



"Eye-safe" 1,54 μm ns lasers "KAUKAS"

Main features

- Compact robust design
- Wide operating temperature range
- 2 mJ and 3 mJ energy models
- OEM version available

Application examples

- LIDAR & Laser Ranging
- LIBS
- Metrology and instrumentation

„Eye-safe“ 1,54 μm wavelength nanosecond lasers series „KAUKAS“ possess a unique compact design and are available in OEM models for dedicated applications such as LIDAR or laser ranging. „Eye-safe“ 1,54 μm wavelength lasers model „KAUKAS“ delivers up to 2 mJ or up to 3 mJ energy per pulse with a repetition rate of up to 1 Hz.

Standard specifications

LASERS "KAUKAS" STANDARD SPECIFICATIONS	
Wavelength	1534 nm
Wavelength tolerance	± 1 nm
Repetition rate	SS - 2 Hz
Pulse energy	>3 mJ
Energy stability, STD	<3 %
Pulse duration	<8 ns
Beam diameter at exit window	<1 mm
Beam quality	$M^2 < 2$
Beam profile	TEM ₀₀

Recommendation

- To use with Laser Driver LR100 (ref.p. 168)
LR100 is a high-precision laser driver designed for pulsed laser systems. With adjustable current up to 100 A, pulse widths up to 5000 μs , and flexible burst and single-shot modes, it offers full control over laser performance. Its digital interface allows easy integration, while built-in monitoring of temperature, voltage, and current ensures safe, stable operation.

Utility requirements

LASERS "KAUKAS 2" UTILITY REQUIREMENTS	
Laser module dimensions	61 x 33 x 29.5 mm (L x W x H)
Laser driver dimensions	257 x 169.5 x 58 mm (L x W x H)
Pump current	<100 A
Pump duration	<4 ms
Electric	100-240 V AC, 20 A, 50/60 Hz
Working environmental temperature	-20°C ... +60°C
Cooling	Passive air cooling

Standard products

LASER MODEL	WAVELENGTH	REPETITION RATE	PULSE ENERGY	PULSE DURATION	OPERATING TEMPERATURE	WEIGHT	SKU
KAUKAS 3	1534 nm	SS-1 Hz	>3 mJ	<8 ns	-20°C to +60°C	0,1 kg	30829
					+10°C to +40°C	0,1 kg	30944
					+10°C to +40°C	0,1 kg	30945
KAUKAS 2	1534 nm	SS-2Hz	>2 mJ	<11 ns	-20°C to +60°C	0,1 kg	30828
					+10°C to +40°C	0,1 kg	30920
					+10°C to +40°C	0,1 kg	30943

Kaukas lasers are offered as OEM solution without laser driver and with our laser driver LR100.

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„Eye-safe“ 1.54 μm ns laser

KAUKAS 2



FEATURES

Compact robust design
High energy per pulse $>2 \text{ mJ}$
OEM version available

APPLICATIONS

LIDAR and Laser Ranging
LIBS
Metrology and instrumentation

**Laser specifications:**

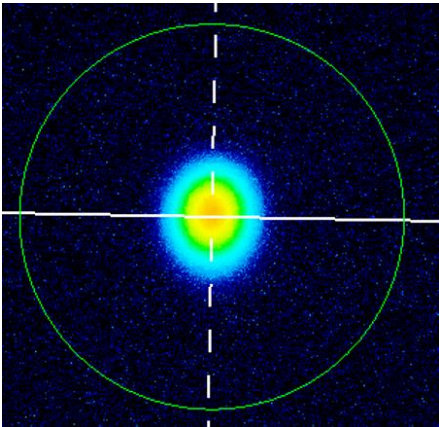
Operating mode	Pulsed
Pulse duration	<11 ns
Repetition rate	SS-1 Hz
Wavelength	1534 nm
Beam divergence, full angle	< 4.5 mRad
Beam profile	TEM ₀₀
Average output energy (-20...+60C°) @1 Hz	>2 mJ
Energy stability Standard Deviation (-20..+60C°) @1Hz	<3 %
Beam diameter at exit window	<1 mm
Beam ellipticity	>0.8
Storage temperature	-40 - +70 °C
Shock resistance test	30 g/6 ms
Vibration resistance test	According to MIL-810G-STD

Physical dimensions:

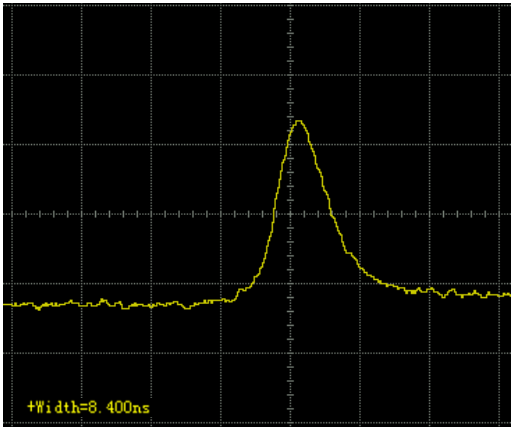
Laser module dimensions	61 x 33 x 29.5 mm (L x W x H)
Laser driver dimensions	124 x 78 x 43 mm (L x W x H)
Power supply dimensions	245 x 105 x 65 mm (L x W x H)

Utility requirements:

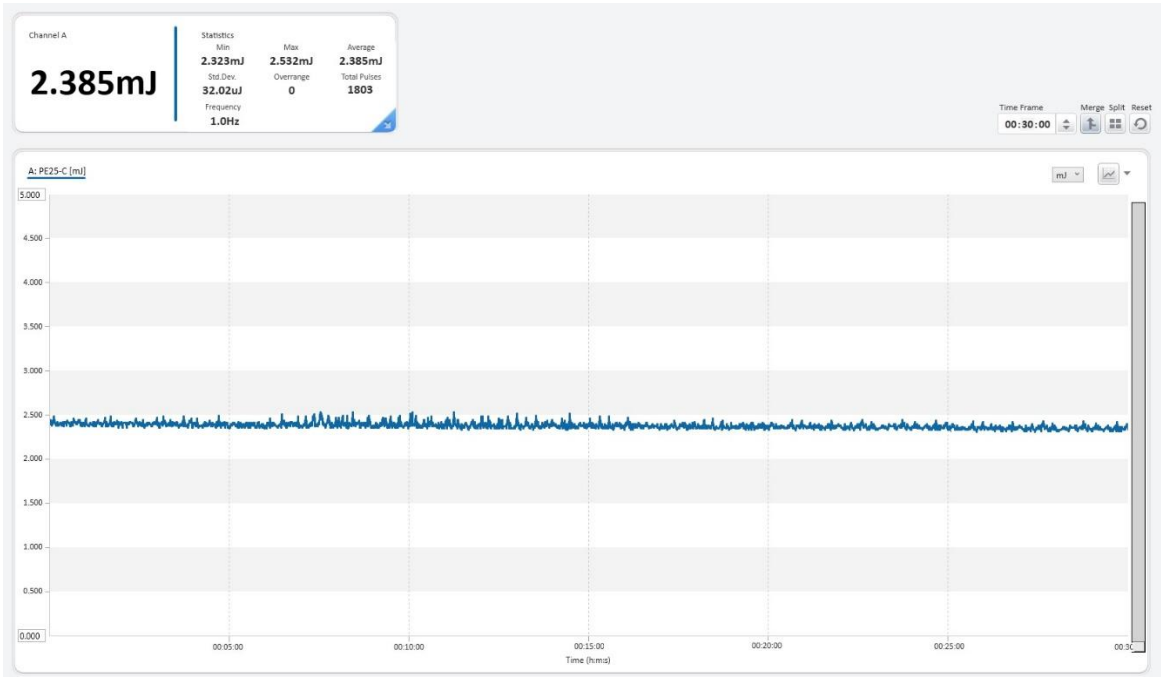
Pump current	100.0 A
Pump duration (-20°C...60°C)	1.8...3 ms
Operating environment temperature	-20 ... +60 °C
Cooling	Passive air cooling



