

Optical Spectrum Analyzer MS9740A Specifications

Optical Spectrum Analyzer MS9740A

Supported Optical Fiber		SM fiber (ITU-T G.652), 50 µm/125 µm GI fiber*1, PC Connector (reflection attenuation 40 dB or more)
Optical Connector		User replaceable: FC, SC, ST, DIN (All connectors are PC polished.)
Wavelength Measurement Range		600 nm to 1750 nm
Wavelength Accuracy*2		±20 pm (1520 nm to 1620 nm, Resolution: 0.03 nm to 0.2 nm), ±100 pm (1520 nm to 1620 nm, Resolution: 0.5 nm, 1.0 nm)*3 ±300 pm (600 nm to 1520 nm), ±200 pm (1520 nm to 1570 nm), ±300 pm (1570 nm to 1750 nm)*4
Wavelength Stability*2		±5 pm (1 min, smoothing: 11 pt, at center wavelength of half maximum, Using SM fiber)
Wavelength Linearity*2		±20 pm (1520 nm to 1620 nm)
Setting Resolution		0.03, 0.05, 0.07, 0.1, 0.2, 0.5, 1.0 nm (0.03 nm, 0.05 nm only 1550 nm band and room temperature)
Resolution Accuracy*2, *5		±7% (Resolution: 0.1 nm), ±3% (Resolution: 0.2 nm), ±2.2% (Resolution: 0.5 nm) [1520 nm to 1620 nm] ±30% (Resolution: 0.1 nm), ±15% (Resolution: 0.2 nm), ±7% (Resolution: 0.5 nm) [600 nm to 1520 nm, 1620 nm to 1750 nm]
Measurement Range*2		–65 to +10 dBm (600 nm to 1000 nm), –85 to +10 dBm (1000 nm to 1250 nm), –90 to +10 dBm (1250 nm to 1600 nm), –85 to +10 dBm (1600 nm to 1650 nm), –65 to +10 dBm (1650 nm to 1700 nm), –55 to +10 dBm (1700 nm to 1750 nm) [5° to 30°C, VBW: 10 Hz, Sweep average: 10, Resolution: 0.07 nm to 1.0 nm, using SM fiber, Optical Att: Off] –60 to +10 dBm (600 nm to 1000 nm), –80 to +10 dBm (1000 nm to 1250 nm), –85 to +10 dBm (1250 nm to 1600 nm), –80 to +10 dBm (1600 nm to 1650 nm), –60 to +10 dBm (1650 nm to 1700 nm), –50 to +10 dBm (1700 nm to 1750 nm) [30° to 45°C, VBW: 10 Hz, Sweep average: 10, Resolution: 0.07 nm to 1.0 nm, using SM fiber, Optical Att: Off] –70 to +23 dBm (1100 nm to 1600 nm), [5° to 30°C, VBW: 10 Hz, Sweep average: 10, Resolution: 0.07 nm to 1.0 nm, using SM fiber, Optical Att: On] –65 to +23 dBm (1100 nm to 1600 nm), [30° to 45°C, VBW: 10 Hz, Sweep average: 10, Resolution: 0.07 nm to 1.0 nm, using SM fiber, Optical Att: On]
Level Accuracy*2, *6		±0.4 dB (Wavelength: 1310 nm, 1550 nm, Input: –10 dBm, Resolution: 0.1 nm to 1.0 nm)
Level Stability*2		±0.02 dB (1 min, Wavelength: 1550 nm, Input: –23 dBm, Resolution: 0.1 nm to 1.0 nm, no polarization fluctuation)
Level Linearity*2		±0.05 dB (Wavelength: 1550 nm, Input: –50 to 0 dBm, Optical Att: Off) ±0.05 dB (Wavelength: 1550 nm, Input: –30 to +20 dBm, Optical Att: On)
Level Flatness*2, *7		±0.1 dB (Wavelength: 1520 nm to 1620 nm, Resolution: 0.5 nm, Optical Att: Off)
Polarization Dependency*2		±0.05 dB (Wavelength: 1550 nm/1600 nm), ±0.1 dB (Wavelength: 1310 nm), [Resolution: 0.5 nm, 1.0 nm]
Dynamic Range*2		High dynamic range: 70 dB (1 nm from peak wavelength), 60 dB (0.4 nm from peak wavelength), 42 dB (0.2 nm from peak wavelength) Normal dynamic range: 62 dB (1 nm from peak wavelength), 58 dB (0.4 nm from peak wavelength), 42 dB (0.2 nm from peak wavelength) [Wavelength: 1550 nm, Resolution: 0.05 nm, Optical Att: Off, 20° to 30°C]
Optical Return Loss*2		≥35 dB (Using SM fiber with wavelength of 1300 nm and 1550 nm)
Sweep		Sweep width: 0.2 nm to 1200 nm, 0 nm Sweep speed: ≤0.2 s (span: 5 nm, Resolution: 0.1 nm), ≤0.3 s (span: 500 nm) [VBW: 10 kHz, Normal dynamic range, center 1550 nm (span: 5 nm), 1200 nm (span: 500 nm), sweep start to stop, no optical input, sampling point: ≤501]
Display		800 × 600 dots, 8.4 inch SVGA color LCD
Function		Measurement functions: Auto Measure, Optical pulse measurement (External trigger), Power monitor Display functions: Normalized, Max Hold, Min Hold, Overlap, Value in Air/Vacuum, Effective Resolution, Multi fiber mode Analysis functions: Wavelength Subtraction, Marker, Wavelength Analysis (Threshold, ndB-Loss, Envelope, RMS, SMSR, Spectrum Power), Light Source Evaluation (FP-LD, DFB-LD, LED, LD Module), Optical AMP NF Evaluation, PMD Measurement, WDM Signal Evaluation, WDM Filter Analysis Calibration functions: Auto Align, Wavelength cal., Level offset, Wavelength offset Memory function: Display measurement data to memory A to J (10 waveforms) Interfaces: Ethernet, GPIB (Option) Input/Output function I/O: Save and read files to USB memory Input: External trigger terminal (0 to 0.8 V/2 V to 5 V, high impedance) Output: Measured data text file output, measurement screen file (BMP, PNG) output, VGA output
Operating Conditions		Operating temperature: +5° to +45°C, Storage temperature: –20° to +60°C, Relative humidity: 0 to 90% (no condensation)
Power Supply		100 V(ac) to 120 V(ac)/200 V(ac) to 240 V(ac), 50 Hz to 60 Hz, ≤75 VA
Dimensions and Mass		426 (W) × 177 (H) × 350 (D) mm (excluding projections), ≤15.0 kg (without options)
CE	EMC	2014/30/EU, EN61326-1, EN61000-3-2
	LVD	2014/35/EU, EN61010-1
	RoHS	2011/65/EU, EN50581
Remote Control Interfaces		Ethernet, GPIB (Opt-001)*8

