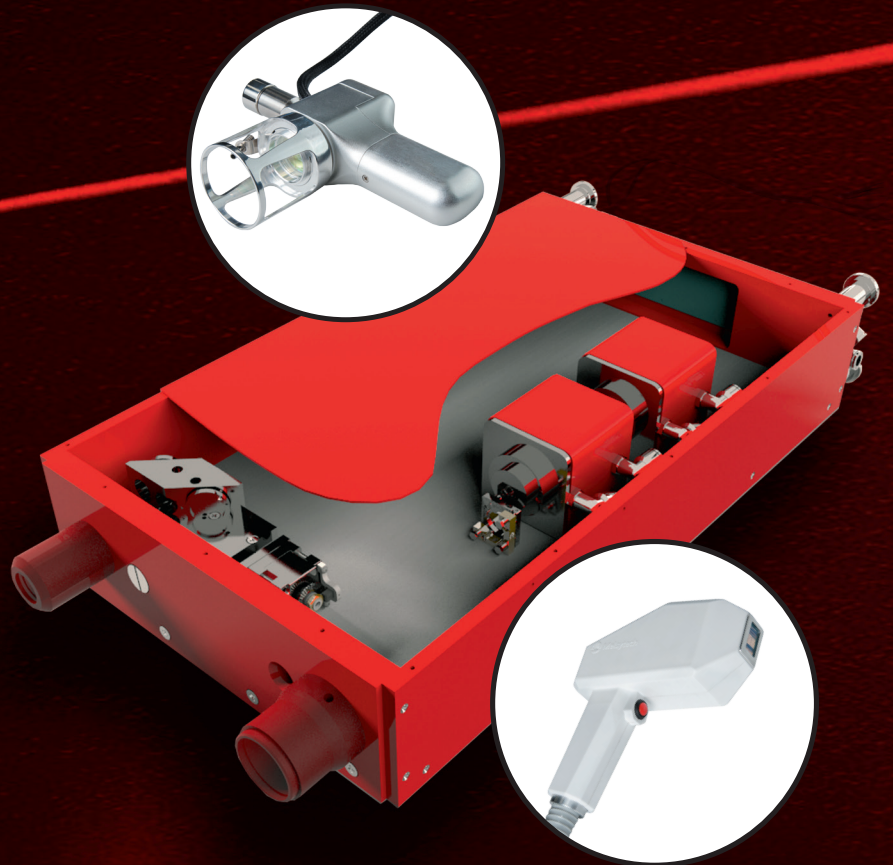


OEM SOLUTIONS

AESTHETIC AND MEDICAL APPLICATIONS

# Astrum LT



Long-pulsed green laser 532nm up to 5J

Long-pulsed yellow laser 583nm up to 5J

Q-Switch Nd:Yag up to 1.7J

Long-pulsed Nd:Yag up to 70J

Picosecond Nd:Yag up to 0.5J at 200ps

755nm, 808nm, or 1064nm hair removal kit, high power,  
custom spot size

Tm CW & pulsed module up to 120W

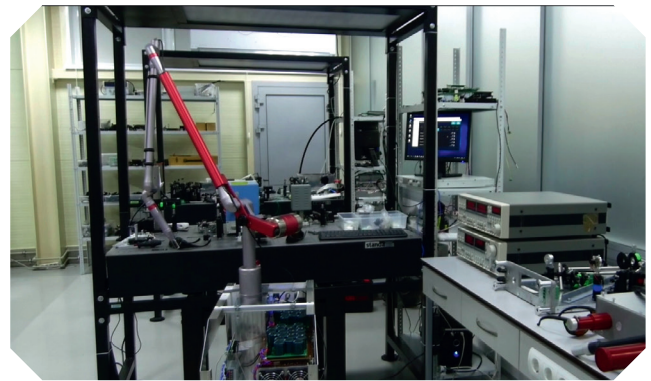
ISO 13485:2016

# Astrum LT

Semiconductor lasers  
systems and components

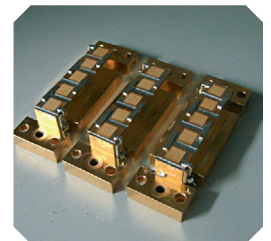
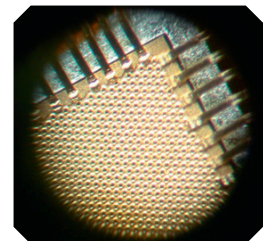
## LASER TECHNOLOGY BY ASTRUM LT

Astrum LT, UAB (Vilnius, Lithuania) is an international developer, and supplier of high power laser systems and components. Astrum LT supplies all well-known laser types - Nd:Yag, diode, KTP, Erbium, Holmium, Thulium, Q-switched and picosecond lasers - for such applications as cosmetology, aesthetic medicine and industrial processing/cutting/engraving of metals and other materials.