Beam profile



Pulse duration

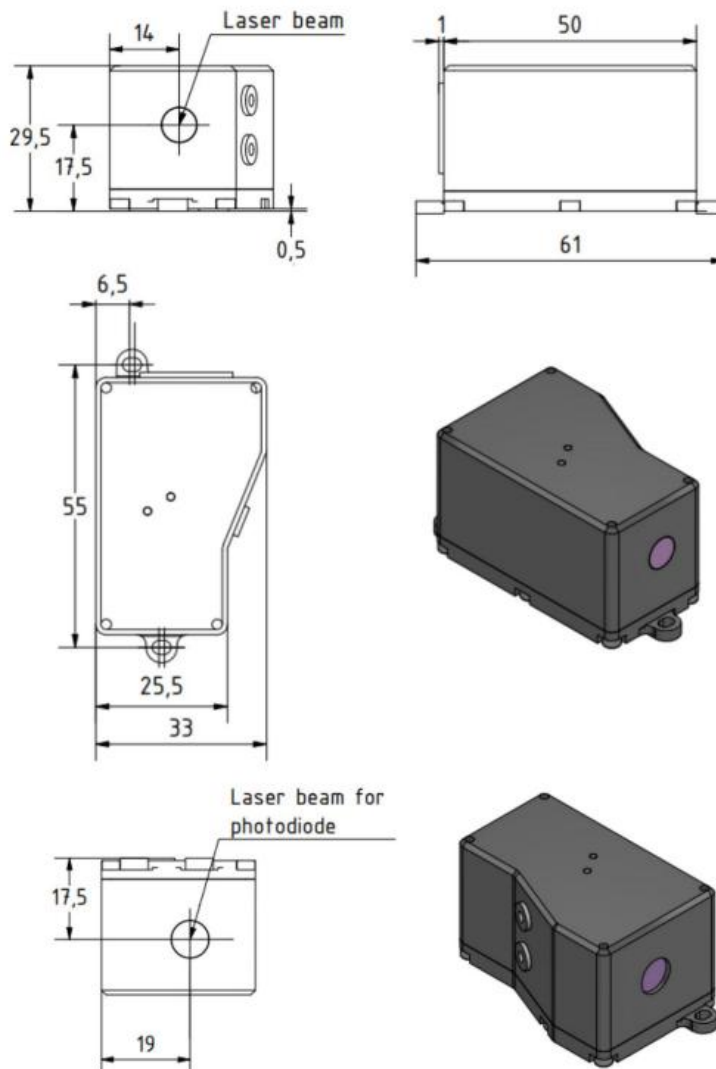


Energy stability @ 1Hz

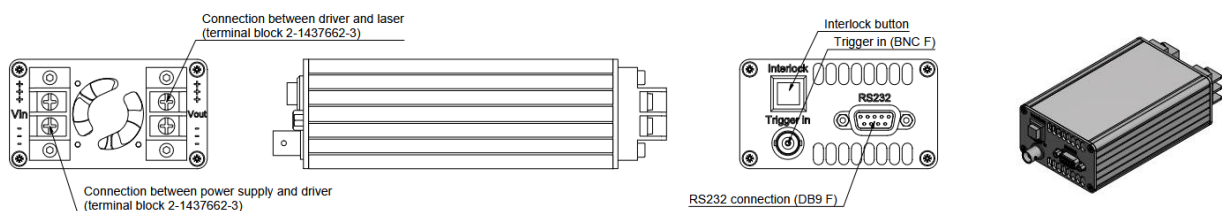


Drawings

Laser head:



Laser driver:



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“Eye-safe” 1,54 μm ns laser

KAUKAS HR



FEATURES:

Compact robust design
Energy per pulse $> 30 \mu\text{J}$ @1 kHz
OEM version available

APPLICATIONS:

LIDAR and Laser Ranging
LIBS
Metrology and instrumentation



**Laser characteristics:**

Wavelength	1534 nm	
Wavelength tolerance	± 1 nm	
Pulse energy	$> 45 \mu\text{J}$	$> 30 \mu\text{J}$
Average output power @1 kHz	4,5 mW	30 mW
Energy stability (2 hr), @1 kHz	$< 3 \%$	
Pulse duration	< 7 ns	
Pulse repetition rate	100 Hz	1 kHz
Polarization contrast	$> 1:80$	
Beam diameter at exit window	< 1 mm	
Beam divergence	< 5 mRad	
Beam profile	TEM ₀₀	

Physical dimensions:

Laser module dimensions	111 x 34 x 25,5 mm (L x W x H)
Laser driver dimensions	248 x 105 x 64 mm (L x W x H)

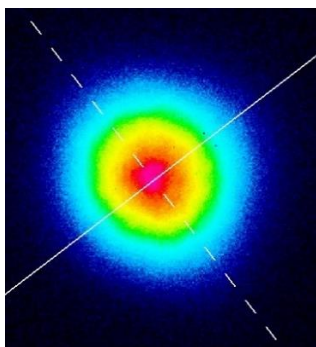
Utility requirements:

Pump current	< 6 A
Working temperature	15 - 35°C
Cooling	Passive air cooling

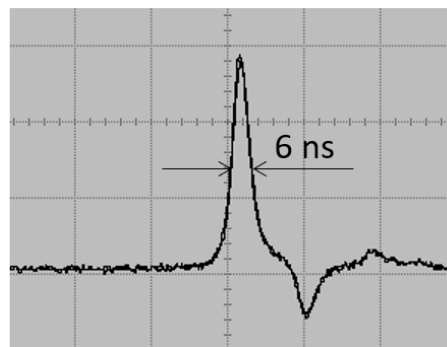




Laser beam profile and laser pulse duration data:



Beam profile at 1 kHz laser repetition rate
(46 cm distance)



6 ns pulse duration at 1 kHz repetition rate

Output energy stability:



Energy stability measurement of 1kHz laser model. Min. – 36,15 μ J, Max. – 37,97 μ J,
Average – 36,77 μ J, Std.Dev. – 389,9 nJ (1,06%)

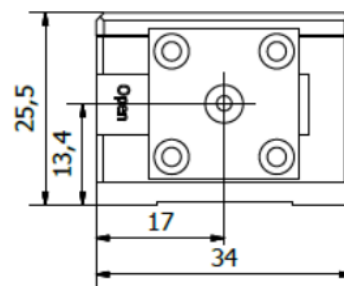
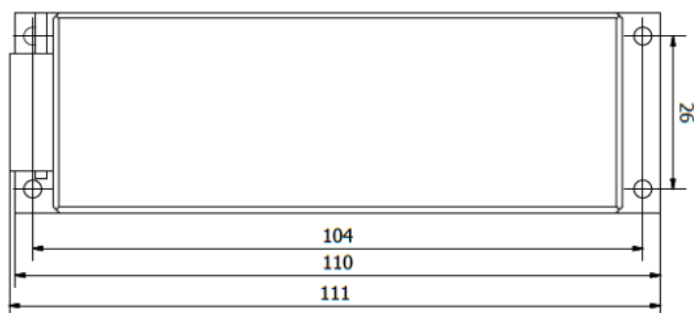




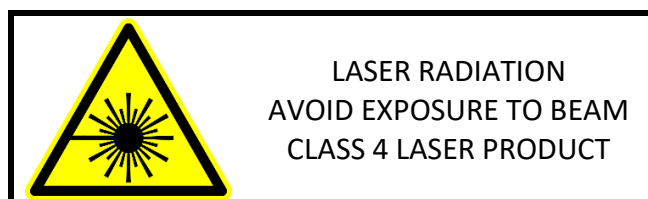
Necessary components to run the laser:

	
KAUKAS HR laser model	Laser driver
	
Power supply	USB-RS232 adapter

Laser head schemes:



Laser safety class:



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“Eye – safe” 1,5 μm laser

KAUKAS CW



FEATURES:

Up to 400 mW of continuous wave power
Compact DPSS design
Various 1,5 μm wavelength models
High beam quality

APPLICATIONS:

Optical instrumentation
Metrology and spectroscopy
Life sciences





Laser specifications:

Wavelength	1522 nm	1531 nm	1542 nm	1550 nm	1555 nm	1602 nm
Wavelength tolerance	± 1 nm					
Beam divergence, full angle	<5 mRad					
Beam diameter at exit window	<1 mm					
Beam quality	$M^2 < 1,5$					
Beam profile	TEM ₀₀					
Polarization ratio	Linear, >100:1					
Average output power	300 mW	300 mW	300 mW	400 mW	300 mW	150 mW
Power stability (3 hour)	<1 % (after 30 min of warm up)					

Physical dimensions:

Laser module dimensions	175 x 78 x 86 mm (L x W x H)
Laser driver dimensions	164 x 105 x 44 mm (L x W x H)

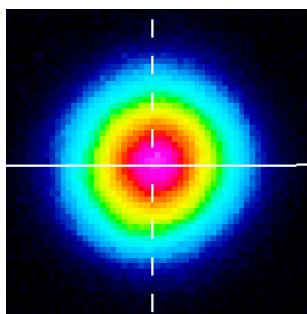
Utility requirements:

Pump current	5-10 A
Electric	100-240 V AC, 50/60 Hz, 1.4 A
Operating temperature	15 – 25 °C
Cooling	TEC element + air cooling

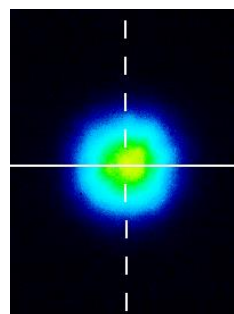




Laser beam profile:

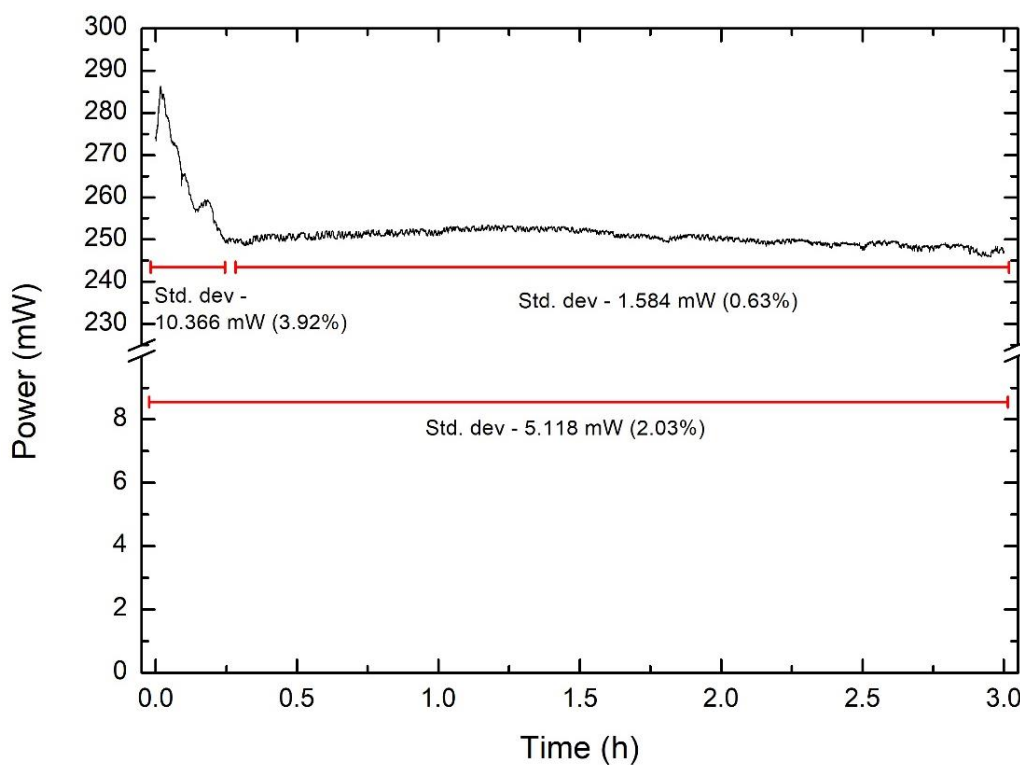


Near field (14 cm from the laser) beam profile



Far field (70 cm from the laser) beam profile

Power stability:



Power stability measurement for 1531 nm laser with 25 min of warm up





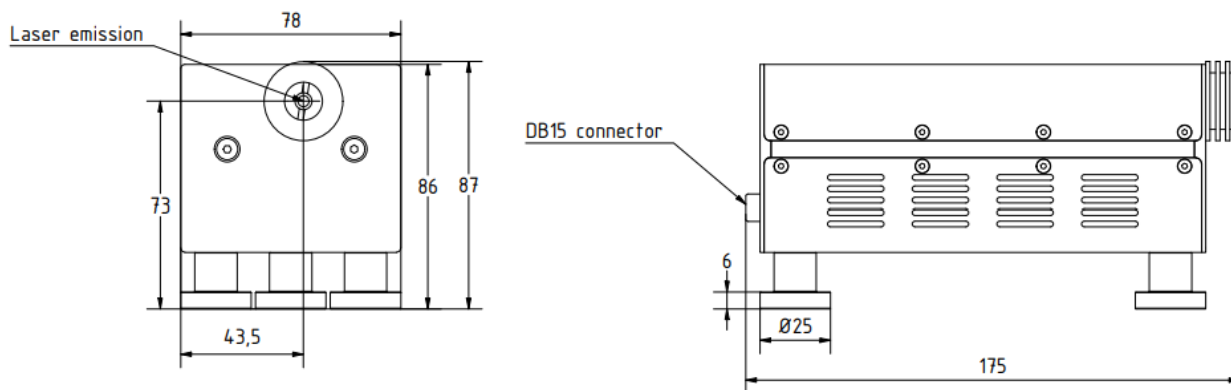
Necessary components to run the laser:

KAUKAS CW laser head*	Laser driver
Power supply with cables	USB-RS232 adapter





Laser head schemes:



Laser safety class:

