

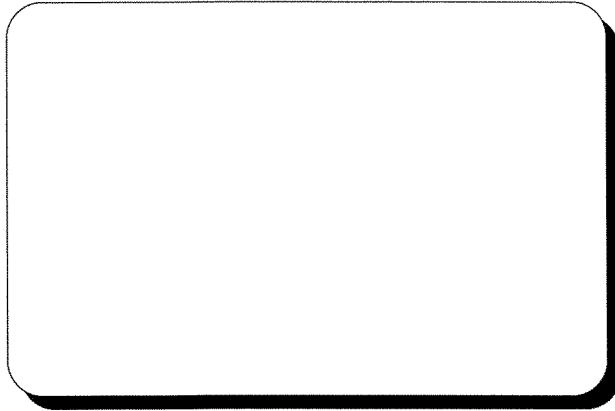
WM4100

WAVELENGTH METER

VERE, INC.

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WM4100 Wavelength Meter



Introduction

The WM4100 Wavelength Meter is a diffraction grating based instrument containing an analog and a digital processor. The special photodetector is silicon and therefore the allowable optical input power follows the inverse of the silicon response curve. A valid LED indicates when the minimum power is injected into the optical fiber input. The minimum is approximately 100 μ W and the maximum is roughly 4 mW, over which the display blanks. Relative optical input power can be monitored on the analog meter. Range switching during operation can be discerned by the audible relay switching and the behavior of the analog meter.

Features:

- ◆ 500 to 1000 nm spectral range
- ◆ 100 μ W to 4 mW optical power range
- ◆ \pm 1 nm accuracy
- ◆ 0.1 nm resolution
- ◆ 600 μ m input fiber core
- ◆ Rear panel wavelength calibration set
- ◆ 115/230 VAC operation

Higher powers, especially in the upper range are inherently more accurate. The BNC connector on the rear panel provides 500 to 1000 mV through a 100 ohm resistor that represents the input wavelength.

The WM4100 is intended for single laser line measurement and provides a reading that represents the centroid of the modal structure. The same applies for LEDs or broader line sources.

Optical power can be coupled into the WM4100 by optical fiber or through attenuating accessories. The internal patch cord has a 600 μ m core. Careful attention must be given to the cleanliness and integrity of the optical fiber ends. Do not allow dirt, dust, liquids or glass chips to enter the optical fiber connector. Always use dust caps on all optical fiber connectors and inspect carefully before each use to assure optimal, dirt-free, damage-free operation. Damaged connectors can be repaired for a nominal fee by VERE, Inc. Additional patchcords and a variety of optical fiber connectors are also available.

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Operation

The WM4100 operates from 115/230 VAC power with a 1 ampere fuse. A spare fuse is stored in the AC inlet module. The unit is wired for 115 VAC unless specified for 230 VAC by purchase order.

Plug the WM4100 into a power source that is compatible with the input selected.

After turn-on the unit will be within ± 1.0 nm after 15 minutes. After a one-hour warm-up the unit will maintain approximately ± 0.1 nm stability.

Calibration on a daily basis before use, with a 632.8 nm HeNe laser, will assure full-time accuracy. It is recommended that the unit be operated continuously to avoid warm-up time and maintain optimum performance.

Optical input power from roughly 100uW to 4 mW, depending on wavelength, is coupled to the instrument through the 600 μ m diameter optical fiber pigtail. ST® connectors are standard equipment, but other connectors and patch cords can be specified by purchase order.

The VALID LED will light when an optical power level is injected that is sufficient to provide the specified wavelength accuracy of measurement.

The digital display will blank when an excessive optical power input condition exists.

Notes for Operation

Higher input powers yield higher accuracy and more stable operation. However, input powers over the blanking level can cause temporary instability or long-term photodetector degradation.

Relative optical input power is indicated on the analog meter. The meter is a convenient indicator for alignment or power tuning.

The WM4100 Wavelength Meter contains precision optics and electronics and should be protected from dropping, jarring and temperature and humidity extremes.