The enterprise was founded in 2017 and completely focuses on semiconductor laser technology. The semiconductor technology offers higher efficiency, improved reliability and provides various technical capabilities. The company provides laser and optical components, modules, and accessories that provide for full cycle manufacturing of laser systems.

	Flash-lamp pumping	Semiconductor
Technology	Conventional	Advanced
Laser source life time	Flash lamp, up to a year	Diode, five years minimum
Optical power and energy	High	High
Maintenance	Third-party, high costs	User, low costs
Pulse repetition rate	1-15Hz	1-100Hz
Emission efficiency	<5%	~50%
Power consumption	High	Low
Cost of ownership	High	Low

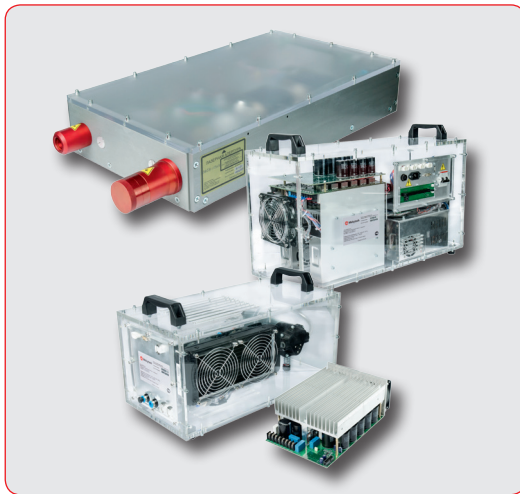


### Astrum LT today:


- an ISO 13485:2016 certified production
- a supplier of innovations and production research in laser technologies for medical and industrial application.
- a holder of patents for unique proprietary technologies.
- a team of qualified professionals, including medical advisers, and engineers of doctorate and highest academic degree.
- quality, reliability, efficiency of laser systems.
- single source for design and development, manufacturing of components, assembly.

## Q-Switch Nd:YAG/KTP kit

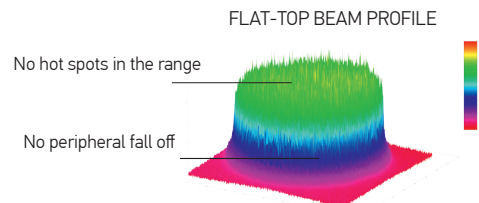
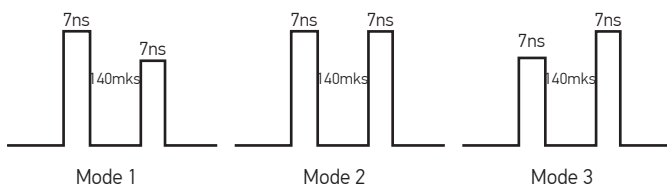
Complete OEM solution for a Q-switch Nd:Yag laser system: laser module, driver, control and cooling system



### FEATURES

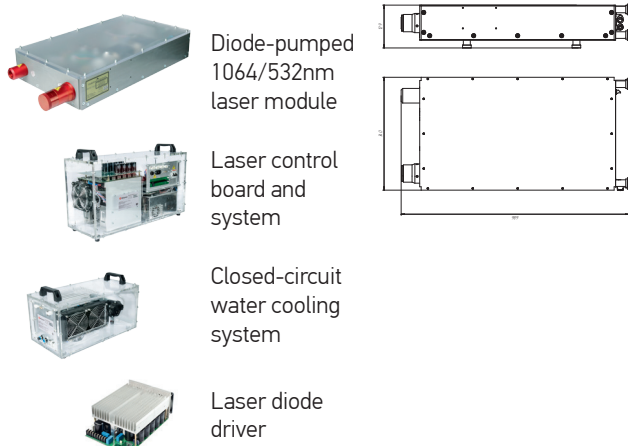
- Semiconductor laser system
- GUI 
- UNIQUE Q-switch + long pulse in a single module
- 1.7J

Wavelength, nm	1064		532
Operation mode	Long pulse	Q-switched	Q-switched
Pulse energy, J	110	1.7	0.7
Max fluence, J/cm <sup>2</sup>	3,600	54	23
Pulse length	0.3 – 60ms	5 - 10ns	5 - 10ns
Max pulse repetition rate, Hz	50	50	50
Cooling system	Air-liquid, integrated		
Beam aperture, mm	9mm		



- A pulse (300mks - 60ms) in a long-pulsed mode can be controllably divided into 1, 2 or 3 sub-pulses, each at a chosen energy level. Such customization turns a simple laser beam into a controlled, precise and finely adjusted tool to effectively treat targeted lesions but avoid damaging neighboring tissue.
- The Q-switched mode features a double-pulse routine, each pulse 7ns long with preset energy levels and 140mks between them. Use different energy patterns when applying the double pulse mode to secure a cascade effect which is a combination of mechanical and thermal actions, so that only chromophores are targeted, and no neighboring tissue is damaged.

