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Related Agilent Literature

8163A
Lightwave Multimeter
Ordering Guide,
p/n 5968-3582E

8163A
Lightwave Multimeter
Technical Specifications,
p/n 5962-9321E

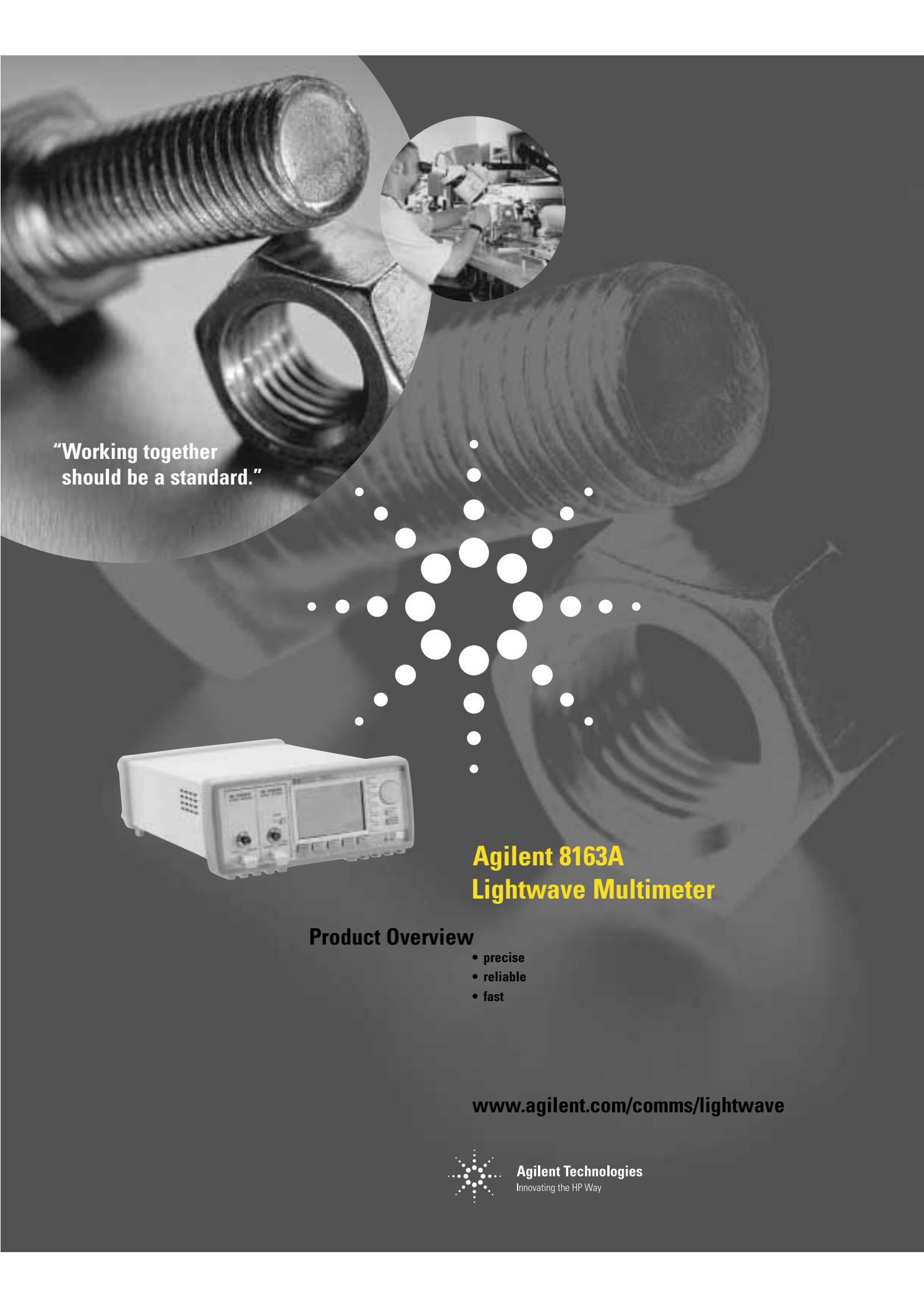
8163A
Lightwave Multimeter
Configuration Guide,
p/n 5968-3581E

Technical data is subject to change
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Printed in Germany 12/99 (B.O.L.A.Y. GmbH)
P/N 5968-3404E



Agilent Technologies

Innovating the HP Way



"Working together
should be a standard."



