

Koheras ADJUSTIK

Low-noise, single-frequency fiber laser



Narrow Linewidth

Ideal for ultra-low noise applications

The Koheras ADJUSTIK is a low-noise fiber laser platform featuring the ultra-low phase noise and narrow linewidth normally only found in costly scientific systems.

The ADJUSTIK is based on our renowned BASIK modules with output powers ranging from 10 mW up to 2 W depending on the model.

Koheras ADJUSTIK

Applications

- Atomic trapping and cooling
- Quantum computing
- Quantum metrology
- Acoustic detection
- Laser vibrometry
- Microwave generation
- Sensor interferometry
- Frequency conversion
- Coherent communication



Features and Benefits

High performance and low cost

The ADJUSTIK lasers are industrial-grade fiber lasers that gives you the best of two worlds: The ultra-low phase noise and narrow linewidth of the scientific systems and the low cost and robustness of the industrial systems.

Tunable center wavelength and output power

A key advantage of our distributed feedback fiber laser technology is the freedom to choose the operating wavelength.

Standard systems deliver 10-40 mW

Standard systems are available at 1550.12 nm and 1064.00 nm and we offer special systems anywhere in the 1535–1580 nm and 1030–1120 nm ranges. Depending on the model, output powers are 10-40 mW.

Choose the high power option

If higher powers are needed, choose the ADJUSTIK HP which operates at 1550.12 nm or 1064.0 nm. It delivers output powers of 2 W in the 1545–1565 nm range, 200 mW in the 1060–1075 nm range, and 500 mW at 1762.17 nm.

Thermal tuning and fast wavelength modulation

The laser offers a wide thermal tuning range combined with fast wavelength modulation for e.g. stabilization to an external frequency reference to obtain an even higher level of frequency stability than provided by the free-running laser.

Polarization-maintaining fiber output

The output is delivered with a polarization maintaining fiber to ensure a fixed orientation of the polarization. This would typically be required when the laser output needs to be externally modulated or frequency converted.

Ideal for low-noise applications

The ADJUSTIK lasers are ideal for experimental work for all kinds of low noise applications e.g. for metrology and coherent sensing where laser noise is critical.