### BUILD YOUR DESIGN



OR

### RECEIVE A COMPLETELY ASSEMBLED UNIT



# Astrum LT

Semiconductor lasers  
systems and components


## 532-808-1064nm laser kit

Complete OEM solution for a 532-808-1064nm laser system: laser module, driver, control and cooling system



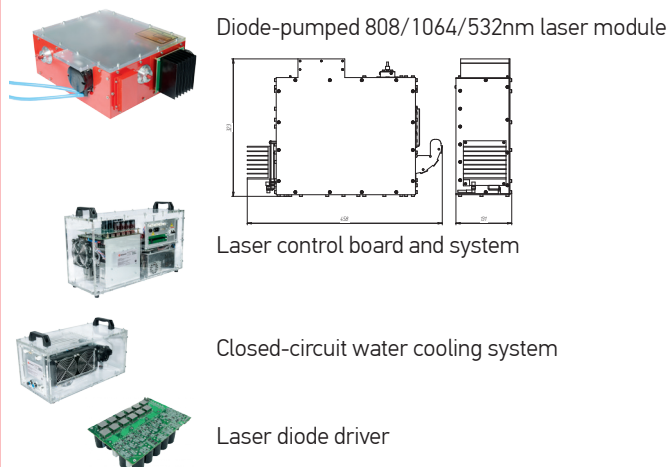
The three-wave module provides for application of various modes within a single procedure by switching between the wavelengths in seconds, which makes it universal for a wide range of medical applications. The diode-pumping technology eliminates any flash lamps in the laser systems, and therefore is not subject to cumbersome and expensive aftersales service.

### FEATURES

- Semiconductor laser system
- GUI 
- UNIQUE tri-wave optical module and a single optical
- Fiber handpiece
- 5-100W
- Easily transforms into 532nm single wave
- Small blueprint
- Customized wavelengths upon request

Wavelength, nm	1064	808	532
Mode	Q-switched modulated long pulse	Free running	Q-switched modulated long pulse
Max pulse energy, mJ	300	900	150
Pulse length	10ms - 2s		
Max energy density, J/cm <sup>2</sup>	270	800	140
Max pulse repetition rate, Hz	50	50	50
Max average power, W	30	90	10
Max pulse power, W	30,000	90	15,000
Cooling system	liquid, integrated		
Spot size	1.2 - 10mm		

### BUILD YOUR DESIGN



OR

### RECEIVE A COMPLETELY ASSEMBLED UNIT



# Astrum LT



Semiconductor lasers  
systems and components

## 755nm, 808nm, 1060nm Hair removal laser kit, -6°C skin cooling

Complete OEM solution for a hair removal laser system: laser module with sapphire skin cooling, laser diode driver, control and cooling system.



### FEATURES

- High power VCSEL chips inside
- GUI  or 
- 200W Peltier cooling
- Standard or custom spot size
- Treatment protocol support
- 808, 755 or 1060nm
- Any wavelength, same chassi

### BUILD YOUR DESIGN



755, 808, or 1060nm module, up to 4kW



Closed-circuit water cooling system



Laser diode driver

OR

### RECEIVE A COMPLETELY ASSEMBLED UNIT



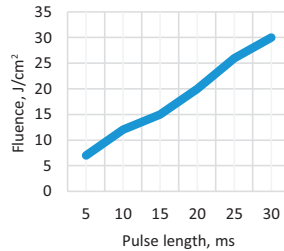
# Astrum LT

Semiconductor lasers  
systems and components

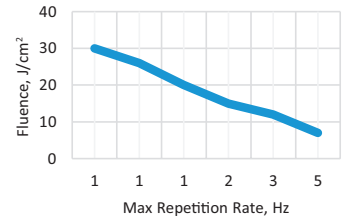
## Wavelength - 755nm

- Power - 1800W
- Design - edge emitting laser bars
- Pulse length - 5 - 30ms
- Spot size - 10x10mm
- Max fluence - 30J/cm<sup>2</sup>
- Max repetition rate - 5Hz

Fluence vs Pulse length



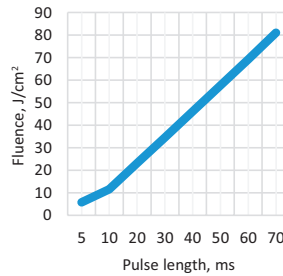
Fluence vs Max Repetition Rate (Hz)



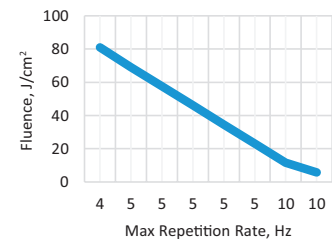
## Wavelength - 755nm

- Power - 1600W
- Design - edge emitting laser bars
- Pulse length - 5 - 70ms
- Spot size - 10x10mm
- Max fluence - 80J/cm<sup>2</sup>
- Max repetition rate - 10Hz

