

Wavelength Meter WR5 Series



HighFinesse
The Standard of Accuracy



Ångström

Available Measurement Ranges

WR5 Standard (VIS)	330 – 1180 nm
WR5 UV-I	248 – 1180 nm
WR5 UV-II	192 – 800 nm
WR5 VIS / IR-I	330 – 1750 nm

Absolute (and Other) Accuracies¹⁾

192 – 330 nm (with multi mode fiber)	3 pm
330 – 800 nm	3000 MHz
800 – 1750 nm	2000 MHz
Quick coupling accuracy (with 50 µm multi mode fiber)	3000 MHz
Wavelength deviation sensitivity/Measurement resolution ²⁾	500 MHz
Linewidth estimation accuracy ^{3) 4)}	2000 MHz

Measurement Speed⁵⁾

IR-I: 1500 Hz on request; all other wavelength ranges: 950 Hz

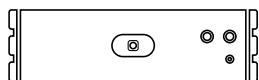
1) According to 3σ criterion, but never better than 20 % of the laser linewidth.

2) Standard deviation.

3) Not better than 20 % of the linewidth.

4) Each instrument in each mode can measure lasers with a linewidth up to 30 % of the corresponding FSR.

5) Depending on PC hardware and settings.



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Required Minimum Input Energy and Power⁶⁾

Standard (VIS)	0.02 – 15 μJ or μW
UV-I	0.02 – 10 μJ or μW
UV-II	0.02 – 200 μJ or μW
VIS/IR-I	VIS: 0.08 – 60 μJ or μW / IR-I: 8 – 800 μW

For low power instruments with increased sensitivity, please contact HighFinesse support.

FSR of the Fizeau Interferometers (Fine/Wide Mode)

100 GHz⁴⁾

Calibration

Built-in calibration source

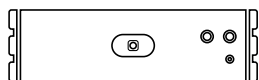
Recommended calibration period ≤ 1 month

Warm-up Time

No warm-up time under constant ambient conditions

4) Each instrument in each mode can measure lasers with a linewidth up to 30 % of the corresponding FSR.

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



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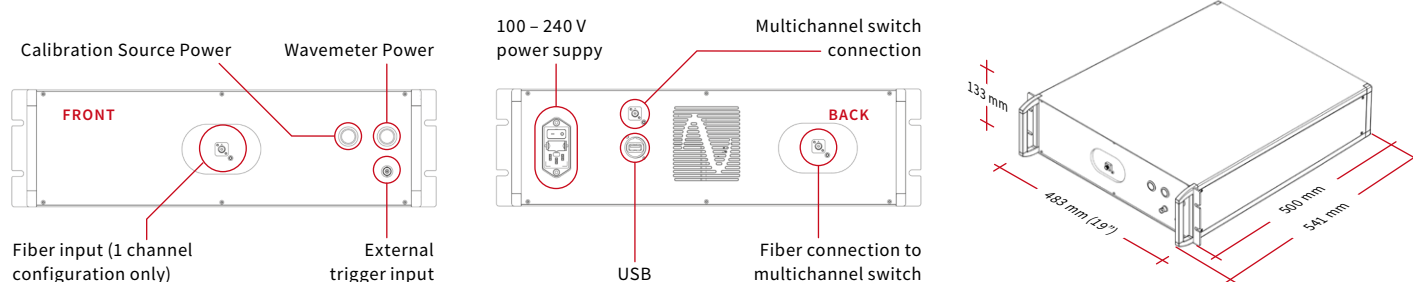
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Dimensions L × W × H ⁷⁾

541 × 483 × 133 mm



Weight

16 kg

Interface

Control	High-speed USB 2.0 connection
External Trigger	BNC

Power Supply

100 – 240 V ~ 50/60 Hz 80 W

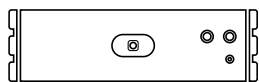
Included Options

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.

Please note, if the option MC is ordered together with the TTL option, the TTL mode can only be used if the switch is set fixed to one input channel.

⁷⁾ Dimensions with handles.



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Options

Laser Control (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 instrument 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.

Singlemode fibers are required.

Typical Applications

The WR5 series offers an accuracy of 3000 MHz. It is mostly chosen for pulsed lasers and broad CW lasers (linewidth > 3000 MHz) when the targeted absolute accuracy is 3000 MHz or less stringent.

Further Information

For further technical information, application examples, diagrams and for customization of the WR5 series please contact:

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