- *1: The connection loss when connecting 50 µm/125 µm multimode optical fiber degrades the minimum light reception sensitivity.
The MS9740A has an MM mode function to correct correction loss when connecting 50 µm/125 µm multimode optical fiber and to display the level. The optical loss level is corrected when the MM mode is On. It corrects the level by 14 dB (sum).
Level display errors occur if light is input under other excitation conditions.
- *2: Using SM fiber (ITU-T G.652), after 2 hours of warm-up (The Repeat sweeping performed at span 100 nm or more and VBW 10 kHz or more during the warm-up operation), after Auto Align, at stable room temperature
- *3: Built-in MS9740A-002, after Wl cal (ref) wavelength calibration execution, at stable room temperature
- *4: After Wl cal (Ext) wavelength calibration execution by external light source, such as Single Longitudinal mode laser (DFB-LD)
- *5: Effective resolution, after Res-cal, using SM fiber
- *6: Using master FC connector, 23° ±5°C
- *7: 10° to 30°C
- *8: When controlling the MS9740A remotely using the Ethernet port, a VISA*9 driver must be installed in the PC controller. We recommend using NI-VISA*10 from National Instruments™ (NI hereafter) as the VISA driver.
Although a license is generally required to use NI-VISA™, the licensed NI-VISA™ driver is provided free-of-charge for use when performing remote control (Note) of a MS9740A unit in which the MS9740A-001 GPIB option has been installed.

The NI-VISA™ driver can be downloaded from the NI website at:

<http://sine.ni.com/psp/app/doc/pid/psp-411>

Be sure to comply with the NI license agreement for the usage and license scope. Be sure to uninstall the NI-VISA™ driver when disposing of the MS9740A or transferring it to a third party, etc., or when ceasing to use NI-VISA™.

(Notes)

Although the NI-VISA™ driver itself can be downloaded free-of-charge from the web, an implementation license is required for legal reasons if some requirements are not met. (Check the NI web page for the detailed requirements.)

If these requirements are not met, permission is not granted to use NI hardware and software and an NI implementation license must be purchased. However, since the MS9740A-001 GPIB option incorporates NI hardware (GPIB ASIC), the NI-VISA™ driver can be used free-of-charge.

Glossary of Terms:

*9: VISA: Virtual Instrument Software Architecture
I/O software specification for remote control of measuring instruments using interfaces such as GPIB, Ethernet, USB, etc.

*10: NI-VISA™

World de facto standard I/O software interface developed by NI and standardized by the VXI Plug&Play Alliance.

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