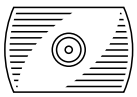


Wavelength Meter

WS8-30 Series

HighFinesse
Laser and Electronic Systems

Ångstrom

Available measurement ranges

WS8-30 Standard	330 – 1180 nm
WS8-30 UV-I	248 – 1180 nm
WS8-30 IR-I	630 – 1750 nm [1)]
WS8-30 IR-II	1000 – 2250 nm

Absolute (and other) accuracies [2)]

192 – 330 nm [3)]	0.1 pm
330 – 420 nm	0.02 pm
420 – 1100 nm	30 MHz
1000 – 2250 nm	20 MHz
Quick coupling accuracy (with multi mode fiber)	100 MHz
Wavelength deviation sensitivity/Measurement resolution [4)]	1 MHz
Linewidth option Accuracy [5)]	100 MHz

Measurement speed

500 Hz

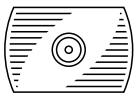
1) Photonic Crystal Switches can be used up to 2000 nm. Please contact HighFinesse if you want to measure over 2000 nm.

2) According to 3σ criterion, but never better than 20 % of the laser linewidth

3) With multi mode fiber

4) Standard deviation. WS6-200 and higher models require singlemode or PC fibers to reach this resolution.

5) Not better than 5 % of the linewidth.



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Required input energy and power [6)]

WS8-30 Standard	0.08 – 60 µJ or µW
WS8-30 UV-I	0.08 – 40 µJ or µW
WS8-30 IR-I	8 – 800 µJ or µW
WS8-30 IR-II	8 – 800 µJ or µW

FSR of the Fizeau interferometers (Fine/wide mode)

4 GHz/32 GHz (Each device in each mode can measure lasers with a linewidth up to 30 % of the correspondig FSR)

Calibration

Stabilized HeNe laser or any other well known laser source $\Delta v < 5$ MHz

Recommended calibration period ≤ 10 hour

Warm-up time

> 30 min.

Dimensions L × W × H

360 × 200 × 120 mm

Weight

6.1 kg

Interface

High-speed USB 2.0 connection

6) The CW power interpretation in [µW] compares to an exposure of 1s (generally the energy needs to be divided by the exposure time to obtain the required power)

Power supply

Power consumption < 2.3 W, power provided directly via USB cable
WS8-30 IR-II: external power supply included; WS8-30 IR-I: external power supply only

Options

External Trigger (TTL)

All wavelength meters detect and measure pulsed signals automatically. Additionally, this option allows the user to trigger pulsed measurements externally. The TTL option guarantees synchronization between pulsed excitation and measurement It provides low-noise signals without parasitic parts when measuring pulsed signals with low duty cycles.

Lasercontrol (PID)

With the PID option it is possible to stabilize the frequency of a laser connected to the wavelength meter using a software based proportional-integral-derivative controller (PID controller). Unlike analog PID electronics, the PID option provides software based signal processing, allowing the laser to be stabilized to a specific user defined frequency or regulated with an arbitrary pattern.

This makes it extremely useful in experiments where the laser frequency has to be actively regulated or varied to fit changing experimental conditions, such as laser cooling, atomic detection, trapping and spectroscopy.

Combined with the MC option the wavelength meter can be used to stabilize multiple lasers simultaneously. The regulation speed, quality and absolute accuracy match the measurement speed, relative accuracy and absolute accuracy of the wavelength meter respectively. The measurement speed is not affected by the regulation.

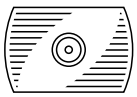
Linewidth Estimation (L)

The linewidth estimation of a singlemode laser source is performed by a special algorithm which eliminates the interferometer's instrument response function. The algorithm enables the estimation of the linewidth with an accuracy better than the tenth of the device FSR.

The linewidth option can also be used for measuring the linewidth of multimode lasers or lasers with sidebands. In this case, the longitudinal mode splitting needs to be less than the instruments spectral resolution and the calculated result is the FWHM of the envelope function of the multiline spectrum. Any instrument can be upgraded with the L-option, except IR-III devices. Singlemode fibers are required.

External Calibration (CAL)

Standard HighFinesse wavelength meters up to an absolute accuracy of 60 MHz feature autocalibration via an integrated calibration source. This guarantees the accuracy and stability of measurements with our wavelength meters. For the higher accuracies we offer a variety of frequency stabilized, narrow linewidth, laser sources with up to ± 10 kHz frequency stability for different applications.



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Typical Applications

The WS8-30 series offers an accuracy of 30 MHz. It is dedicated to wavelength monitoring with an absolute accuracy of 30 MHz and wavelength control with the wavelength deviation sensitivity of 1 MHz. In order to monitor and control complex laser systems, it perfectly combines with the photonic crystal fiber technology enabling multichannel operation in the entire spectral range of the wavelength meter.

The absolute 30 MHz accuracy is reached, when the wavelength meter is combined with one of our calibration sources or any suitable frequency reference provided by the user.

Further Information

For further technical information, application examples, diagrams and for customization of the WS8-30 series please contact:

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