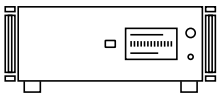


Linewidth Analyzer

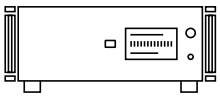
LWA-10k VIS

HighFinesse
The Standard of Accuracy

Analyzer Unit

Input	min.	max.	typ.
Wavelength range [1)]	450 nm	1064 nm	780 nm
Input power range	0.5 mW	8 mW	5 mW
Input power stability	± 5 %		
Laser type	CW, single-mode		
Input fiber type	SM or PM (recommended), FC/AP		
Scan stroke (@ fscan > 10 Hz)	—	40 MHz	

1) For customized wavelength ranges please contact: service@highfinesse.de



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Spectral and Frequency Noise Specifications

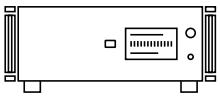
		10 Hz	100 Hz	1 kHz	10 kHz	100 kHz	> 1 Mhz
Noise floor $N_{\Delta v}$ @ typ. input power and wavelength [2]	Hz/√Hz	500	150	60	60	50	30
Laser phase noise floor @typ. input power and wavelength [3] [4]	rad/√Hz	5	1.5	60 m	6 m	500 µ	30 µ
	dBrad/√Hz	24	3.5	–24	–44	–66	–90
Equivalent interferometer signal noise @ typ. input power and wavelength [4] [5]	rad/√Hz/m	16 µ	4.6 µ	1.8 µ	1.8 µ	1.6 µ	920 n
	dBrad/√Hz/m	–96	–106	–114	-114	–116	-120
Frequency noise density range (Hz/√Hz)		30 – 10 M					
Minimum intrinsic linewidth (Lorentzian linewidth)		< 12 kHz					
Effective linewidth range (β-separation)		< 20 kHz – 30 MHz					
Dynamic range		60 dB					

2) $N_{\Delta v}$ is the noise floor of the instrument in terms of the square root of the power spectral density of the frequency noise.

3) The phase noise floor corresponds to the noise floor of the square root of the power spectral density of the phase. It is calculated from $N_{\Delta v}$ by the formula $1/f \times N_{\Delta v}$ .Aditionally, phase noise is often specified in terms of $\mathcal{L}(f)$ which can be calculated with the formula $\mathcal{L}(f) = 1/f^2 \times N^2_{\Delta v}/2$.

4) Not included in the software, can be calculated by the user from exported data.

5) This is the calculated noise of the interferometer phase of a two path interferometer with length imbalance L (in meters). The alculation is performed for a given frequency noise density floor by $2\pi nL/c \times N_{\Delta v}$ with n being the refractive index of the reference fiber interferometer material and c being the speed of light in vacuum. Values in the table are given for an refractive index of n = 1.46 and a reference length of 1 meter.



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Lineshape Specification [6)]

Effective linewidth range (optical linewidth) [curve fitting method]	< 20 kHz – 10 MHz
Dynamic range	60 dB
Frequency noise bandwidth [7)]	10 Hz – 10 MHz

Miscellaneous

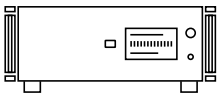
Interface	Ethernet and USB 3.0
Analog output	± 7.5 V (50 Ω)
Dimensions	440 × 340 × 155 mm
Weight	12.0 kg

Digitizer Module

Sample rate (Sa/s)	62.5 M
Resolution	16 bits
Acquisition time	1 ms – 100 ms
Evaluation time	10 ms – 1 s
Interface	USB 3.0 type B
Dimensions	210 × 200 × 74 mm
Weight	2.0 kg

6) Frequency noise and lineshape specifications are derived from measurements at 780 nm.

7) According to a –3 dB criterion.



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Software

Operating system	Microsoft® Windows® 10 or newer
CPU (recommended)	Intel® i5 8600 / AMD Ryzen™ 5 2600 or better
Memory (recommended)	16 GB RAM or more
Graphical evaluation options	Frequency noise density spectrum, lineshape spectrum, intrinsic (Lorentzian) linewidth, effective (optical) linewidth

Further Information

For further technical information, application examples, diagrams and for customisation of linewidth analyzers please contact:

HighFinesse Service
service@highfinesse.de

HighFinesse GmbH
Wöhrdstraße 4
72072 Tübingen, Germany

T + 49 (0) 7071 - 53 918 0
F + 49 (0) 7071 - 53 918 99
M info@highfinesse.com

Additional information
and distributors:
www.highfinesse.com

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