Fluence vs Pulse length



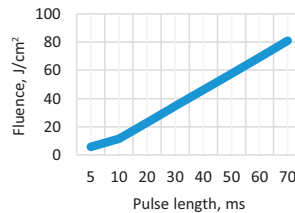
Fluence vs Max Repetition Rate (Hz)



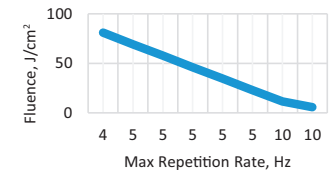
## Wavelength - 1060nm

- Power - 1600W
- Design - edge emitting laser bars
- Pulse length - 5 - 70ms
- Spot size - 10x10mm
- Max fluence - 80J/cm<sup>2</sup>
- Max repetition rate - 10Hz

Fluence vs Pulse length



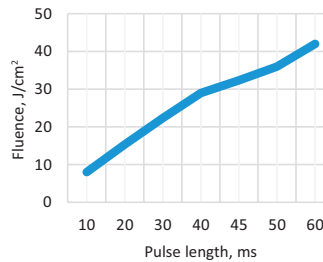
Fluence vs Max Repetition Rate (Hz)



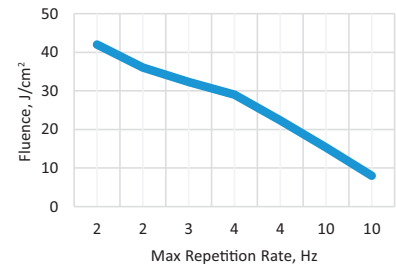
## Wavelength - 808nm

- Power - 1000W
- Design - edge emitting laser bars
- Pulse length - 10 - 60ms
- Spot size - 10x10mm
- Max fluence - 40J/cm<sup>2</sup>
- Max repetition rate - 10Hz

Fluence vs Pulse length



Fluence vs Max Repetition Rate (Hz)



The stated power value is the total emitting power of the package, whereas the performance graphs take account of optical losses.

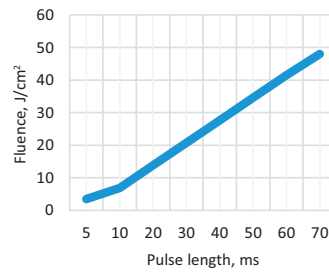
# Astrum LT

Semiconductor lasers  
systems and components

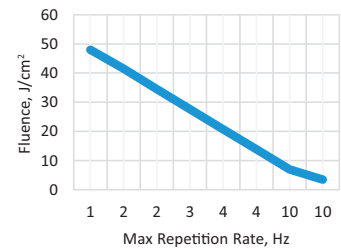
## Wavelength - 808nm

- Power - 2400W
- Design - edge emitting laser bars
- Pulse length - 5 - 70ms
- Spot size - 10x25mm
- Max fluence - 48J/cm<sup>2</sup>
- Max repetition rate - 10Hz

Fluence vs Pulse length



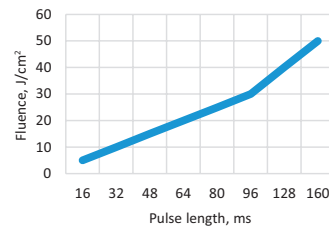
Fluence vs Max Repetition Rate (Hz)



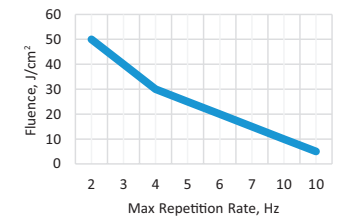
## Wavelength - 808nm

- Power - 1200W
- Design - VCSEL
- Pulse length - 15 - 160ms
- Spot size - 10x10mm
- Max fluence - 50J/cm<sup>2</sup>
- Max repetition rate - 10Hz

Fluence vs Pulse length



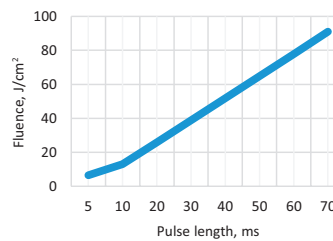
Fluence vs Max Repetition Rate (Hz)



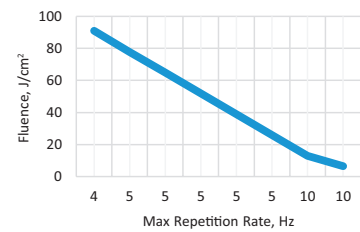
## Wavelength - 808nm

- Power - 1800W
- Design - edge emitting laser bars
- Pulse length - 5 - 70ms
- Spot size - 10x10mm
- Max fluence - 90J/cm<sup>2</sup>
- Max repetition rate - 10Hz

Fluence vs Pulse length



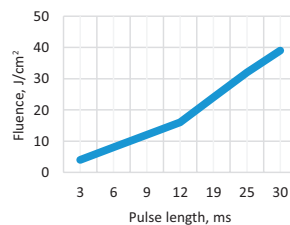
Fluence vs Max Repetition Rate (Hz)