Koheras ADJUSTIK

Features

Center wavelengths in the 1535–1580 nm, 1030–1120 nm ranges, and at 1762.17 nm

High-power: Up to 2 W

Industry-leading low phase noise

Extremely narrow linewidth

Stable single-frequency operation

Wide thermal wavelength tuning

Integrated fast wavelength modulation

Polarization-maintaining fiber output

Easy-to-use benchtop system

Graphical user interface

Plug and Play

Robust and maintenance-free

Features and Benefits

Easy to control via a graphical user interface

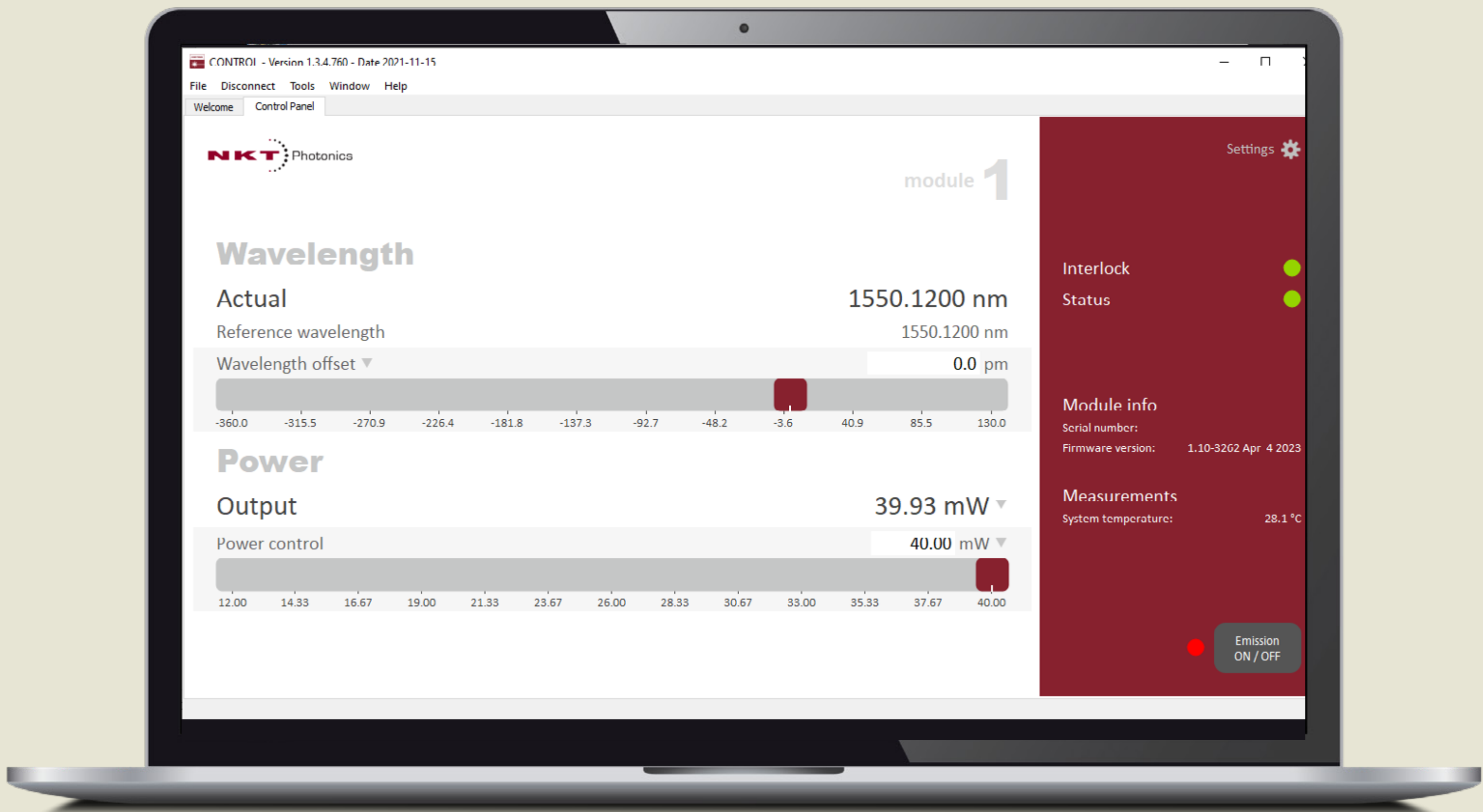
For easy control, the ADJUSTIK lasers are available with a USB interface kit and can be controlled via our NKTP CONTROL graphical user interface.

The market’s lowest frequency noise

The ADJUSTIK lasers features a very low frequency noise, unparalleled in industrial fiber lasers.

The low noise and robust single-frequency operation makes the ADJUSTIK lasers a strong choice for coherent sensing, as well as for metrology applications.

In sensing systems, the low frequency noise is key to obtaining high sensitivity and accuracy.



