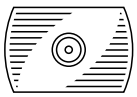

Wavelength Meter

WS7-60 Series

HighFinesse
Laser and Electronic Systems

Ångstrom

Available measurement ranges

WS7-60 Standard	330 – 1180 nm
WS7-60 UV-I	248 – 1180 nm
WS7-60 UV-II	192 – 800 nm
WS7-60 IR-I	630 – 1750 nm
WS7-60 IR-II	1000 – 2250 nm

Absolute (and other) accuracies [1)]

192 – 330 nm [2)]	0.2 pm
330 – 420 nm	0.04 pm
420 – 1100 nm	60 MHz
1000 – 2250 nm	40 MHz
Quick coupling accuracy (with multi mode fiber)	150 MHz
Wavelength deviation sensitivity/Measurement resolution [3)]	2 MHz
Linewidth option Accuracy [4)]	200 MHz

Measurement speed

500 Hz

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

2) With multi mode fiber

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

4) Not better than 5 % of the linewidth.

Required input energy and power [5)]

WS7-60 Standard	0.02 – 15 µJ or µW
WS7-60 UV-I	0.02 – 10 µJ or µW
WS7-60 UV-I	0.04 – 400 µJ or µW
WS7-60 IR-I	2 – 200 µJ or µW
WS7-60 IR-II [6)]	2 – 80 µJ or µW

FSR of the Fizeau interferometers (Fine/wide mode)

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

Calibration

Built-in calibration [7)]

Recommended calibration period ≤ 14 days

Warm-up time

No warm-up time under constant ambient conditions

IR-II: > 30 min. warm-up, or until ambient equilibrium

Dimensions L × W × H

360 × 200 × 120 mm

Weight

5.9 kg

5) 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)

6) µJ interpretation for pulsed lasers. CW signals need more power in [µW] since the exposure is limited at IR-II devices

7) WS7-60 IR-devices: external calibration source needed, e.g. SLR-1532

Interface

High-speed USB 2.0 connection

Power supply

Power consumption < 2.3 W, power provided directly via USB cable
WS7-60 IR-II: external power supply included; WS7-60 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.

Multiplexer (MC)

In order to measure the frequencies of more than just one laser at a time, an opto-mechanical switch is used. The combination of our high-speed wavelength meters with one of the quickest fiber switches (MEMS) available allows up to eight channels to be measured almost simultaneously. Exposure time and other parameters can be defined independently for each light source.
You can choose between singlemode or multimode fiber switches, depending on the required accuracy level of your measurements.

Options

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.

Spectrometer (D)

The spectrometer option allows the analysis of emission spectra to an accuracy of 6 GHz, for laser sources with broad emission. The software automatically searches the spectral section where the laser emission line is located and displays it on the screen. In combination with the additional Fizeau interferometer array this allows wide range applications with a single device.

Typical Applications

The WS7-60 series offers an accuracy of 60 MHz. It is a compact, versatile multipurpose wavelength meter for a laser laboratory.

The integrated calibration source makes it a compact solution for high-end laser applications with an absolute accuracy of 60 MHz and a wavelength deviation sensitivity of 2 MHz.

Further Information

For further technical information, application examples, diagrams and for customization of the WS7-60 series please contact:

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