

MS9740A

Optical Spectrum Analyzer

600 nm to 1750 nm



Anritsu MS9740A
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Optical Spectrum Analyzer

Wavelength	1528.9428 nm	0	1543.0572 nm	D-A	4.2144 nm
Span	C	D	D	C-D	4.2144 nm
Resolution	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm
Bandwidth	0.1 nm	0.1 nm	0.1 nm	0.1 nm	0.1 nm
Power	0 dBm	0 dBm	0 dBm	0 dBm	0 dBm
Offset	0 dB	0 dB	0 dB	0 dB	0 dB
Filter	None	None	None	None	None
Reference	None	None	None	None	None
Marker	1	2	3	4	5
Marker 1	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm
Marker 2	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm
Marker 3	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm
Marker 4	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm
Marker 5	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm	1543.0572 nm

Max Span: 1750 nm
Min Span: 600 nm
Resolution: 0.1 nm
Bandwidth: 0.1 nm
Power: 0 dBm
Offset: 0 dB
Filter: None
Reference: None
Marker: 1, 2, 3, 4, 5
Marker 1: 1543.0572 nm
Marker 2: 1543.0572 nm
Marker 3: 1543.0572 nm
Marker 4: 1543.0572 nm
Marker 5: 1543.0572 nm

Optical Input: Optical Input 1 (IN)
Optical Output: Optical Output 1 (OUT)

CAUTION: LASER RADIATION
DO NOT STARE INTO BEAM

Improved Production Efficiency Reduces Measurement and Inspection Times

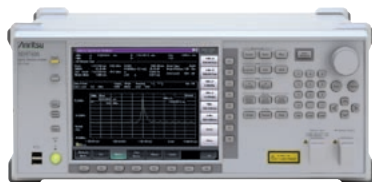
Reduce the manufacturing costs is a key issue for vendors of active optical devices. Measuring instruments for device evaluation are expected to increase productivity by shortening inspection times.

The MS9740A reduces the total time from waveform sweeping to data transfer to external control equipment and supports simple analysis procedures, offering excellent cost performance and better productivity.

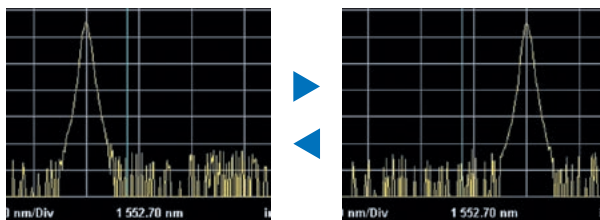
Reduces the Time from Waveform Sweeping to Data Transfer by 80% Compared to Previous Models

Waveform Sweeping

Spectrum Measurement at 0.2 s / 5 nm Real-time Sweeping



High-speed waveform sweeping and range processing support spectrum measurement at 0.2 s / 5 nm.



The spectrum change and variation in noise level can be monitored in real time and the waveform light source can be switched in real time too.

Analysis

Seven Analysis Menus



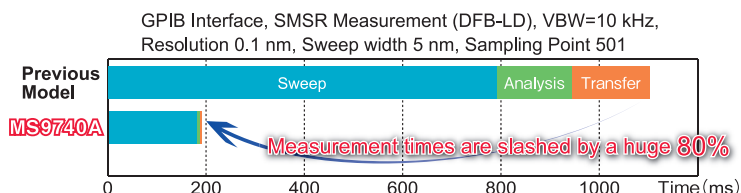
- LD-Module New
- DFB-LD
- FP-LD
- LED
- PMD
- Opt.Amp
- WDM

Data Transfer

Instant Data Transfer



Data is transferred at high speed from waveform sweeping to external controller equipment.





All-in-One Unit Supports Functions for Evaluating All Active Optical Devices

The all-in-one unit supports the performance and functions for evaluating all active optical devices, including SFP, XFP, and SFP+ modules, as well as optical transceivers and DFB optical sources. Evaluation results, such as center wavelength, level, spectrum, SMSR, OSNR, etc., are displayed on one screen. Combination with a BERTs supports effective spectrum analysis of optical transceiver outputs, and WDM signal analysis of DFB optical sources.

- Wavelength sweeping time <math><0.2\text{ s} / 5\text{ nm}</math>
- Dedicated applications for evaluating active optical devices (LD module tests)
- Supports SM and MM fibers
- Support LC connector

Wide Dynamic Range for Evaluating Passive Optical Devices and High Resolution for Evaluating WDM Signals

The MS9740A supports signal evaluation with wide dynamic range and high-resolution, such as measurement of narrow-band filters and OSNR analysis of WDM signals.