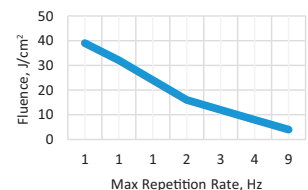
## Wavelength - 808nm

- Power - 4000W
- Design - edge emitting laser bars
- Pulse length - 3 - 30ms
- Spot size - 10x25mm
- Max fluence - 40J/cm<sup>2</sup>
- Max repetition rate - 9Hz

Fluence vs Pulse length



Fluence vs Max Repetition Rate (Hz)



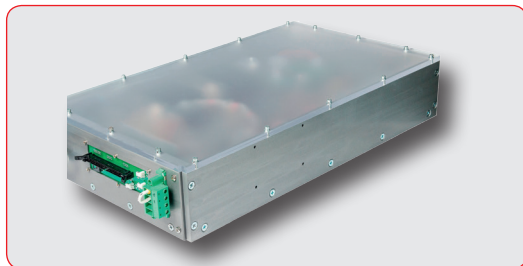
The stated power value is the total emitting power of the package, whereas the performance graphs take account of optical losses.

# Astrum LT



Semiconductor lasers  
systems and components

## Tm:YAG laser solution, 2020nm Urology application: surgery & lithotripsy in a single design

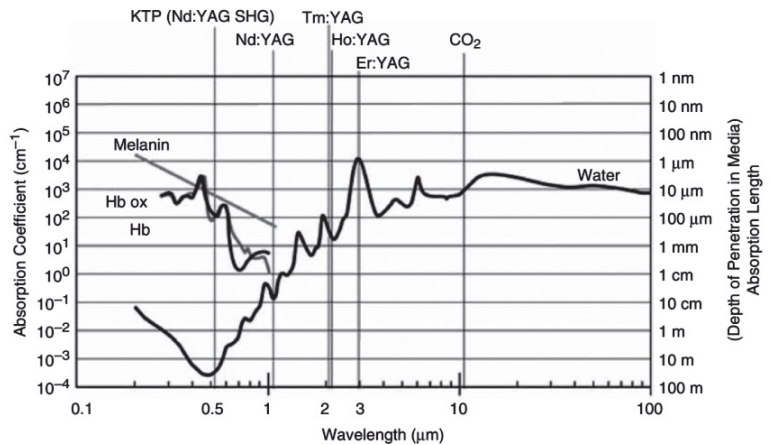
Complete OEM solution for urology application: optical module with temperature stabilization, laser diode driver, control and cooling system.



### FEATURES

- High power
- GUI  or 
- **CW and Pulsed** mode in a single solution
- **CW up to 200W**
- **Pulsed 0.1-2ms up to 1500W**
- Fiber output 600micron

In urinary tissues, water is the main chromophore absorbed by thulium laser radiation. In surgical applications, thulium laser radiation effectively cuts tissue and provides the required level of coagulation. Absorption depth in the prostate is only 0.4 mm, creating a high energy density sufficient for vaporization: dissipating heat causes simultaneous coagulation of small blood vessels to a depth of about 2 mm; this enables precise, char-free and virtually bloodless incision in prostatic tissue. The main mechanism of laser lithotripsy is heating and dramatically expanding the water contained in the stone pores. This leads to microexplosions, destroying the material of the stone.



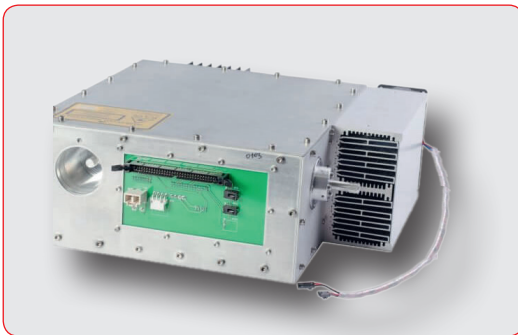
### TM:YAG LASER APPLICATION IN UROLOGY:

Surgical	Lithotripsy
Benign prostatic hyperplasia (BPH)	Stone fragmentation
Adenoma (ThuLEP)	Stone dusting
Urothelial tumors	Kidney stones
Strictures	Bladder stones
Tunnel and bladder neck incision	All type of stones including calcium oxalate monohydrate (COM)