Agilent 8163A Lightwave Multimeter

Product Overview

- precise
- reliable
- fast

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High Bandwidth

The New Standard

The Agilent 8163A Lightwave Multimeter is a basic measurement tool in the fiber optic industry. It ensures accurate and fast results, even for your most demanding measurements on optical components and systems.

The 8163A Lightwave Multimeter is the successor to the highly popular 8153A Lightwave Multimeter. It builds on all the key attributes that made the 8153A Lightwave Multimeter the standard in Research and Development and in Manufacturing.

Its modular format makes it flexible enough to meet your changing measurement needs, whether you are measuring optical power, insertion loss or return loss for single- or multimode components.

The lightwave multimeter system includes the mainframe and a variety of plug-in modules for set-ups requiring:

- single or dual channel power meters,
- single or dual fixed light sources,
- compact tunable laser modules

Features and Benefits

The 8163A Lightwave Multimeter helps ease your work-load by offering several advanced functions that turn your 8163A into a powerful measurement system.

Without needing an external controller, built-in application software guides you through the step-by-step procedures needed for measurement tasks such as measuring loss, monitoring stability or logging data.

For example, for long term monitoring you only need to input the total measurement time and the averaging time per sample – the 8163A Lightwave Multimeter does the rest. After the test is complete, the result can be displayed numerically or graphically on the display or the result can be sent to a printer.

You can easily integrate the 8163A Lightwave Multimeter into your test environment by using plug & play drivers over GPIB, or by using the configurable hardware input and output trigger ports.



"The Agilent family of optical component test equipment. Because working together should be a standard."

**Best possible
measurement results**



**Precise, sensitive, stable and fast
power measurements**

You can be sure of the best possible measurement results thanks to the excellent accuracy, high linearity and low polarization dependent loss (PDL) of our full range of power sensors and optical heads.

To meet your test requirements, our range of sensors and heads cover the important wavelengths and power ranges you need. And you will like the measurement speed which can come down to 100 μ s. A broad variety of advanced interfaces and adapters makes it easy to connect your test devices.

To help you work efficiently and quickly and to increase your throughput and yield, the input ports are designed to eliminate multiple reflections – the cause of many measurement errors.

**Measurements requiring a stable
fixed source**

To take the uncertainty out of monitoring loss over long periods of time, Agilent's sources are stabilized and very insensitive to backreflections.

For your convenience there are single and dual wavelength source modules, available with an output power of up to +13 dBm. The output power of the sources can be attenuated for applications where you need lower power levels.

Measurements requiring a tunable source

If you need to make measurements at various fixed wavelengths, or if the test device must be characterized as a function of wavelength, then the compact tunable laser module is the ideal candidate for your test needs.

In combination with a power sensor or an optical head you can setup a complete measurement system for wavelength dependent loss.



**The Agilent 8163A Lightwave
Multimeter allows engineers to
count on the accuracy of their
measurements more than ever.**

DWDM
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Upgradable Firmware

To protect your investment for the future, the Agilent 8163A Lightwave Multimeter is designed for easy firmware upgrades as new modules and features become available.

Compatibility

To protect your existing investment the 8163A mainframe is compatible with the modules from the 8153A Lightwave Multimeter series.

Also you can use both the modules of the 8163A and 8153A series together in the 8163A Lightwave Multimeter Mainframe.

The programming syntax used by the 8163A Multimeter mainframe is compatible with the 8164A Lightwave Measurement System (the tunable laser family), the 8166A Lightwave Multichannel System and with the 8153A Lightwave Multimeter.

The 8163A mainframe is compatible in height and width with the 8153A series, making it easy for you to add or substitute the 8163A to your rack systems.



**"Working together
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**Flexible enough to meet changing
measurement needs.**

High Precision

High Precision

Selected Specifications¹⁾

8163A Lightwave Multimeter

Display: Graphical display, monochrome

Interfaces: GPIB, RS232C, Parallel Printer Interface (Centronics)

Programming*: SCPI Standard, compatible with programming syntax of 8164A Lightwave Measurement System, 8166A Lightwave Multichannel System, 8153A Lightwave Multimeter.