- Dynamic range performance $\geq 58\text{ dB}$ (0.4 nm from peak wavelength)
- -90 dBm minimum light-reception sensitivity
- 30 pm minimum resolution
- $\pm 20\text{ pm}$ wavelength accuracy (using C/L band and wavelength calibration light source)
- Functions for optical axis alignment, wavelength calibration and effective resolution calibration

Large 8.4-inch Display and Full Range of Interfaces for Easy Monitoring, Data Storage, and Operation

The large 8.4-inch display is very easy to read. Ethernet (TCP/IP) and GPIB (option) interfaces support easy transfer of measurement screens as png or bmp files to an external PC using remote control. Up to 1000 files can be saved in internal memory and files are easily moved to external storage, such as a PC via the six USB ports.

- Large 8.4-inch LCD
- Ethernet and GPIB (option) interfaces
- USB storage function

Lightweight, 50% Less Power Consumption

The MS9740A is 10% lighter than the MS9710C, offering easy portability, and power consumption is halved using a resource-friendly design.

- Low power consumption at $<75\text{ VA}$
- Compact and quiet benchtop analyzer weighing $<15\text{ kg}$

MS9740A

Optical Spectrum Analyzer

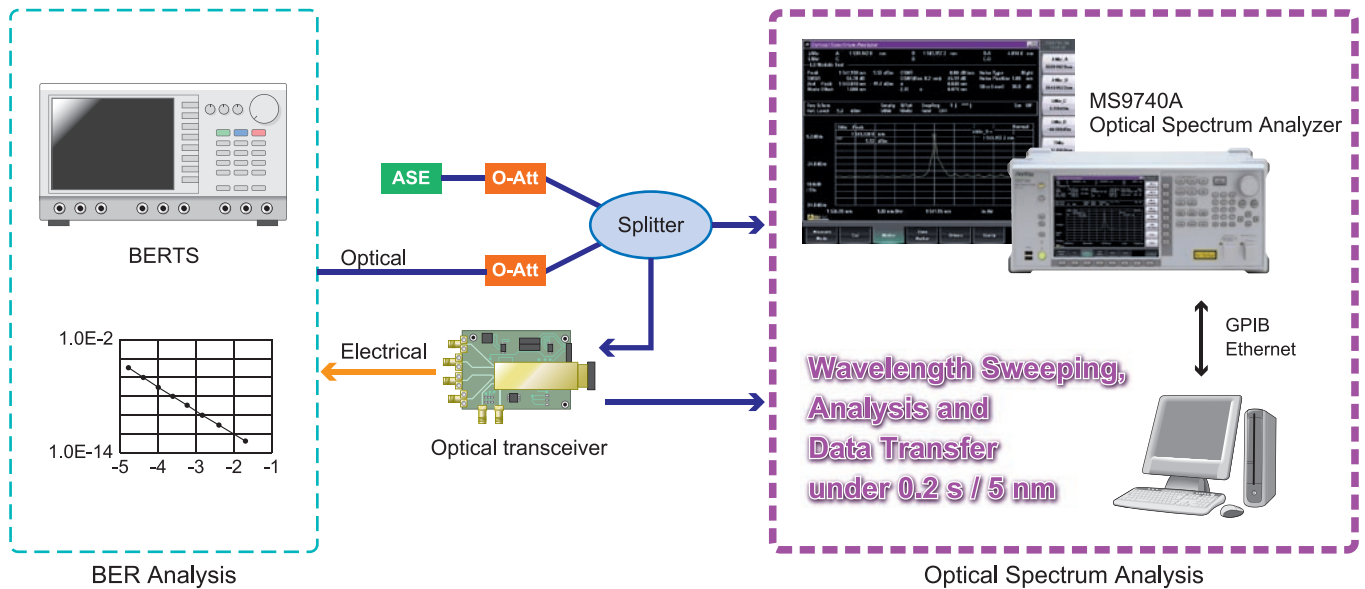
600 nm to 1750 nm



Various Measurement Applications

Fast and Easy Analysis

Example of Optical Transceiver Measurement



LD Module Test Analysis

This application measures test items such as center wavelength, optical level, OSNR, etc., required for LD module tests, and displays the results on one screen. The center wavelength, optical level, OSNR (per nm), side mode suppression ratio (SMSR) and 20 dB down spectrum width of LD modules can be measured. The center wavelength and spectrum half-width (FWHM) of FP-LDs are measured using the RMS method. Both SM and MM fibers are supported by one unit, helping cut equipment costs.



