

## UKKO LASERS

### PICOSECOND FIBER LASERS



#### Key Features

- Up to 70 W at 1064 nm
- Up to 30 W at 532 nm
- Up to 12 W at 355 nm
- 50 kHz–20 MHz repetition rate
- Up to 60  $\mu$ J pulse energy
- Pulse duration 50 ps
- Excellent beam quality  $M^2 < 1.3$
- Monolithic, sealed and rugged design
- Air- and water cooled versions
- Low life-time ownership cost

## Applications

- Inner volume marking of transparent materials
- Marking and structuring
- Micromachining of brittle materials
- Biological Imaging
- Pumping of femtosecond OPO/OPA
- Microscopy
- Laser cleaning
- Raman spectroscopy
- Glass modification

## Ordering information

UKKO-PS-1064/532/355-50-5/10/12/30/70-10/12/20/30/60

UKKO – "pulse range" – "wavelength" – "pulse duration" –  
"maximum output power" – "maximum pulse energy"

Example: **UKKO-PS-1064-50-10-20**

*wavelength: 1064 nm*

*pulse duration: 50 ps*

*maximum output power: 10 W*

*maximum pulse energy: 20  $\mu$ J*

### Air cooling

UKKO-PS-1064-50-10-20

UKKO-PS-1064-50-10-60

UKKO-PS-532-50-5-10

UKKO-PS-532-50-5-25

### Water cooling

UKKO-PS-1064-50-70-60

UKKO-PS-532-50-30-25

UKKO-PS-355-50-12-10

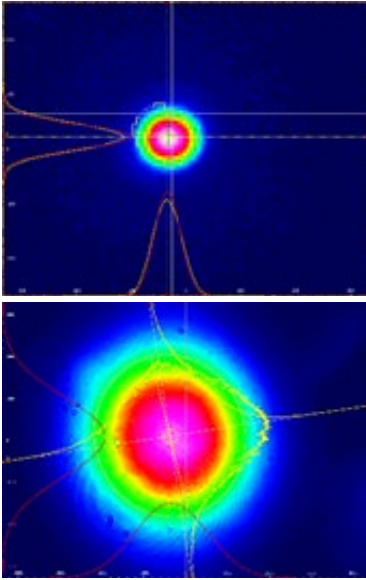


## Specifications

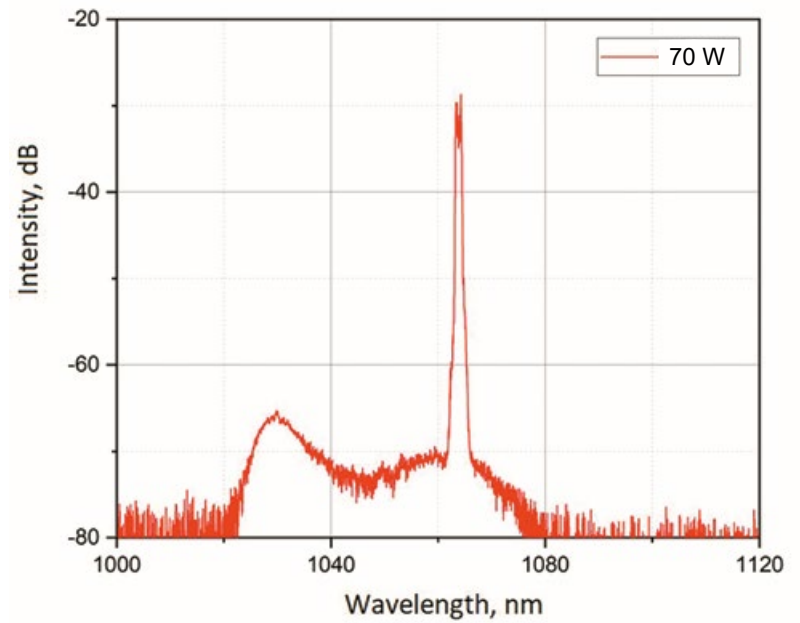
Model (UKKO-PS-...)	1064-50-10-20	1064-50-10-60	1064-50-80-60	532-50-5-10	532-50-40-30	532-50-40-30	535-50-15-12
<b>MAIN SPECIFICATIONS</b>							
Central wavelength	1064±1 nm						
Laser pulse repetition rate (PRR) range	50 kHz–20 MHz						
Maximal average output power (1064 nm)	>10W	>10W	>70W	-	-	-	355 ± 1 nm
Maximal average output power (532 nm)	-	-	-	> 5W	> 30W	-	-
Maximal average output power (355 nm)	-	-	-	-	-	-	> 12W
Pulse energy at lowest PRR (1064 nm)	20µJ	60µJ	60µJ	-	-	-	-
Pulse energy at lowest PRR (532 nm)	-	-	-	10µJ	25µJ	25µJ	-
Pulse energy at lowest PRR (355 nm)	-	-	-	-	-	-	10µJ
Power long term stability over 8 h after warm-up (Std.dev.)	<1.0 %						
Pulse duration (FWHM) at 1064 nm	50±5 ps						
M <sup>2</sup> parameter	<1.3						
Polarization (PER)	>15dB						
Beam circularity, far field	>0.85						
Beam divergence, full angle	<3mRad						
Astigmatism	<0.1						
Beam pointing stability (pk-to-pk)	<70µRad						
Beam diameter (1/e <sup>2</sup> ) at 50cm distance from laser aperture	1±0.2 mm						
Control interfaces	RS232, LAN, USB, external TTL triggering, TTL signal output synchronized with optical pulse						
<b>OPERATING REQUIREMENTS</b>							
Mains requirements*	24 VDC	24 VDC	24 VDC; 36 VDC	24 VDC	24 VDC	24 VDC; 36 VDC	24 VDC; 36 VDC
Maximal power consumption	100W	110W	400W	170W	180W	400W	400W
Chiller power consumption	Not required	Not required	300W	Not required	Not required	300W	300W
Operating ambient temperature	18–27°C						
Relative humidity	10–80 % (non-condensing)						
Air contamination level	ISO 9 (room air) or better						
<b>PHYSICAL CHARACTERISTICS</b>							
Cooling	Air	Air	Water	Air	Air	Water	Water
Laser size (W×H×L)	345×330×121 mm						
<b>CLASSIFICATION</b>							
Classification according EN60825-1	CLASS 4 laser product						

\*Can be powered by 220V 50 Hz when using the optional "IGUL Power Supply"

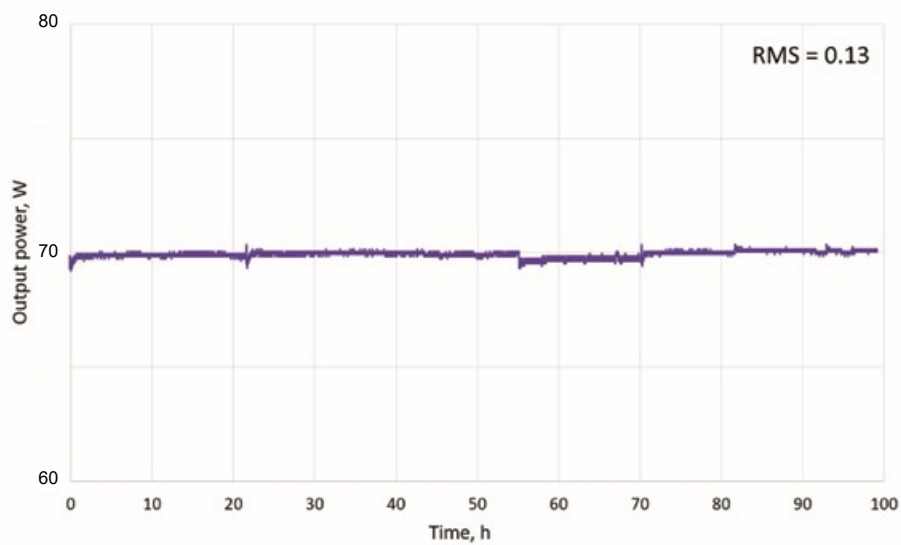
## Performance



Typical beam profile at 1064 nm  
at maximum average power

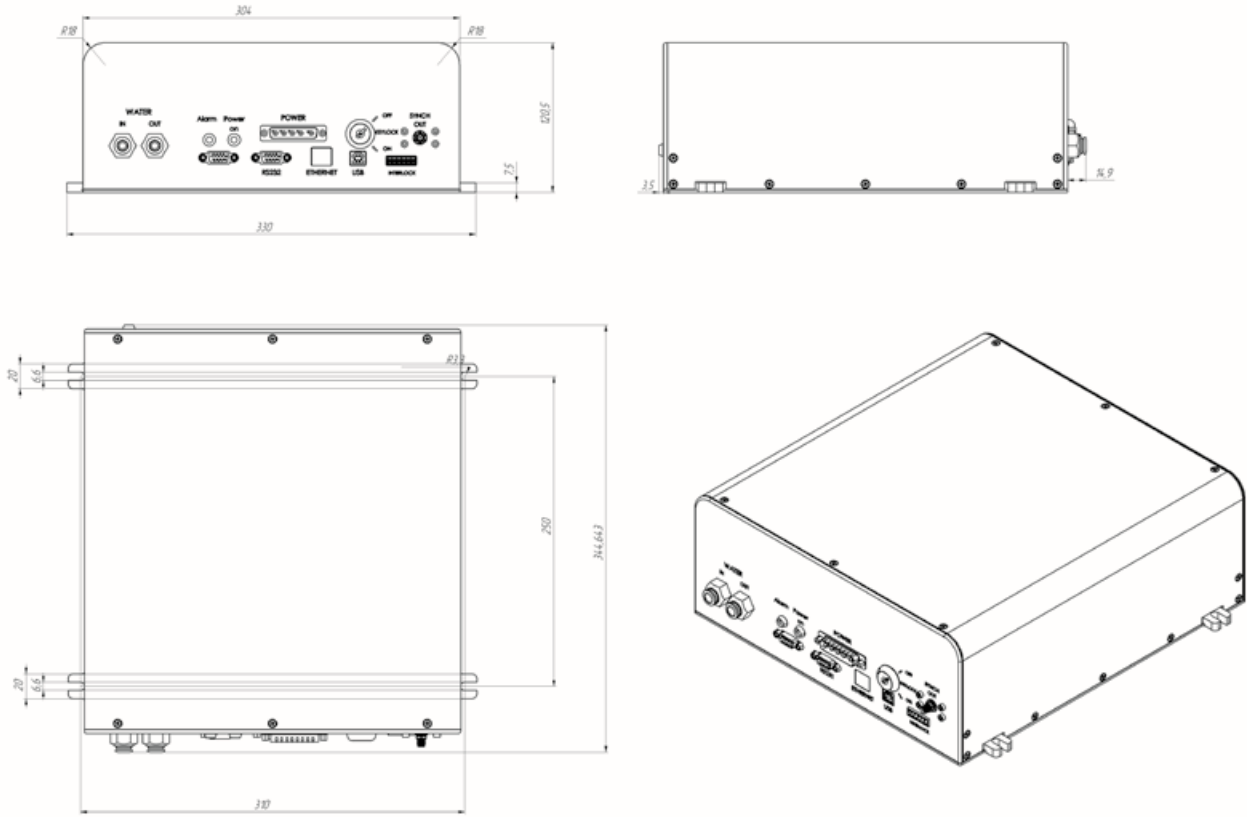


Spectrum at maximum average power at 1064 nm

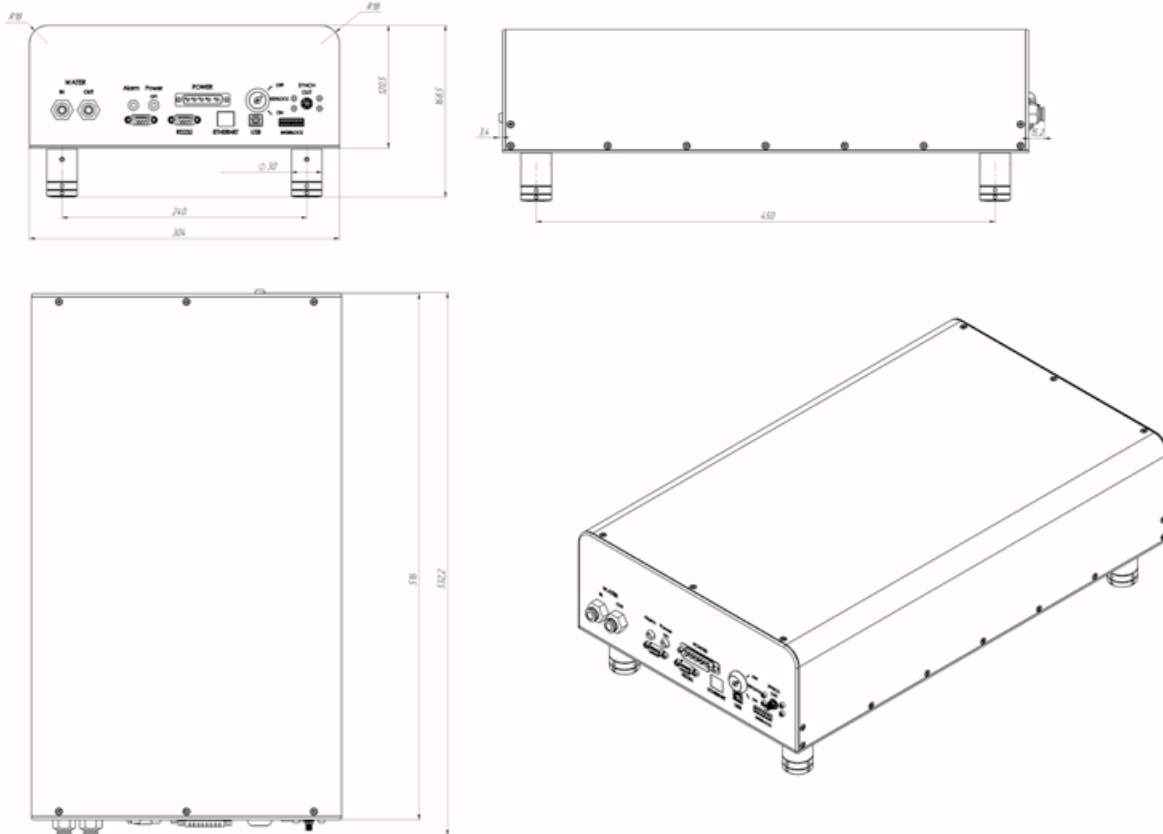


Average output power versus time at a wavelength of 1064 nm (RMS=0.13)

Drawings



UKKO-PS-1064 and UKKO-PS-532 series laser



UKKO-PS-355 series laser dimensions