| Average power consumption (after warm-up) | 200 W |
| Maximal power rating | 600 W |
| Operating temperature | 18 – 35 ° C |
| Humidity | non condensing |
| Transportation/storage temperature | -20 – +70 ° C |
| Dimensions:<br>Laser head (L × W × H)<br>Control unit (L × W × H)<br>AC/DC converter (L x W x H) | <br>425 x 180 x 128 mm<br>449 x 370 x 140 mm<br>250 x 125 x 60 mm |
| Umbilical length | 3 ± 0.2 m |
| Cooling:<br>Laser head<br>Control unit | <br>air (passive)<br>forced air (fans) |

[1] Laser power is approximately constant in the 80kHz-2MHz operation range. Pulse energy is therefore inversely proportional to the repetition rate.

[2] Attenuation can be controlled by a few different methods: a) by PC user interface, b) by CAN register, c) by analog input (0-1V, rise time <1 µs). Beam quality specifications are maintained down to 10% power level.

[3] Defined as the worst case ellipticity along the z-scan (± 5 xLRayleigh) of the beam.

[4] Measured during 8h operation starting 30 minutes after cold start. Environmental temperature stability within ± 1° C.

[5] Measured with integration time of 1s at the same conditions as (4).

[6] Measured within 10s time interval for at least 1000 pulses.

[7] Technology is protected by international patents: LT6261 (B); JP6276471 (B2); US10038297 (B2); EP3178137; DK3178137 (T3); CN106575849 (B); PL3178137 (T3); LT6639 (B); LT2020 563.

CE RoHS

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DANGER: VISIBLE AND/OR INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT, REFLECTED OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT

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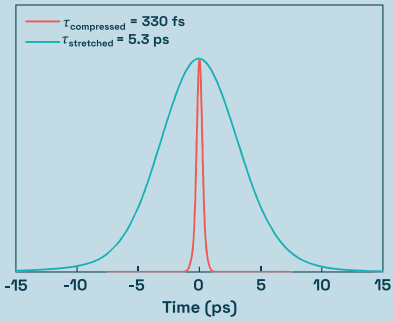
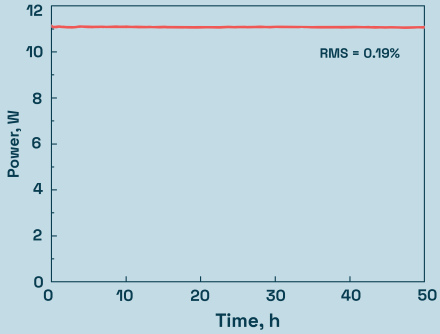
# INDYLIT 10 Vision

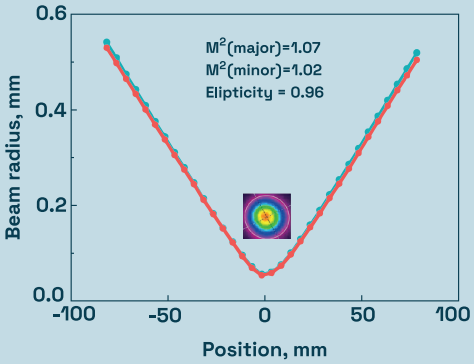
## PERFORMANCE




Pulse autocorrelation traces of optimally compressed and maximally stretched pulses



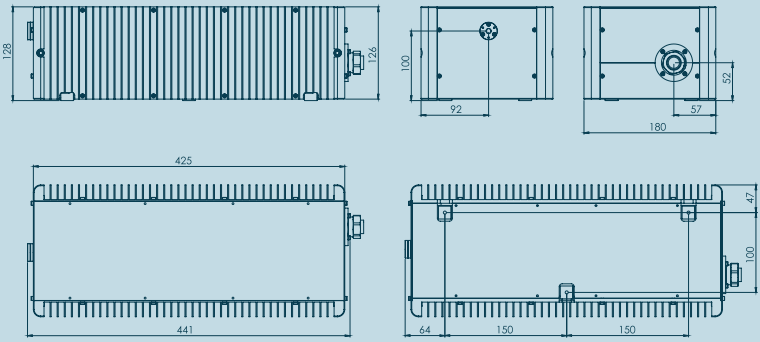

Long term output power stability



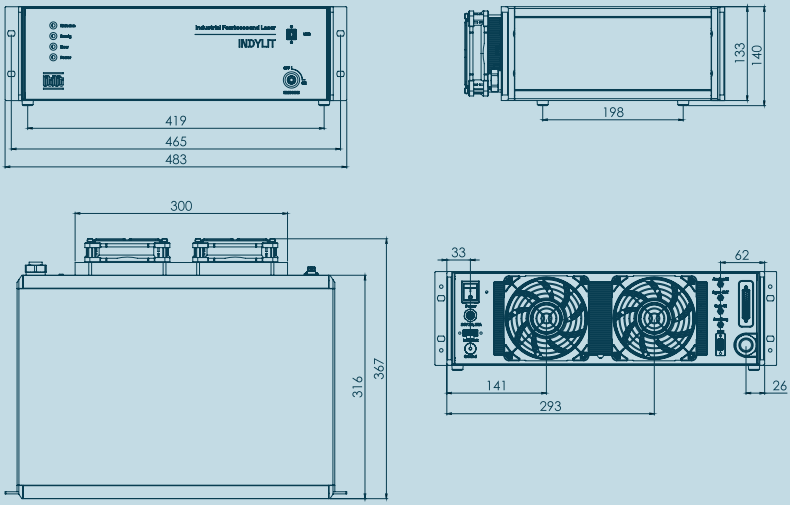

Beam z-scan measurement and beam profile in far field

# INDYLIT 10 Vision

DRAWINGS




Drawing of Indylit-10 Vision laser head (in mm)




Drawing of Indylit-10 Vision laser control unit (in mm)

NOTES

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