LD Module Test

LD Module Test Items

- Center wavelength, level
- OSNR (actual measured value)
- OSNR (noise level per nm)
 - * OSNR noise level specified from Higher, Left, Right, (L+R) / 2 or distance from peak wavelength
- SMSR
- Side mode peak wavelength, level
- Spectrum width (ndB, RMS method, standard deviation)

The wavelength sweep time depends on the VBW and measurement wavelength range as shown below:

VBW, Sweep Speed, Minimum Light Reception Sensitivity*1

VBW	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz
Sweep speed (typ.) ^{*2}	32 s	3.5 s	0.5 s	0.2 s	0.2 s	0.2 s
Minimum light reception sensitivity ^{*3}	-90 dBm	-80 dBm	-70 dBm	-60 dBm	-50 dBm	-40 dBm

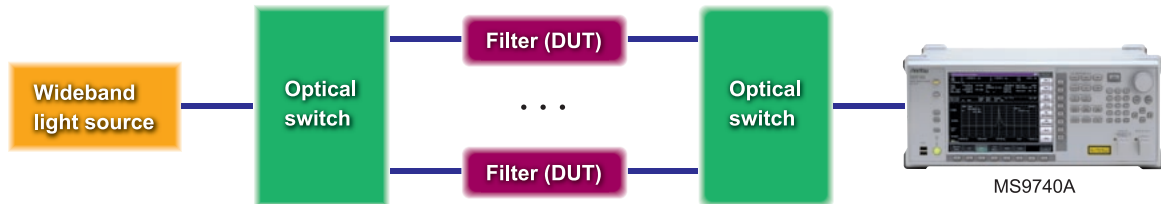
*1: Reference value; not supported as standard

*2: Center wavelength 1200 nm, span 200 nm, Sampling points 501, Normal dynamic range, Point Avg. 1, no optical input

*3: Wavelength 1250 nm to 1600 nm, Optical Att: Off, Sweep Avg 10, Ambient temperature 0° to 30°C, no optical input

Easy Reference Measurement of Optical Filters using Waveform Difference Display

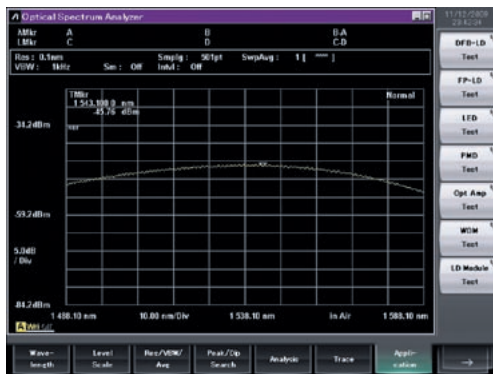
Example of Narrow-band Filter Measurement



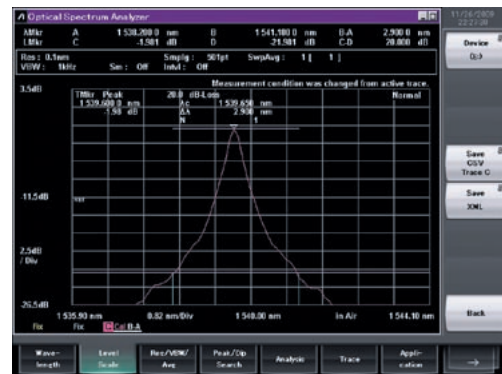
Narrow-band Filter Analysis using Trace Mode

Evaluation of passive devices, such as FBG, AWG, OBPF, etc., uses a wideband light source. The variance between results with and without (reference measurement) the DUT is measured to evaluate the DUT characteristics. The MS9740A has a large waveform memory for saving up to 10 waveforms and a wavelength difference calculation function making it easy to evaluate devices such as optical switches.

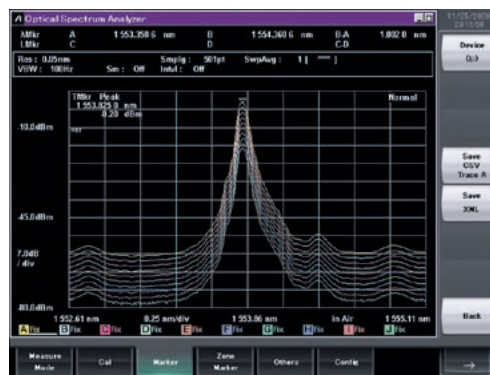
Evaluation of passive device also requires a wide dynamic range. The MS9740A is perfect for these evaluations because it has a wide dynamic range of 42 dB at 0.2 nm from the peak wavelength and 58 dB at 0.4 nm from the peak. Moreover, because minimum wavelength resolution is 30 pm and minimum light-reception sensitivity is -90 dBm, the MS9740A can easily evaluate the characteristics of narrow-band filters, etc. In addition, all 10 waveforms displayed on one screen can be saved in one file.