Koheras ADJUSTIK

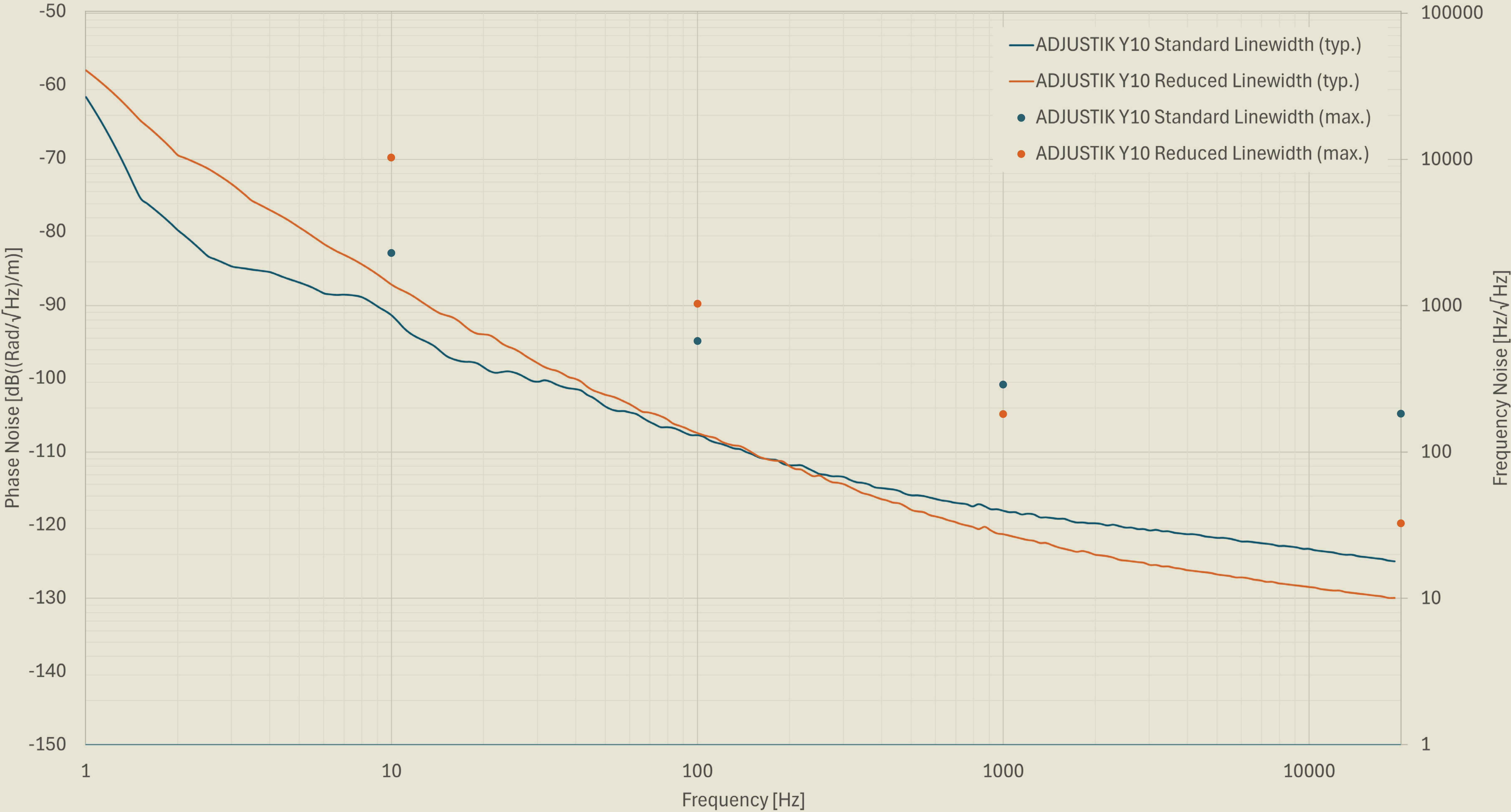
NKT Photonics CONTROL

Like other NKT Photonics lasers, the Koheras ADJUSTIK can be controlled by our intuitive CONTROL software that gives easy access to all laser functions.