*for details please refer to Programming guide P/N 08164-91016

Agilent Power Sensor Modules	81632A (InGaAs)	81635A (InGaAs) dual	81633A (InGaAs)	81634A (InGaAs)
Wavelength Range	800 nm to 1650 nm		800 nm to 1700 nm	
Power Range	+10 dBm to -80 dBm		+10 dBm to -90 dBm	+10 dBm to -110 dBm
Uncertainty (accuracy) at reference conditions	<±3% (1200 nm to 1630 nm)		<±2.5% (1000 nm to 1630 nm)	
Relative Uncertainty due to Polarization due to Spectral Ripple	typ ±0.015 dB typ ±0.015 dB		<±0.005 dB <±0.005 dB	
Linearity (power) at 23°C ±5°C	(CW +10 dBm to -60 dBm) <±0.02 dB ±20 pW		(CW +10 dBm to -70 dBm) <±0.015 dB ±2 pW	(CW +10 dBm to -90 dBm) <±0.015 dB ±0.2 pW

Agilent Optical Heads ²⁾	81623A (Ge, ø 5 mm)	81624A (InGaAs, ø 5 mm)	81625A (InGaAs, ø 5 mm)
Wavelength Range	750 nm to 1800 nm	800 nm to 1700 nm	850 nm to 1650 nm
Power Range	+10 dBm to -80 dBm	+10 dBm to -90 dBm	+20 dBm to -80 dBm
Uncertainty (accuracy) at reference conditions	<±2.2% (1000 nm to 1650 nm)	<±2.2% (1000 nm to 1630 nm)	<±2.5% (950 nm to 1630 nm)
Relative Uncertainty due to Polarization due to Spectral Ripple		≤±0.005 dB (typ. ±0.002 dB)	≤±0.005 dB (typ. ±0.002 dB)
Linearity (power) at 23°C ±5°C	(CW +10 dBm to -60 dBm) <±0.025 dB ±100 pW	(CW +10 dBm to -70 dBm) <±0.02 dB ±5 pW	(CW +20 dBm to -60 dBm) <±0.02 dB ±100 pW

¹⁾ For full specifications, and the test conditions, see the Technical Specifications p/n 5962-9321E

²⁾ All optical heads have to be operated with the single (81618A) or dual (81619A) Interface Module.

Agilent Standard Source Modules (Fabry-Perot Laser)	81650A	81651A	81652A	81654A
Center Wavelength	1310 nm ±15 nm	1550 nm ±15 nm	1550 nm/1625 nm ±15 nm	1310 nm/1550 nm ±15 nm
Output Power	>0 dBm			
Short term (15 min) CW power stability	<±0.005 dB typ <±0.003 dB with coherence control active			
Long term (24 h) CW power stability	typ ±0.03 dB			
CW power stability to back reflection (RL ≥14 dB)	typ ±0.003 dB			

Agilent High Power Source Modules (Fabry-Perot Laser)	81655A	81656A	81657A
Center Wavelength	1310 nm ±15 nm	1550 nm ±15 nm	1310 nm/1550 nm ±15 nm
Output Power	>+13 dBm		
Short term (15 min) CW power stability	<±0.005 dB typ <±0.003 dB with coherence control active		
Long term (24 h) CW power stability	typ ±0.03 dB		
CW power stability to back reflection (RL ≥14 dB)	typ ±0.003 dB		



Compact Tunable Laser Source Module	81689A
Wavelength Range	1525 nm to 1575 nm
Output Power	≥+6 dBm
Power Stability	±0.03 dB
Signal to Source Spontaneous Emission Ratio (typ.)	≥39 dB/nm
Wavelength Repeatability	±0.05 nm
Wavelength Stability (typ., 24h)	<±0.02 nm

Connection to Test Devices

The 8163A Lightwave Multimeter supports a wide range of fiber connectors. For details please refer to the 8163A Configuration Guide. This gives information on the connector interfaces and bare fiber adapters for use with these modules, as well as the filter holders, filters, lenses and connector adapters required for the optical heads.

Ordering Information

The 8163A Mainframe has two slots for any combination of the modules listed in this document, or modules of the 8153A Lightwave Multimeter series.

Connector interfaces should also be ordered for each input and output, as well as any bare fiber adapters you require.

If you want to use optical heads, you also need an interface module 81618A (single) or 81619A (dual) and you may need filter holders, filters, lenses and connector adapters.



**Agilent 8163A Lightwave Multimeter
Stimulus Response Solution**

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