Agilent
N7744A 4-Channel Optical Multiport Power Meter
N7745A 8-Channel Optical Multiport Power Meter

Data Sheet - PRELIMINARY

Agilent Technologies

General Information

Up to 8 power meter channels in a small package

Agilent's new N7744A and N7745A optical power meters with four or eight power-sensor channels provide manufacturing customers with increased throughput and operational efficiency to meet today's challenges in manufacturing.

Designed for optical multiport applications

Designed for characterizing optical multiport components, these optical power meters offer industry-leading solutions for device connectivity, high-speed measurement data acquisition and fast data transfer for postprocessing. The multiport power meter enables fast measurement solutions for all multiport devices; for example multiplexers, PON splitters, wavelength selective switches (WSS) and ROADMs, as well as compact setups for simultaneous testing of multiple single-port devices.

Save significant rack space

These power meters achieve a level of space-saving channel density that is new in the industry, and simplify fiber handling for many-port device testing. This is complemented by the ease of integrating multiple instruments into a single setup with LAN or USB connections.

A single N7744A/45A is only one rack unit high and a half rack unit wide.

A reliable four-port optical connection with the new one click quad-adapter

With this new power meter comes the unprecedented N7740 fiber connectivity concept, which is a quadruple adapter with a snap-on quick-locking mechanism. The device to be tested can be connected to the quad-adapters in a comfortable ergonomic working position, even while the instrument is measuring another device.

The quad-adapters can be quickly snapped on to the instrument, to provide reliable and repeatable high-precision connections. Use of the quad-adapters simplifies aligning connector keys, especially for rack-mounted instruments and makes it easier to connect ports in the desired order, helping to avoid errors and connector damage.

This quad-adapter also fits into Agilent's standard bare fiber connectivity solutions 81000BI. The one click zeroing adapter N7740ZI allows quick and reliable 4-port zeroing of the new power meters.

Code compatible with your existing Agilent optical power meters

The new optical multiport power meter is code compatible with the Agilent optical power meter sensors and optical power meter heads. Simply replace up to eight existing single power meter modules with the new N7745A optical multiport power meter, adapt the new instrument configuration and run your existing application software.

Key benefits

10x faster than previous swept-wavelength measurement solutions:

- High-speed measurement data acquisition and transfer of up to 1 million samples/channel.

25x higher time resolution for transient analysis

- Short minimum averaging time of 1 µs

Unprecedented device connectivity (patented):

- Industry-leading solution to separate the connecting task from the measuring task
- Fibers can be comfortably attached to the quad-adapter away from the power meter
- The quad-adapter supports MU, FC, SC and LC connectors, as well as bare fiber connectors

Flexibility:

- The instrument can be controlled via LAN and USB, as well as GPIB for compatibility with existing equipment
- The comprehensive hardware and trigger concept along with its large memory storage gives the flexibility to adapt the power meter to many test needs
- The instrument programming code is compatible to the Lightwave solution platform.

Definitions

Generally, all specifications are valid at the stated operating and measurement conditions and settings, with uninterrupted line voltage.

Specifications (guaranteed)

Describes warranted product performance that is valid under the specified conditions.

Specifications include guard bands to account for the expected statistical performance distribution, measurement uncertainties changes in performance due to environmental changes and aging of components.

Typical values (characteristics)

Characteristics describe the product performance that is usually met but not guaranteed. Typical values are based on data from a representative set of instruments.

General characteristics

Give additional information for using the instrument. These are general descriptive terms that do not imply a level of performance.