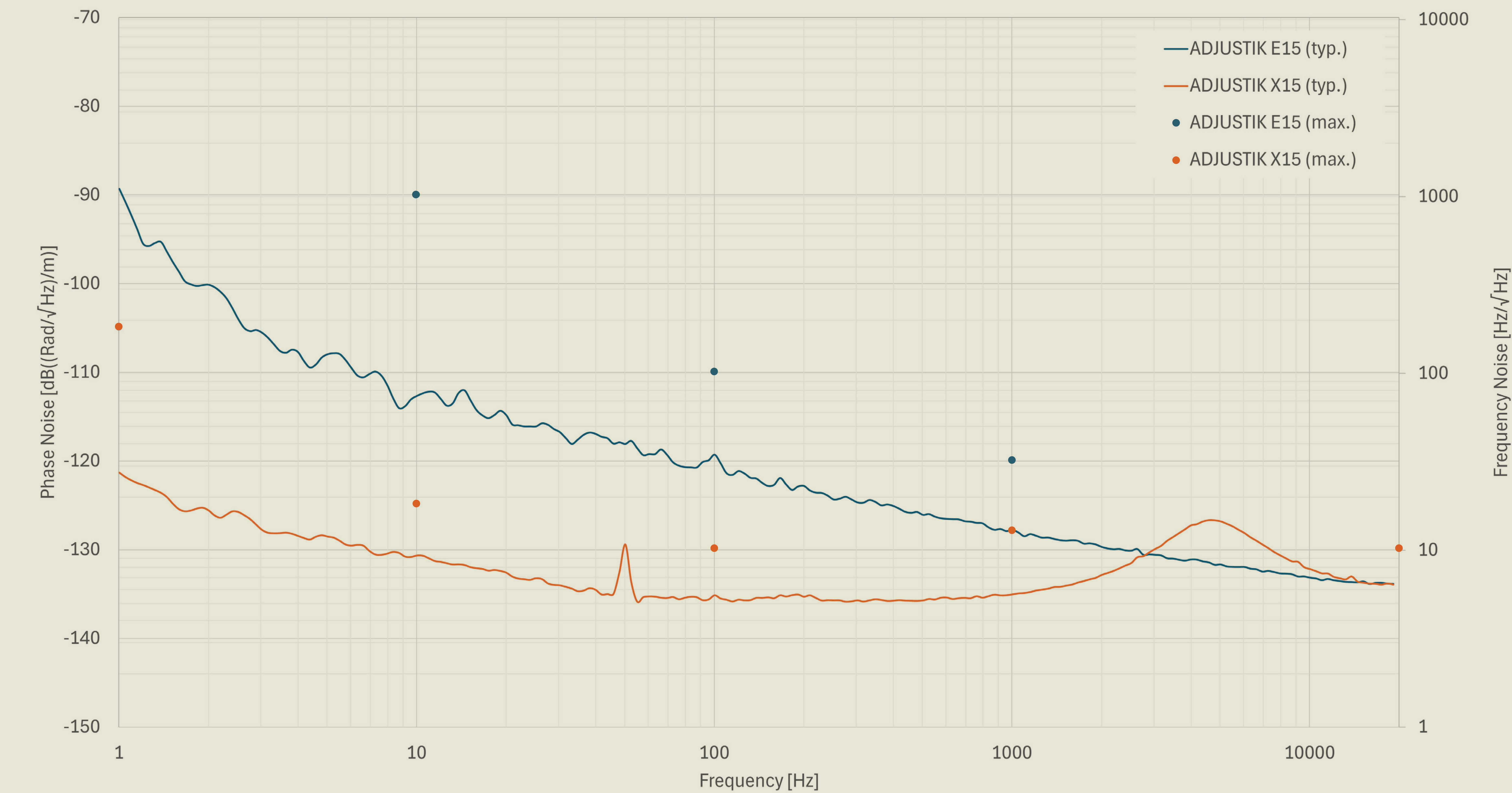
The software automatically detects all units attached to the computer. It is easy to use and supports touch input as well as traditional mouse and keyboard control.