Wideband Light Source Waveforms



Filter Analysis by Waveform Difference Comparison



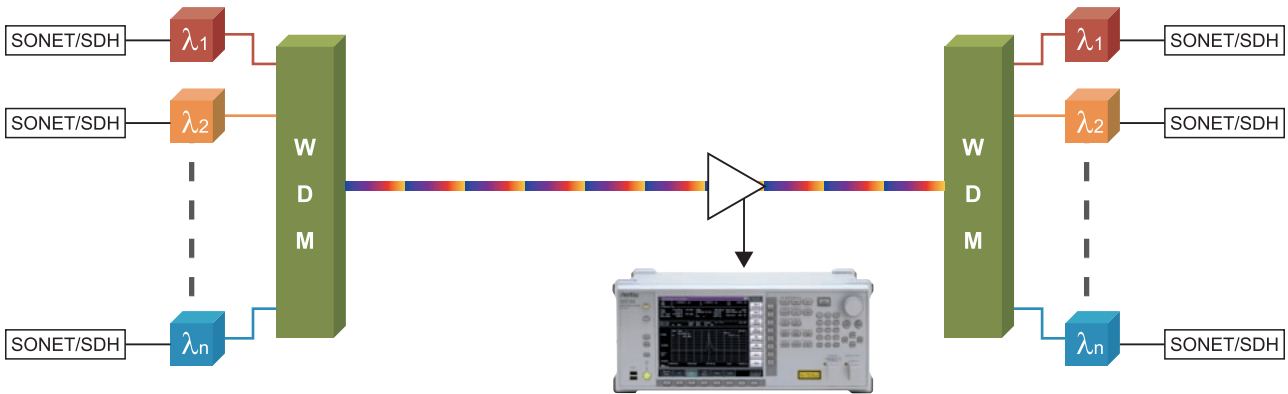
Multi-waveform Display

Analyze 100 GHz and 50 GHz Spaced WDM Signal at Once

WDM Signal Analysis

WDM Mode

The 42 dB dynamic range at 0.2 nm from the peak wavelength supports accurate WDM signal measurement at 100 GHz and 50 GHz intervals. Up to 300 channels can be analyzed and information required for WDM signal analysis, such as center wavelength, level, OSNR, etc., is displayed on one screen. Specifying the position of noise as Left/Right/(R+L)/2 for OSNR analysis automatically analyzes the dip point for each channel and specifies the length from the center wavelength. The distance between channels is confirmed at switching to the table display mode.



WDM Signal Analysis

EDFA Analysis

Opt. Amp Mode

Key optical fiber amplifier performance indices are the gain characteristics and noise figure (NF). The MS9740A calculates the gain and NF automatically from the optical input and output to the optical fiber amplifier. In addition, the Amplified Spontaneous Emission (ASE) level is measured either by pulse measurement, by interpolation using fitting, or by polarization nulling. Furthermore, the MS9740A has standard modes for measuring gain characteristics and NF at input of several of optical wavelengths (dummy light) assuming a WDM signal.



EDFA Analysis

Seven Application Modes

The MS9740A has seven modes (DFB-LD, FP-LD, LED, PMD, Opt Amp, WDM, LD Module) matching the measurement target. For example, at evaluation of LD characteristics, analysis items and methods can be tailored to the spectrum, such as a single DFB-LD spectrum, multiple discrete-wavelength FP-LD, wideband LED, etc. Furthermore, analysis of each wavelength spectrum required by WDM signals is supported too. Combining test items into a menu supports easy batch measurement.

Test Target	
DFB-LD	Evaluation of single vertical mode spectrum
FP-LD	Evaluation of multiple discrete-wavelength spectrum
LED	Evaluation of wideband light source spectrum
PMD	Evaluation of PMD characteristics of optical fiber
Opt Amp	Evaluation of gain and NF characteristics of fiber amplifier (EDFA)
WDM	Evaluation of WDM signal spectrum for up to 300 wavelengths (channels)
LD Module	Evaluation of optical-transceiver characteristics

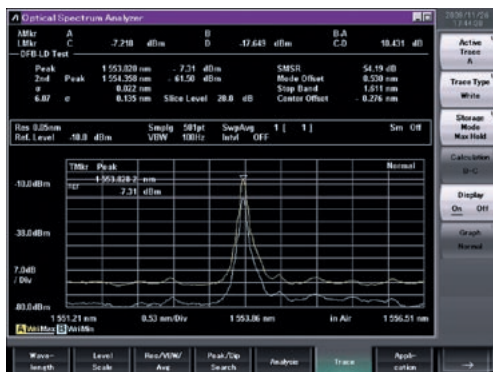


FP-LD Measurement

* At evaluation of FP-LDs with a spectrum composed of multiple discrete wavelengths, one screen summarizes the analysis results for maximum peak wavelength and level, as well as center wavelength, half width, number of oscillation modes, total power, etc.

Various Trace Displays

In addition to the normal waveform displays, the MS9740A has a full range of flexible display modes including Max Hold for displaying peak levels at continuous sweeping, Min Hold for displaying dip level at continuous sweeping, Calculate for computing differences between traces, etc.



Max Hold, Min Hold Display Function

These display functions are convenient for confirming maximum and minimum levels at continuous sweeping.

Easy Operation

When a mouse is connected, the familiar Windows GUI makes menu selection and parameter setting an easy and convenient alternative to setting using panel keys. Common settings, such as wavelength sweep width, level scale, markers, etc., can all be assigned to dedicated shortcut keys. In summary, every operation, ranging from setting measurement conditions to analyzing waveforms, is transparent and easy.

- Windows® is a registered trademark of Microsoft Corporation in the USA and other countries.

Modulated and Pulse Light Measurements

Measurement of modulated and pulsed optical signals requires synchronization with modulation. The trigger input connector on the back panel of the MS9740A supports input of an external trigger synchronized to the internally modulated light, supporting measurement without data loss.

Wavelength Calibration Function for Accurate Measurements and Analysis

Assuring reliable measurement and analysis requires measurement with the best accuracy and resolution, which in turn requires automatic alignment of the internal optical axis, wavelength calibration with an external light source, and resolution calibration. A wavelength accuracy of ± 20 pm is assured by calibrating the wavelength using the Light Source for Wavelength Calibration (Opt 002) after automatic optical axis alignment. In addition, the MS9740A has a function for automatically calibrating wavelength if the ambient temperature and pressure change, based on the first calibration data. Calibration of effective resolution is important when measuring the noise level of a continuous spectrum, such as EDFA ASE, LDs, etc.

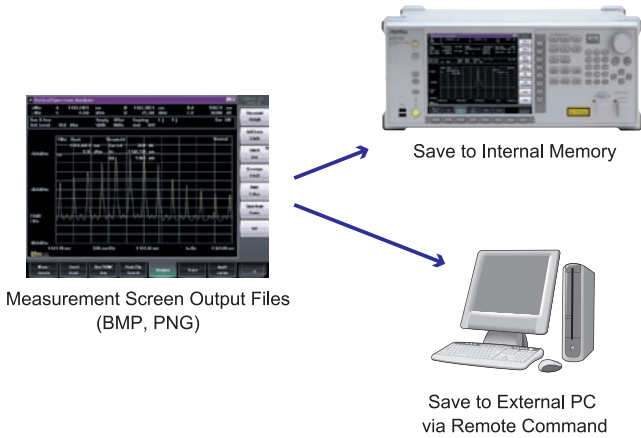
Item	Calibration
Automatic optical axis alignment	Satisfy wavelength accuracy, level accuracy and dynamic range specifications
Wavelength calibration	Calibrate wavelength using external light source and light source for wavelength calibration
Effective resolution calibration	Calibrate effective resolution for accurate noise level measurement

Supports SM and MM Fibers

One MS9740A unit supports measurement of both SM and MM fibers. In addition, Optical return loss is held to less than 35 dB to suppress the impact of backscatter on the DUT.

Screen Hard Copy

The built-in screen hard copy function dumps the screen image as a bmp or png file, which can be easily transferred to a PC via the Ethernet or GPIB Interface using a remote command.



Save 10,000 Waveforms to Internal Memory

Measured and analyzed data can be saved to internal memory. Up to ten waveforms (Trace A to J) can be saved in one file and up to 1000 files can be saved to internal memory. These files can be saved to USB memory as well.

Six USB Ports

The six USB ports (two on front and four on back) can be used to move data in internal memory to external USB memory while keeping a USB mouse and keyboard connected, making waveform analysis and file management easier than ever.

Remote Control via Ethernet and GPIB Interfaces

Remote control is supported over either the Ethernet or GPIB (option) interfaces, slashing the time from measurement start at the MS9740A to data capture at an external PC via the GPIB interface by 80% compared to previous measurement systems.

Backward Compatibility with MS9710/9780 Remote Commands

Full support for all remote commands used by the earlier MS9710 and MS9780 series of instruments assures smooth backwards compatibility and easy future-proof migration to newer instruments.

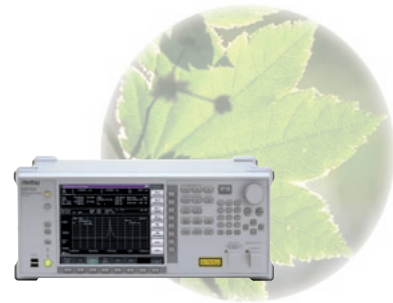
VGA Output

The VGA connector displays measurement and setting screens on an external display for easy group viewing, etc.

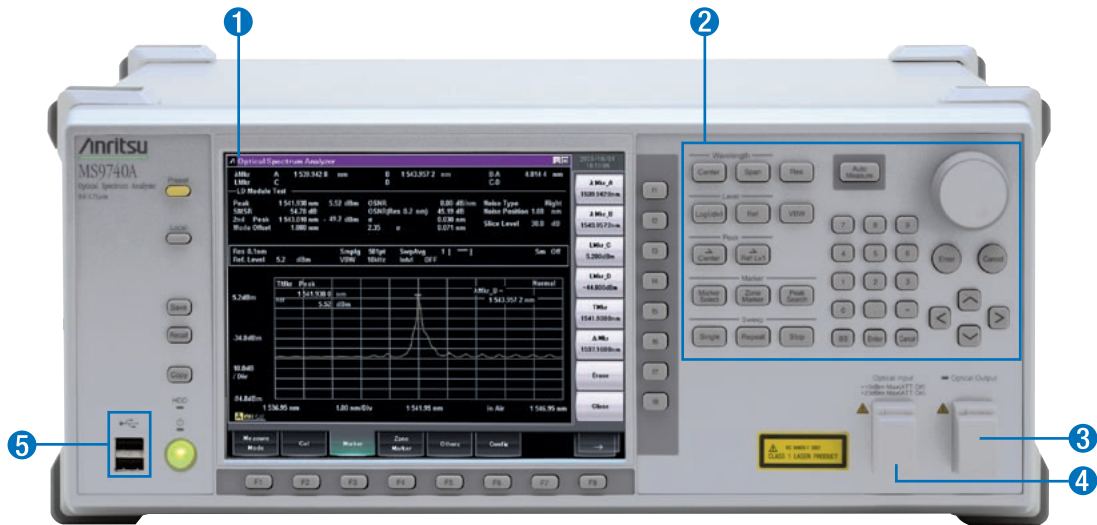


Compact and Low Power Consumption

Weighing in at under 15 kg, the MS9740A is the world's lightest benchtop spectrum analyzer (at December 2009). Consuming under 75 VA, or less than half its predecessors, it's also eco-friendly too. And not only does it save power, it's quiet as well, making it the ideal benchtop companion.

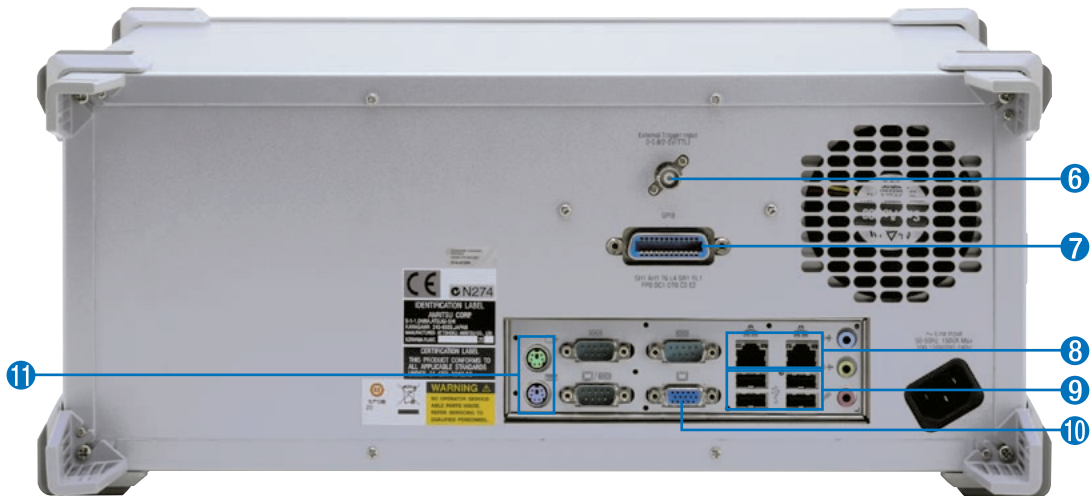


Panel



- 1 8.4-inch Liquid Crystal Display (LCD)**
Waveforms and results are easy to read on the large display. The familiar Windows GUI makes operation with a mouse easy too.
- 2 Measurement and Shortcut Keys, and Encoder**
These keys are used to make settings and perform analysis. Common operations have shortcut keys.

- 3 Light Source for Wavelength Calibration Option**
Wavelength measurement can be calibrated to achieve ± 20 pm accuracy (1520 nm to 1620 nm) by inputting light from this option into the optical input connector.
- 4 Optical Receiver Connector**
Both SM and MM fiber connections are supported by exchangeable connector types (FC, SC, ST, DIN, LC).
- 5 USB Port**
This connector supports a USB mouse, keyboard or memory (for easy file exchange).



- 6 Trigger Input**
This connector is for inputting a synchronous signal to measure modulation and pulse signals.
- 7 GPIB Interface Option**
This connector supports external control from a PC over GPIB.
- 8 Ethernet Interface**
This connector supports external control from a PC via Ethernet.

- 9 USB Port**
This connector supports a USB mouse, keyboard or memory (for easy file exchange).
- 10 VGA Output**
This connector is for an external VGA screen.
- 11 PS/2 Port**
This connector is for a PS/2 mouse or keyboard.

Specifications

MS9740A Optical Spectrum Analyzer

Items	Specifications
Supported optical fiber	10 μm/125 μm SM fiber (ITU-T G.652), 50 μm/125 μm GI fiber
Optical connector	User replaceable: FC, SC, ST, DIN, LC
Wavelength measurement range	600 nm to 1750 nm
Wavelength accuracy* ¹	±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)* ² ±300 pm (600 nm to 1520 nm), ±200 pm (1520 nm to 1570 nm), ±300 pm (1570 nm to 1750 nm)* ³
Wavelength stability* ¹	±5 pm
Wavelength linearity* ¹	±20 pm (1520 nm to 1620 nm)
Setting resolution	0.03, 0.05, 0.07, 0.1, 0.2, 0.5, 1.0 nm (RBW: 3 dB optical filter: transmission bandwidth)
Resolution* ^{1, *4}	±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	-85 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, 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, 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, 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, using SM fiber, Optical Att: On]
Level accuracy* ^{1, *5}	±0.4 dB (1310 nm/1550 nm, Input: -10 dBm, Resolution: ≥0.1 nm)
Level stability* ¹	±0.02 dB (1 min, Resolution: ≥0.1 nm, Input: -23 dBm, 1550 nm, no polarization fluctuation)
Level linearity* ¹	±0.05 dB (1550 nm, -50 to 0 dBm, Optical Att: Off) ±0.05 dB (1550 nm, -30 to +20 dBm, Optical Att: On)
Level flatness* ^{1, *6}	±0.1 dB (1520 nm to 1620 nm, Resolution: 0.5 nm, Optical Att: Off)
Polarization dependency* ¹	±0.05 dB (1550 nm/1600 nm), ±0.1 dB (1300 nm), [Resolution: ≥0.5 nm]
Dynamic range* ¹	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) [Resolution: 0.05 nm, 1550 nm, Optical Att: Off, 20° to 30°C]
Optical return loss* ¹	≥35 dB (1300 nm/1550 nm)
Sweep	Sweep width: 0.2 nm to 1200 nm, 0 nm Sweep speed: ≤0.2 s (span 5 nm), ≤0.3 s (span 500 nm), [Resolution: 0.1 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 bits, 8.4 inch SVGA color LCD
Function	Measurement functions: Auto Measure, Optical pulse measurement (External trigger), Power monitor Display functions: Normal, Normalize, Max hold, Min hold, Value in Air/Vacuum, Effective resolution, Multi mode fiber Analysis functions: Waveform difference function, Marker function, Waveform analysis (Threshold, ndB-Loss, Envelope, RMS, SMSR, Spectrum Power), Light source (FP-LD, DFB-LD, LED, LD-Module), Opt. Amp, PMD, WDM 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) I/O: I/O: Save and read files to USB memory Input: External trigger terminal (0 to 0.8 V/2 to 5 V, high impedance) Output: Measurement data text file, measurement screen file (BMP, PNG), VGA output terminal, keyboard, mouse
Operating conditions	Operating temperature: 5° to 45°C, Storage temperature: -20° to 60°C, Relative humidity: 0 to 90% (no condensation)
Power	100 to 120 V/200 to 240 Vac, 50 Hz to 60 Hz, ≤75 VA
Dimensions and mass	426 (W) × 177 (H) × 350 (D) mm (excluding projections), ≤15.0 kg (without options)
EMC	EN61326-1, EN61000-3-2
LVD	EN61010-1

*1: 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

*2: Built-in option 002, after WI cal (ref) wavelength calibration execution, at stable room temperature

*3: After WI cal (Ext) wavelength calibration execution by external light source, such as DFB-LD

*4: Effective resolution, after Res-cal, using SM fiber

*5: Using master FC connector, 23° ±5°C

*6: 10° to 30°C

Light Source for Wavelength Calibration (Option 002)

Supported optical fiber	10 μm/125 μm SM fiber (ITU-T G.652)
Output level	-40 dBm/nm (Reference wavelength, Reference light, 10° to 30°C, 1550 nm ±20 nm, Resolution: 1 nm)
Output level stability	±0.04 dB (10 minutes after power-on, 1550 nm, Resolution: 1 nm, VBW: 100 Hz, Point Avg. 20, Measurement time 1 minute)
Laser safety*	Class 1 (IEC 60825-1: 2007)

*: Safety measures for laser products. This option complies with optical safety standards in Class 1 of IEC 60825-1; The following descriptive labels are affixed to the product.



Ordering Information

Please specify the model/order number, name and quantity when ordering. The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

(1) Specify the mainframe

Model/Order No.	Name
MS9740A	– Main Frame – Optical Spectrum Analyzer
Z1353A*1	– Standard Accessories – MS9740A Operation Manual (CD): 1 pc Power Cord: 1 pc

(2) Specify one optical connector

Model/Order No.	Name
	– Options (Optical Connector) –*2
MS9740A-033	LC Connector
MS9740A-037	FC Connector
MS9740A-038	ST Connector
MS9740A-039	DIN 47256 Connector
MS9740A-040	SC Connector

(3) Select an option from the list

Model/Order No.	Name
	– Options (Interface) –
MS9740A-001	GPIB Interface
MS9740A-101	GPIB Interface Retrofit
	– Options (Light Source for Wavelength Calibration) –*3
MS9740A-002	Light Source for Wavelength Calibration
MS9740A-102	Light Source for Wavelength Calibration Retrofit

(4) Select the application parts, peripherals and consumables from the list

Model/Order No.	Name
	– Application Parts –
W3328AE	MS9740A Optical Spectrum Analyzer Operation Manual (Printed)
W3329AE	MS9740A Optical Spectrum Analyzer Remote Control Operation Manual (Printed)
J0617B	Replaceable Optical Connector (FC-PC)*5
J0618D	Replaceable Optical Connector (ST)*5
J0618E	Replaceable Optical Connector (DIN)*5
J0619B	Replaceable Optical Connector (SC)*5
J1413A	Replaceable Optical Connector (LC)*5
J0635A	FC•PC-FC•PC-1M-SM (Optical Fiber Cord, 1.0 m)
J0635B	FC•PC-FC•PC-2M-SM (Optical Fiber Cord, 2.0 m)
J0635C	FC•PC-FC•PC-3M-SM (Optical Fiber Cord, 3.0 m)
J0660A	SC•PC-SC•PC-1M-SM (Optical Fiber Cord, 1.0 m)
J0660B	SC•PC-SC•PC-2M-SM (Optical Fiber Cord, 2.0 m)
J0660C	SC•PC-SC•PC-3M-SM (Optical Fiber Cord, 3.0 m)
J0893A	FC•PC-FC•PC-1M-GI (Optical Fiber Cord, 1.0 m)
J0893B	FC•PC-FC•PC-2M-GI (Optical Fiber Cord, 2.0 m)
J0839A	SC•PC-SC•PC-1M-GI (Optical Fiber Cord, 1.0 m)
J0839B	SC•PC-SC•PC-2M-GI (Optical Fiber Cord, 2.0 m)
Z0914A	Ferrule Cleaner
Z0915A	Replacement Reel for Ferrule Cleaner
Z0284	Adapter Cleaner (Stick Type)
B0640A*6	Carrying Case
B0641A	Rack Mount Kit
J0008	GPIB Cable, 2.0 m
Z0541A	USB Mouse
Z0975A	Keyboard (USB)

*1: CD contains Operation Manual for Main Frame and Remote Control.

*2: One free specified optical connector for optical input port.

*3: When Light Source For Wavelength Calibration option selected, one more connector specified in (2) supplied free.

*4: Executing wavelength calibration with this option secures ± 20 pm (1520 nm to 1620 nm) accuracy. The MS9740A supports wavelength calibration with the external light source, such as DFB-LD, but this option assures higher accuracy. Refer to the specifications for details.

*5: Exchangeable-type optical connectors for optical input port and wavelength calibration light source output port.

*6: The Carrying Case includes a Front Panel Protective Cover.

Ordering Configuration

- (1) MS9740A Optical Spectrum Analyzer
- (2) MS9740A-040 SC Connector
- (3) MS9740A-001 GPIB Interface
- (3) MS9740A-002 Light Source for Wavelength Calibration
- (4) J0617B Optical Connector Adapter (FC) × 2 pcs

- When ordering the main frame, specify model name (1) and one connector from (2).
- Two SC connectors specified in (2) supplied free when light source for wavelength calibration option selected in (3).

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