## Nd:YAG laser module for gynecology

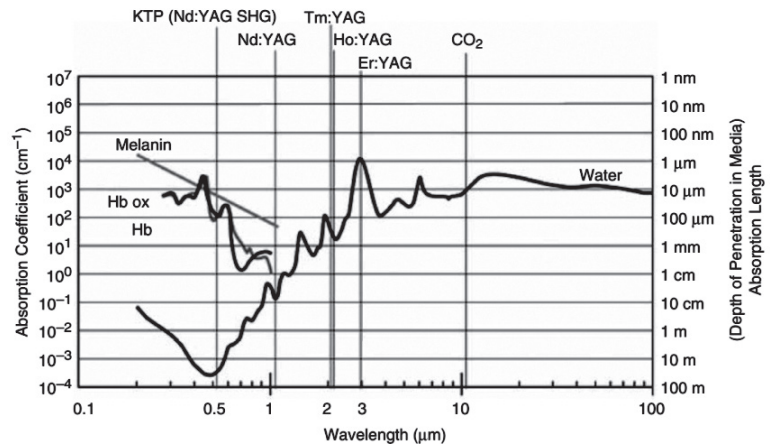
Complete OEM solution for gynecological application: optical module with temperature stabilization, laser diode driver, control and cooling system.



### FEATURES

- Solid and reliable design
- GUI  or 
- QCW **up to 30W**
- Pulse burst length **0.5 – 100ms**
- Pulse energy up to **750mJ**
- 600micron optical fiber out
- Treatment guide support
- Treatment tools options

The neodymium laser radiation with a wavelength of 1064 nm deeply penetrates (up to 5-10 mm) into soft tissues. Moderate absorption of radiation with this wavelength in water and hemoglobin ensures uniform and deep heating of the vaginal walls. Use of the Nd:YAG laser radiation in gynecology is non-ablative and non-coagulative, and respectively non-invasive. Heating the collagen to a temperature of 45-60°C leads to shrinkage of collagen, and absorption in hemoglobin stimulates the growth of a small vascular network. All of these effects lead to a thickening of the vaginal walls and the restoration of blood circulation.



### ND:YAG LASER APPLICATION IN DERMATOLOGY:

Stress urinary incontinence

Vaginal relaxation syndrome

Genitourinary syndrome of menopause

Vaginal prolapse I-II degree

Vulvovaginal atrophy

Recovery after gynecology

### TREATMENT TOOLS

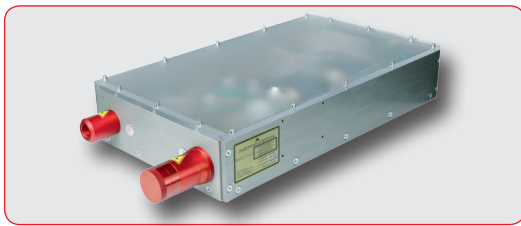
- cone mirror tool for 360° treatment
- 90° mirror tool for specific area treatment
- straight tool for outer urethra tissue treatment.

# Astrum LT



Semiconductor lasers  
systems and components

## Picosend Nd:YAG 1064/532nm laser module

Complete OEM picosecond laser solution: optical module with temperature stabilization, laser diode driver, control and cooling system



### FEATURES

- Solid and reliable design
- GUI  or 
- True picosecond pulsing
- High energies
- Pigmentation, tattoo ink, and rejuvenation

Ultra-short pulse laser pulses enable significant photomechanical stresses to targets. The system delivers very high peak powers so quickly that the target is disrupted. Faster, safer treatments.



Wavelength, nm	1064	532
Pulse length, ps	100-200	100-200
Max pulse repetition rate, Hz	20	20
Max output energy, J	0,5	0,25
Max fluence, J/cm <sup>2</sup>	16,0	8,0
Beam aperture, mm	12	12

## Er:YAG laser solution Dermatology application

Complete OEM solution for dermatology application: optical module with temperature stabilization, laser diode driver, control and cooling system



### FEATURES

- Wavelength **2940nm**
- GUI  or 
- Pulsed mode **0.1 – 2ms**
- Max pulse **energy 2J**
- Max pulse **repetition rate 100Hz**
- 600micron SMA 905 connector

ER:YAG LASER APPLICATION IN DERMATOLOGY:



Cold pilling  
Hot pilling  
Dermabrasion  
Skin resurfacing  
Scars abrasion  
Fractional ablation for skin rejuvenation  
Neoplasms ablation  
Onychomycosis treatment

Er:YAG laser wavelength is strongly absorbed in water, that leads to high ablation rate of soft tissues. The main mechanism of soft tissues ablation by erbium laser radiation is heating and dramatically expanding the water contained in the tissues. This leads to microexplosions, destroying the material of the skin without overheating and carbonization of surrounding tissue. The coagulation width at the edges of ablative lesions in the skin is 20-150 microns. This allows the precise surface treatment of the skin without traumatic coagulation lesions. The erbium laser allows the "cold" skin treatment by removing ultra-thin layers of tissue with minimal thermal damage including polishing of epithelium up to the basal membrane.

