

7000

MULTILINE OPTICAL CHANNEL ANALYZER

WA-7600/7100 Wavemeter

R&D AND MANUFACTURING



Monitor DWDM system performance with unprecedented accuracy and reliability

- Simultaneous measurement of up to 256 optical channels
- Wavelength measurement to a guaranteed accuracy of ± 0.3 pm
- Individual peak and total optical power measurement
- Automatic calculation of OSNR and channel spacing
- Monitor and graph wavelength and power over time

Recent advances in dense wavelength-division multiplexing (DWDM) technology have resulted in the need for more sophisticated test and measurement instrumentation. The ability to accurately measure optical wavelength is necessary in order to characterize and optimize DWDM components and DWDM transmission systems.

While the wavelength performance of DWDM components can be characterized using conventional means such as WA-1650/1150 and WA-1100 Wavemeter® Optical Wavelength Meters, analysis of DWDM transmission systems requires instrumentation capable of measuring the discrete wavelengths of the many optical carriers present on a single fiber. Such demands are addressed by the WA-7600 and WA-7100 Wavemeter Multi-line Optical Channel Analyzers.

The Wavemeter Advantage

WA-7600 and WA-7100 Optical Channel Analyzers employ proven scanning Michelson interferometer-based Wavemeter technology to determine the absolute wavelength of an optical signal under test by comparing its interference fringe pattern with that of a built-in HeNe laser wavelength standard. Unlike other wavelength meters, all factors that can affect wavelength measurement are accounted for, ensuring the highest possible accuracy. The absolute wavelength specification has a confidence level of 3σ , meaning 99.6 % of measurements fall within specification limits. To ensure accuracy, all Wavemeter systems are traceable to recognized standards.

Simultaneous Wavelength and Power Measurement

Combining proven scanning Michelson interferometer-based technology with advanced digital processing results in the ability to measure and differentiate the absolute wavelengths of up to 256 discrete optical signals. The accuracy of these measurements is ± 0.3 pm. What's more, the WA-7600 can simultaneously measure the individual powers of the optical signals. In addition to the WA-7600, EXFO also offers the WA-7100 Wavemeter Multi-line Optical Channel Analyzer. Identical to the WA-7600, it offers an absolute wavelength uncertainty of ± 1.5 pm, providing a lower cost alternative.

High-resolution Optical Spectral Analysis

Unlike other multi-wavelength meters, the WA-7600/WA-7100 provide the full optical spectrum on a clear, easy-to-read display for the most precise DWDM channel analysis. Spectral resolution is as high as 30 pm, resulting in a narrow, sharp-edged spectral response. Discrimination between closely spaced DWDM channels is easily achieved for current 100 GHz and 50 GHz channel spacing and future 25 GHz channel spacing.

Automatic Calculation Increases Productivity

The WA-7600/WA-7100 automatically process measurement data, providing critical DWDM system performance information. In addition to resolving the individual optical carriers and accurately confirming their wavelengths and powers, the WA-7600/WA-7100 calculate parameters such as channel spacing and OSNR.

Stable Measurement with Rugged Design

Stability of all measurements is ensured with the WA-7600/WA-7100 systems' rugged benchtop or rack-mounted package.

SPECIFICATIONS

| MODEL | WA-7600 | WA-7100 |
|---|---|---|
| Wavelength | | |
| Range | 1270 nm to 1680 nm (178 THz to 236 THz) | 1270 nm to 1680 nm (178 THz to 236 THz) |
| Uncertainty (3 σ) (pm) | ± 0.3 | ± 1.5 |
| Minimum resolvable separation ² (pm) | 30 | 30 |
| Display resolution (nm) | 0.0001 | 0.001 |
| Units | nm (vacuum), THz | nm (vacuum), THz |
| Power | | |
| Uncertainty (2 σ) | ± 0.5 dB (at ± 30 nm from 1310 nm and 1550 nm) | ± 0.5 dB (at ± 30 nm from 1310 nm and 1550 nm) |
| Linearity (dB) | ± 0.3 | ± 0.3 |
| Display resolution (dB) | 0.01 | 0.01 |
| Units | dBm, mW, μ W | dBm, mW, μ W |
| Optical Input Signal | | |
| Sensitivity, single line input | -40 dBm (0.1 μ W), 1270 nm to 1600 nm -30 dBm (1.0 μ W), 1600 nm to 1680 nm | -40 dBm (0.1 μ W), 1270 nm to 1600 nm -30 dBm (1.0 μ W), 1600 nm to 1680 nm |
| Maximum input level (sum of all lines) | + 10 dBm (10 mW) | + 10 dBm (10 mW) |
| Maximum safe level (sum of all lines) | + 18 dBm (63 mW) | + 18 dBm (63 mW) |
| Optical Dynamic Range | | |
| Signal-to-noise ratio (lines above -25 dBm) ¹ | > 35 dB, channel spacing \geq 100 GHz > 27 dB, channel spacing \geq 50 GHz | > 35 dB, channel spacing \geq 100 GHz > 27 dB, channel spacing \geq 50 GHz |
| Number of Laser Lines | | |
| Maximum ¹ | 256 | 256 |
| Measurement Cycle Time | | |
| Time (rate) | 1.25 s (0.8 measurements/s) | 1.25 s (0.8 measurements/s) |
| Inputs/Outputs | | |
| Optical input | 9/125 μ m fiber FC/UPC or FC/APC SC/UPC or SC/APC ST/UPC | 9/125 μ m fiber FC/UPC or FC/APC SC/UPC or SC/APC ST/UPC |
| Instrument interface | GPIB (IEEE-488.2), RS-232, floppy disk drive VGA monitor port, parallel printer port | GPIB (IEEE-488.2), RS-232, floppy disk drive VGA monitor port, parallel printer port |
| Environment | | |
| Nominal warmup time | 7 minutes | N/A |
| Temperature ¹ | +10° to +30°C (-10° to +70°C storage) | +10° to +30°C (-10° to +70°C storage) |
| Pressure ¹ (mm Hg) | 500 to 900 | 500 to 900 |
| Humidity ¹ | \leq 90 % R.H. at +40 °C (no condensation) | \leq 90 % R.H. at +40 °C (no condensation) |
| Dimensions and Weight | | |
| Dimensions (H x W x D) | 5.25 in x 17.0 in x 16.50 in (133.4 mm x 431.8 mm x 419.1 mm) | 5.25 in x 17.0 in x 16.50 in (133.4 mm x 431.8 mm x 419.1 mm) |
| Weight | 23 lbs (10.5 kg) | 23 lbs (10.5 kg) |
| Power Requirements | | |
| Voltage and frequency | 90 to 260 VAC, 50/60 Hz | 90 to 260 VAC, 50/60 Hz |
| Notes | | SAFETY |
| 1. Typical | | 21 CFR 1040.10 and IEC 60825-1:1993+A2:2001. |
| 2. Minimal resolvable separation is 30 pm, 35 pm or 40 pm depending on selected wavelength range. | | CLASS 1 LASER PRODUCT |

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EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices.

Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.

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