Low frequency noise

Koheras
ADJUSTIK



Low frequency noise



Specifications - ADJUSTIK

Optical

Model	X15	E15	Y10	
Laser emission	Continuous wave - inherently single frequency			
Output power [mW]	30	40	> 10 ¹	
Operating wavelength [nm]	1535-1580	1535-1580	1030-1120	
Output power tunability [%]	30 - 100	30 - 100	-	
Linewidth [kHz] ²	< 0.1	< 0.1	Standard Linewidth	Reduced Linewidth
			< 20	<3
Max. phase noise [dB((rad/√Hz)/m)]	-105 @ 1 Hz	-	-	-
	-125 @ 10 Hz	-90 @ 10 Hz	-83 @ 10 Hz	-70 @ 10 Hz
	-130 @ 100 Hz	-110 @ 100 Hz	-95 @ 100 Hz	-90 @ 100 Hz
	-128 @ 1 kHz	-120 @ 1 kHz	-101 @ 1 kHz	-105 @ 1 kHz
	-130 @ 20 kHz	-130 @ 20 kHz	-105 @ 20 kHz	-120 @ 20 kHz
Max. frequency noise [Hz/√Hz]	182.8 @ 1 Hz	-	-	-
	18.3 @ 10 Hz	1027.7 @ 10 Hz	2300 @ 10 Hz	10277.4 @ 10 Hz
	10.3 @ 100 Hz	102.8 @ 100 Hz	577.9 @ 100 Hz	1027.7 @ 100 Hz
	12.9 @ 1 kHz	32.5 @ 1 kHz	289.7 @ 1 kHz	182.8 @ 1 kHz
	10.3 @ 20 kHz	10.3 @ 20 kHz	182.8 @ 20 kHz	32.5 @ 20 kHz

Koheras ADJUSTIK

Reliability

The Koheras range of single frequency fiber lasers is based on telecom-grade fiber components and built to last thousands of hours with no service or maintenance.

With several thousand lasers installed in environments varying from fully climate controlled national standards laboratories to the demanding environment on oil rigs and submarines, the Koheras line is the most robust single-frequency laser range on the market with an unmatched reliability track record.

Specifications - ADJUSTIK (continued)

Optical

Model	X15	E15	Y10
Beam quality	M ² < 1.05	M ² < 1.05	M ² < 1.05
RIN peak [MHz]	Appr. 0.7	Appr. 0.7	Appr. 1.8
RIN level [dBc/Hz]	< -100 @ peak	< -100 @ peak	< -105 @ peak
	< -135 @ 10 MHz	< -135 @ 10 MHz	< -140 @ 10 MHz
Optical S/N (50 pm res.) [dB]	> 50 (typ. > 55)	> 50 (typ. > 55)	> 65 (typ. > 70)
Min. thermal wavelength tuning range [pm] ³	± 350	± 350	± 240
Total thermal tuning range [pm]	1000	1000	680
Fast wavelength modulation range [GHz] ⁴	0.5	8	10
Fast wavelength modulation [kHz] ⁴	Up to 20	Up to 20	Up to 20
PM output - PER [dB]	> 23	> 23	> 23

1. For reduced linewidth models with wavelength > 1090 nm, only > 5 mW is guaranteed.

2. Lorentzian.

3. Relative to center wavelength at room temperature. If the laser case temperature is outside the interval of approximately 10-50 °C, the range of detuning from the center wavelength may be reduced.

4. Modulation depth and frequency are typically slew-rate limited, depending on the power.

Specifications - ADJUSTIK HP

Koheras
ADJUSTIK

Optical

Model	X15 ¹	E15	Y10		T20
Laser emission	Continuous wave - inherently single frequency				
Output power [W]	0.2 / 2.0	0.2 / 2.0	0.2		0.5
Operating wavelength [nm]	1545 — 1565	1545 — 1565	1060 — 1075		1762.17
Output power tunability [%]	25 — 100 @ 0.2 W	25 — 100 @ 0.2 W	25 — 100 @ 0.2 W		N/A
	10 — 100 @ 2 W	10 — 100 @ 2 W	N/A		10 — 100 @ 0.5 W
Linewidth [kHz] ²	< 0.1	< 0.1	Standard Linewidth	Reduced Linewidth	
			< 20	<3	< 10
Max. phase noise [dB((rad/√Hz)/m)]	-105 @ 1 Hz	-	-	-	-
	-125 @ 10 Hz	-90 @ 10 Hz	-83 @ 10 Hz	-70 @ 10 Hz	-80 @ 10 Hz
	-130 @ 100 Hz	-110 @ 100 Hz	-95 @ 100 Hz	-90 @ 100 Hz	-100 @ 100 Hz
	-128 @ 1 kHz	-120 @ 1 kHz	-101 @ 1 kHz	-105 @ 1 kHz	-
	-130 @ 20 kHz	-130 @ 20 kHz	-105 @ 20 kHz	-120 @ 20 kHz	-120 @ 20 kHz
Max. frequency noise [Hz/√Hz]	182.8 @ 1 Hz	-	-	-	-
	18.3 @ 10 Hz	1027.7 @ 10 Hz	2300 @ 10 Hz	10277.4 @ 10 Hz	3250 @ 10 Hz
	10.3 @ 100 Hz	102.8 @ 100 Hz	577.9 @ 100 Hz	1027.7 @ 100 Hz	325 @ 100 Hz
	12.9 @ 1 kHz	32.5 @ 1 kHz	289.7 @ 1 kHz	182.8 @ 1 kHz	-
	10.3 @ 20 kHz	10.3 @ 20 kHz	182.8 @ 20 kHz	32.5 @ 20 kHz	32.5 @ 20 kHz

Specifications - ADJUSTIK HP (continued)

Koheras
ADJUSTIK

Optical

Model	X15	E15	Y10	T20
Beam quality	M ² < 1.05	M ² < 1.05	M ² < 1.05	M ² < 1.1
RIN peak [MHz]	Appr. 0.7	Appr. 0.7	Appr. 1.5	Appr. 0.7
RIN level [dBc/Hz]	< -100 @ peak	< -100 @ peak	< -105 @ peak	< -80 @ peak
	< -135 @ 10 MHz	< -135 @ 10 MHz	< -140 @ 10 MHz	< -120 @ 10 MHz
Optical S/N (50 pm res.) [dB]	> 45	> 45	> 60	> 45
Min. thermal wavelength tuning range [pm] ³	± 350	± 350	± 240	± 350
Total thermal tuning range [pm]	1000	1000	680	~900 (TDB)
Fast wavelength modulation range [GHz] ⁴	0.5	8	10	6
Fast wavelength modulation [kHz] ⁴	Up to 20	Up to 20	Up to 20	Up to 20
PM output - PER [dB]	> 20	> 20	> 17	> 17
Control mode	Constant pump current, constant power			

1. X15 phase noise app. 20 dB lower in the 1 Hz-10 kHz frequency range compared to E15.

2. Lorentzian.

3. Relative to center wavelength at room temperature. If the laser case temperature is outside the interval of app. 10-50 °C, the range of detuning from the center wavelength may be reduced.

4. Modulation depth and frequency are typically slew-rate limited, depending on the power.

Specifications

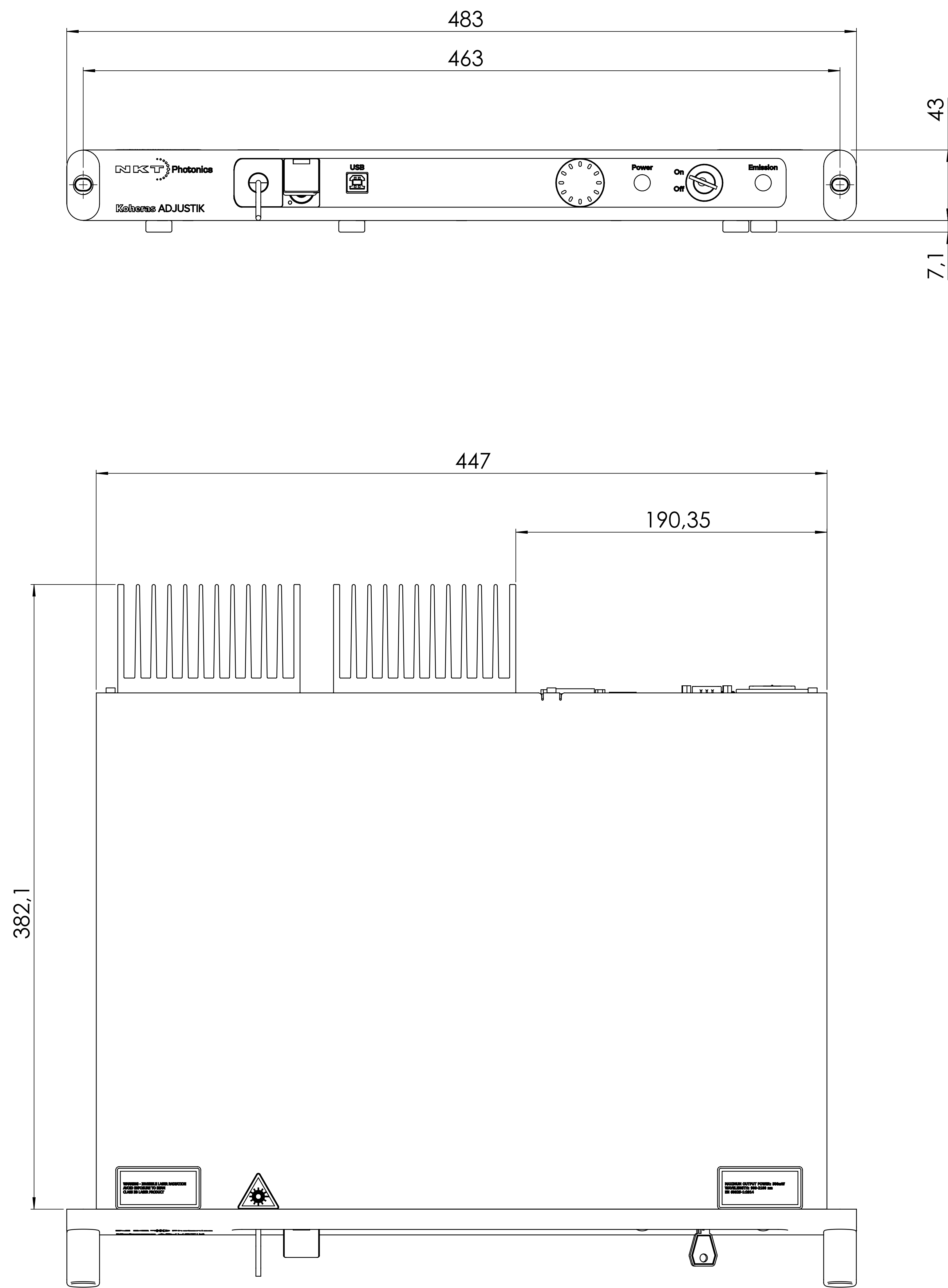
Electrical/Mechanical/Environmental

Power supply requirements [VAC, Hz]	100-240 VAC, 50-60 Hz
Digital interface	USB 2.0, Ethernet 10/100
Amplitude and frequency modulation [V]	DB9 male, differential 2x5
Connectors	Standard: FC/APC pigtail 1 m
Monitor output ¹	Yes, FC/APC bulkhead
Operation temperature [°C] ²	15 – 55
Storage temperature [°C]	-20 – 60
Dimensions (WxHxL) [mm ³]	483 x 50.1 x 382.1 (19” 1U)
Weight [kg]	6
Humidity non-condensing [% RH]	0 – 70

Humidity non-condensing [% RH]	0 – 70
--------------------------------	--------

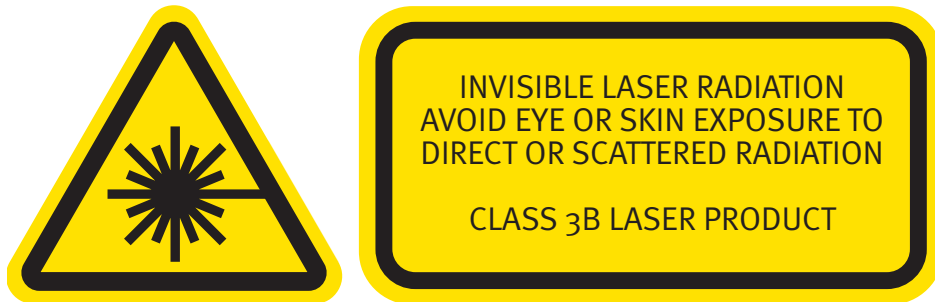
1. Optical monitor signal is approximately 1% of the seed laser signal.
2. Internal module case temperature.

Technical Drawings



Koheras ADJUSTIK

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



SOLUTIONS FOR INNOVATORS