Optical Multiport Power Meter Specifications

	Agilent N7744A, N7745A			
Sensor element	InGaAs			
Wavelength range	1250 nm to 1650 nm			
Specification wavelength range	1250 nm to 1625 nm (if not stated differently)			
Power range	-80 dBm to +10 dBm			
Maximum safe power	+16 dBm			
Data logging capability	1 million measurement points per port			
Averaging time	1 µs to 10 s			
Applicable fiber type	Standard SM and MM ≤ 62.5 µm core size, NA ≤ 0.24			
Uncertainty at reference conditions [f1] [f3]	typ. ≤ ±2.5%			
Total uncertainty [f2] [f4] [f8]	typ. ≤ ±4.5%			
Relative port to port uncertainty [f1] [f3] [f7] [f9]	typ. ≤ ±0.05 dB			
Linearity [f4] [f8] [f9] at (23±5)°C	≤ ±0.02 dB			
Polarization dependent responsivity (PDR) [f3] [f5]	±0.01 dB @ 1310 nm ± 30 nm and 1550 nm ± 30 nm typ. 0.008 dB overall			
Spectral ripple (due to interference) [f6]	±0.01 dB			
Drift (dark) [f9]	±20 pW			
Noise peak to peak (dark) [f3]	<20 pW (1 s averaging time, 300 s observation time)			
Dynamic range (logging mode) [f3] [f9]	Averaging time:	25 µs	100 µs	1 ms
PM range +10 dBm	typ.	>55 dB	>58 dB	>63 dB
0 dBm	typ.	>57 dB	>60 dB	>65 dB
-10 dBm	typ.	>57 dB	>60 dB	>65 dB
Frequency response	3 dB cutoff frequency at 1 µs averaging time			
-20 to +10 dBm range	220 kHz typ.			
-30 dBm range	28 kHz typ.			
Return loss [f3] [f11]	typ. > 55 dB			
Operating temperature	+5°C to +40°C			
Operating humidity	15% to 80%, non-condensing			
Storage conditions	-40°C to +70°C			
Warm-up time	20 min.			
Recommended recalibration period	24 months			
Dimensions	372 mm × 212 mm × 43 mm (excluding front and back rubber cushions)			
Weight	3 kg (6 lb)			

[f1] Reference conditions:

- Fiber 9 µm SMF
- Power level: -20 dBm to 0 dBm
- On day of calibration (add ±0.3% for aging over one year; add ±0.6% for aging over two years)
- Spectral width of source < 10 nm full-width half-maximum (FWHM)
- Wavelength setting of power sensor corresponds to source wavelength ± 0.4 nm

[f2] Operating conditions:

- Wavelength setting of power sensor corresponds to source wavelength ± 0.4 nm
- Spectral width <10 nm FWHM
- Within one year of calibration; add ±0.3% for second year
- Single-mode fiber. For multimode fiber, typical

[f3] Ambient temperature (23 ± 5)°C

[f4] Excluding noise and offset drift

[f5] Straight connector

[f6] For constant state of polarization, source linewidth >100 MHz, angled connector 8°, wavelength range 1520 nm to 1625 nm. Typical for 1250 nm to 1520 nm. Add ±0.01 dB typ. for straight connector with ceramic ferrule.

[f7] Same connector plug, same wavelength

[f8] Power range -50 dBm to +10 dBm

[f9] Temperature constant within ±1K after zeroing

[f11] Connector 8° angled, ceramic ferrule, SMF, 1310 nm ± 30 nm and 1550 nm ± 30 nm

Ordering informations

All systems have 1 year warranty.

N7744A, N7745A ordering options

N7744A	Optical Multiport Power Meter (4 channel)
N7745A	Optical Multiport Power Meter (8 channel)
includes: USB and cross-over LAN cabels	

Accessories

N7740FI	FC Connector Adapter for Optical Multiport Power Meter
N7740KI	SC Connector Adapter for Optical Multiport Power Meter
N7740LI	LC Connector Adapter for Optical Multiport Power Meter
N7740MI	MU Connector Adapter for Optical Multiport Power Meter
N7740BI	Bare Fiber Connector Adapter for Optical Multiport Power Meter
N7740ZI	Blank Zeroing Connector Adapter for Optical Multiport Power Meter

Service and Repair

R-51B-001-C	1 year Return-to-Agilent warranty
R-51B-001-3C	1 year Return-to-Agilent warranty extended to 3 years
R-51B-001-5C	1 year Return-to-Agilent warranty extended to 5 years
R-50C-011-3	Agilent calibration up front support plan 3 year coverage
R-50C-011-5	Agilent calibration up front support plan 5 year coverage

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Remove all doubt

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