Calibration

1. Allow one hour warm-up time at 22 ± 5 C.
2. Inject 632.8 nm optical power sufficient to drive the analog meter close to the top of the scale after the range switch. This will require 3-5 mW of coupled power to be just below blanking of the digital meter.
3. Adjust the WAVELENGTH OFFSET potentiometer on the rear panel to obtain a reading of 632.8 ± 0.1 nm.
4. Decrease the input power to a level that just lights the VALID LED. Adjust the ZERO potentiometer through the bottom cover to obtain a reading of 632.8 ± 0.1 nm. (Figure 1).
5. Repeat steps 3 and 4 to verify calibration over the entire input power range.
6. Full wavelength range calibration requires three accurate laser or filter lines. A line near 520 nm and a second near 980 nm will provide satisfactory results. The width of the range is set by adjusting the RANGE potentiometer through the bottom panel (Figure 1). Record the wavelength reading for each reference line and subtract to obtain the span reading. Adjust the RANGE potentiometer carefully between sets of readings to obtain the actual range between the reference wavelengths. Then introduce the 632.8 nm to calibrate the entire span with the WAVELENGTH OFFSET potentiometer. Compensation for the diffraction grating nonlinear dispersion is performed internally.
7. Factory refurbishment and calibration are available for a nominal fee by VERE, Inc.

Warranty

The WM4100 is warranted for a period of 90 days from delivery. Modification, misuse or opening the case voids warranty. If you have a problem with the unit, please contact the factory for assistance.

Technical Assistance

Technical assistance is available by calling the factory. We are happy to assist you with any questions, problems or applications.

Revised 2/9/94

WM4100 Wavelength Meter Specifications

Wavelength	500.0 - 1000.0 nm
Accuracy	± 1 nm
Resolution	0.1 nm
Optical Power	100 μ W to 4 mW Wavelength Dependent
Input Fiber Diameter	600 μ m
Connectors:	
Optical Input	ST® Front Panel
Wavelength Output	BNC Rear Panel 500 to 1000 mV
Displays:	
Digital Red LED	Wavelength
Analog Panel Meter	Relative Optical Power
Calibration:	
Wavelength	Slotted Potentiometer on Rear Panel. Adjust to 632.8 nm with HeNe Laser
Temperature operating	$22 \pm 5^{\circ}\text{C}$
Warm-up Time	One Hour
AC Power	115/230 VAC
Fuse	1A 250V 5x20 mm
Dimensions: Width	220 mm
Length	220 mm
Height	108 mm
Weight	2 kg

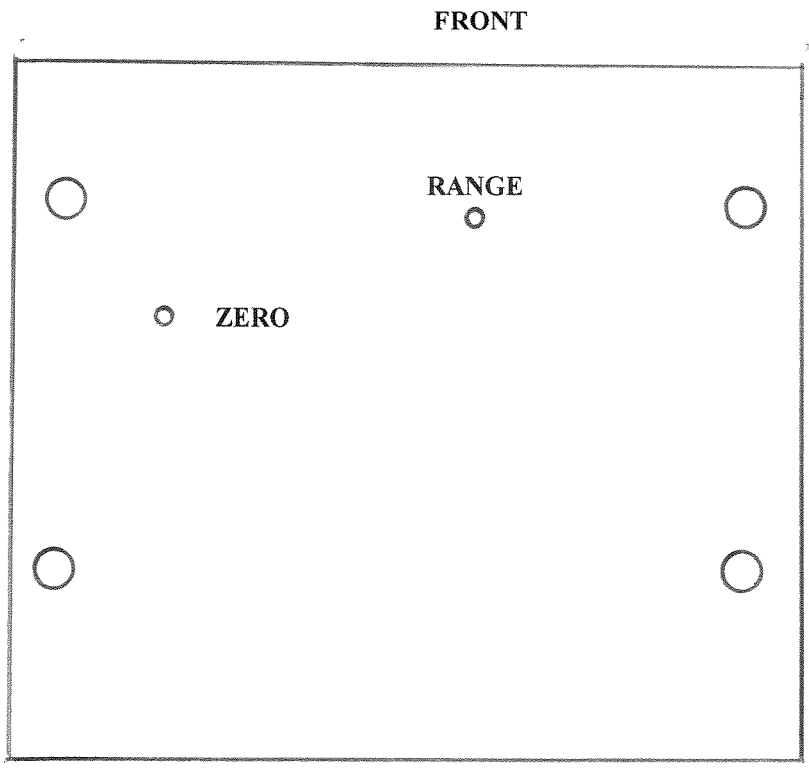


FIGURE 1. CASE BOTTOM VIEW