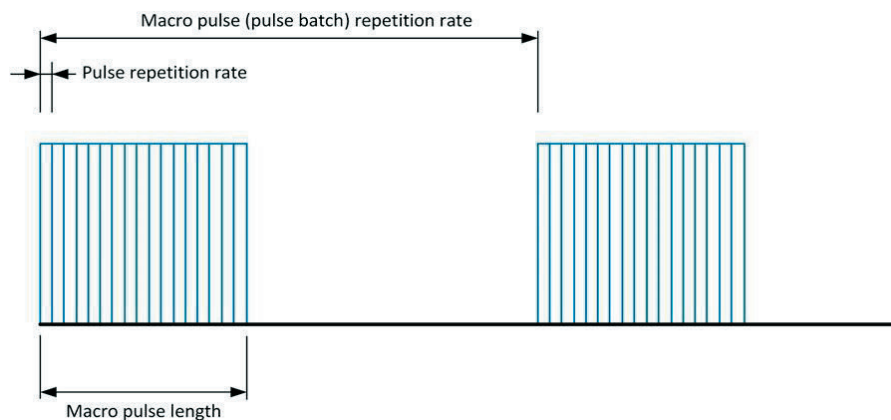
## Long pulsed green laser 532nm

Complete OEM solution for dermatology application: optical module with temperature stabilization, laser diode driver, control and cooling system.

### FEATURES

- Wavelength 532nm
- GUI  or  3.5 kW
- Power 3.5 kW
- Beam profile near Gaussian
- Fiber output flat top
- Mode Multimode



Operation mode	quasi-continuous
Pulse energy @ 10ms	0.8J
Pulse energy @ 60ms	5J
Pulse length	10-60ms
Max pulse repetition rate, Hz	18Hz
Beam divergence	< 3 mrad
Beam aperture, mm	up to 3mm



## Long pulsed yellow laser 583nm

Complete OEM solution for dermatology application: optical module with temperature stabilization, laser diode driver, control and cooling system.

### FEATURES

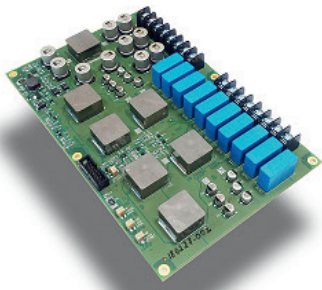
- Wavelength 583nm
- GUI  or  3.5 kW
- Power 3.5 kW
- Beam profile near Gaussian
- Fiber output flat top
- Mode Multimode

Operation mode	quasi-continuous
Pulse energy @ 10ms	0.8J
Pulse energy @ 60ms	5J
Pulse length	10-60ms
Max pulse repetition rate, Hz	18Hz
Beam divergence	< 3 mrad
Beam aperture, mm	up to 3mm

# Astrum LT

Semiconductor lasers  
systems and components

## LASER DIODE DRIVERS OFF-THE-SHELF and CUSTOM BUILT



### CW Laser Diode Driver LDD2400-60A-CW

- Maximum output current CW – 60 A
- Maximum output current pulsed – 200 A
- Maximum output voltage – 48 V (at supply voltage – 52 V)
- Supply voltage – 44...52 V
- Rise/Fall time – < 100 us (at  $R_{load} \leq 15 \text{ Ohm}$ )
- Current regulation – < 1 % of maximum output current
- Output current monitor – 50 mV/A
- Output voltage monitor – 200 mV/V



### CW Laser Diode Driver LDD350-100A-CW

- Maximum output current CW – 100 A
- Maximum output current pulsed – 100 A
- Maximum output voltage – 3.5 V
- Supply voltage – 8...15 V
- Rise/Fall time – < 100 us (at  $R_{load} \leq 10 \text{ mOhm}$ )
- Current regulation – < 1 % of maximum output current
- Output current monitor – 100 mV/A
- Output voltage monitor – 2.5 V/V



### CW Laser Diode Driver LDD480-12A-CW

- Maximum output current CW – 12 A
- Maximum output current pulsed – 12 A
- Maximum output voltage – 48 V (at supply voltage – 56 V)
- Supply voltage – 44...56 V
- Rise/Fall time – < 250 us (at  $R_{load} \leq 1 \text{ Ohm}$ )
- Current regulation – < 1 % of maximum output current
- Output current monitor – 833 mV/A
- Output voltage monitor – 200 mV/V



### Pulsed Laser Diode Driver LDD1200-150A-QCW

- Pulse rate \* (Fp) – 0...1000 Hz
- Pulse duration \* (Tp) – 0.1...100 ms
- Maximum output pulse current \* (Io) –  $\leq 150 \text{ A}$
- Average output power \* (Pa) –  $\leq 1200 \text{ W}$
- Maximum output voltage \* (Vo) – 160 V (at supply voltage – 200 V)
- Supply voltage – 160...225 V
- Rise/Fall time – < 20 us (at  $R_{load} \leq 1 \text{ Ohm}$ )
- Current regulation – < 1 % of maximum output current
- Output current monitor – 62.5 mV/A
- Output voltage monitor – 40 mV/V

## CW LDD series

### Continuous mode of operation

Operating DC supply voltage, V	12	12	12	24	48	48	48	48	48	72
Max output current, A	100	70	70	15	12	15	100	70	50	50
Max output voltage, V	3,3	3	2,7	20	40	40	40	40	40	60
Electric output, W	330	210	190	300	480	600	4000	2800	2000	3000
Reduced error of output current setting, max %	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
External control	+	+	+	+	+	+	+	+	+	+

## Pulsed LDD series

### Pulsed mode of operation

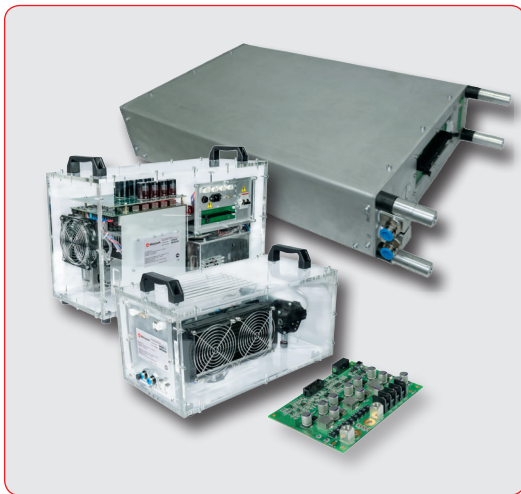
Operating DC supply voltage, V	12	24	48	48	48	48	48	190	210
Max output current, A	80	15	15	100	60	200	150	180	180
Max output voltage, V	3,3	20	20	40	40	40	40	150	190
Max pulse length at max current	1ms	1ms	1ms	60ms	60ms	60ms	60ms	1ms	1ms
Rise/fall, $\mu$ s	80	80	80	120	120	120	120	20	20
Long pulsed mode/max pulse length, ms	60	60	60	60	60	60	60	60	60
Max output current at max pulse length, A	80	15	15	100	60	200	150	60	55
Duty ratio, %	20	20	20	20	20	15	15	5	5
Max electrical input power, W	60	70	140	900	550	1400	1000	1500	1800
Reduced error of output current setting, max %	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
External control	+	+	+	+	+	+	+	+	+
Additional bank of capacitors	-	-	-	+	+	+	+	+	+

# Astrum LT


Semiconductor lasers  
systems and components

## Long-pulsed Nd:YAG/KTP kit

Complete OEM solution for a long-pulsed Nd:Yag laser system: laser module, driver, control and cooling system



### FEATURES

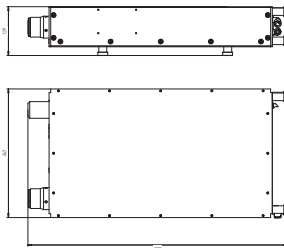
- Semiconductor laser system
- GUI 
- UNIQUE semiconductor long pulse
- 3,600 fluence, 60ms

Wave length, nm	1064
Operation mode	Free running
Max pulse energy	110J
Max energy density	3,600J/cm <sup>2</sup>
Pulse length	0.3 – 60ms
Max pulse repetition rate, Hz	50
Cooling system	Air-liquid, integrated
Spot size, mm	2-10mm

### BUILD YOUR DESIGN



Long-pulsed  
1064nm diode-  
pumped laser  
module



Laser control board  
and system



Closed-circuit water  
cooling system



Laser diode driver

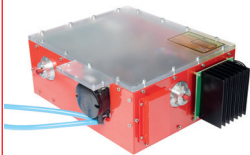
OR

### RECEIVE A COMPLETELY ASSEMBLED UNIT



## Modules, amplifiers and components

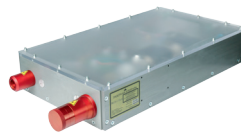
### SEMICONDUCTOR LASER SYSTEMS



808/1064/532 nm



1910/11935/2100 nm



1064/532 nm

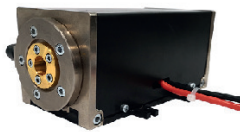


355 nm



583 nm

### LASER GAIN MODULES



CW Laser Gain Module  
Nd:YAG



Pulsed Laser Gain Module  
Nd:YAG

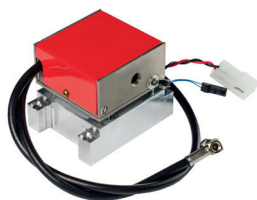


CW Laser Gain Module  
Tm:YLF/ Tm:YAP

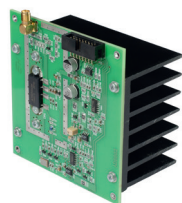


Pulsed Laser Gain Module  
Tm:YLF

### ELECTRONIC COMPONENTS



Acoustooptical Modulator



Acoustooptical Modulator  
Driver



Electrooptical Modulator  
Driver



Thermal Stabilization Unit

### LASER DIODE DRIVERS



CW



Pulsed

## **Astrum LT**

OEM Solutions  
Aesthetic and Medical  
Applications

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