

KEYSIGHT TECHNOLOGIES (AGILENT HP)

81633A

The Keysight (Agilent) 81633A is a high-performance optical power sensor module designed for use with the Keysight 816x series Lightwave Multimeters. Featuring a 5 mm InGaAs sensor element, it covers a broad wavelength range of 800 nm to 1700 nm with a power measurement range from -90 dBm to +10 dBm. It offers exceptional linearity, extremely low polarization dependence, and a front-panel analog output, making it highly suitable for precise optical component characterization.

SPECIFICATIONS

General

Interfaces	Mainframe proprietary slot interface; Front-panel BNC analog output
Display	None (uses mainframe display)

Physical

Power Supply	Powered directly via mainframe slot
Operating Temperature	0 °C to 40 °C °C
Dimensions (W×H×D)	75 mm × 32 mm × 282 mm mm
Weight	0.5 kg

Sensor Technology & Architecture

Sensor Element	InGaAs (Indium Gallium Arsenide)
Sensor Diameter	5 mm
Number of Channels	1

Measurement Ranges & Power Specifications

Wavelength Range	800 nm to 1700 nm
Power Measurement Range	-90 dBm to +10 dBm
Maximum Safe Input Power	+16 dBm

Accuracy, Calibration & Noise

Uncertainty at Reference Conditions	±2.5% (at 1310 nm and 1550 nm)
Reference Conditions	1310 nm & 1550 nm, -20 dBm, 23 °C ± 5 °C, SM 9/125 µm fiber, non-condensing
Linearity (-70 to +10 dBm)	< ±0.015 dB (1200 nm to 1630 nm, 23 °C ± 5 °C)
Linearity (-80 to -70 dBm)	< ±0.03 dB (1200 nm to 1630 nm, 23 °C ± 5 °C)
Linearity (-90 to -80 dBm)	< ±0.15 dB (1200 nm to 1630 nm, 23 °C ± 5 °C)
Total Uncertainty (1000 to 1630 nm)	±4.0% (±3.0% typical)
Total Uncertainty (800 to 1000 nm)	±6.5% (±5.0% typical)
Total Uncertainty (1630 to 1700 nm)	±6.5% (±5.0% typical)
Polarization Dependence	< ±0.01 dB (typical, 1200 nm to 1630 nm)
Spectral Ripple	< ±0.01 dB (typical, 1200 nm to 1630 nm, with patchcord)

Triggering & Sampling

Minimum Averaging Time	100 µs
Maximum Averaging Time	10 s

Connectivity & Host Interfaces

Analog Output Voltage Range	0 to 2 V into open circuit
Analog Output Impedance	10 kΩ (typical)
Analog Output Bandwidth	DC to 5 kHz (typical)

RF Port Characteristics

Optical Connector Interface	Requires Keysight 81000xx series connector adapter
Return Loss (Straight SM 9/125 µm)	> 40 dB (typical)
Return Loss (Angled SM 9/125 µm)	> 55 dB (typical)

Meter Compatibility & System Integration

Compatible Mainframes	Keysight 8163A, 8163B, 8164A, 8164B, 8166A, 8166B
Module Slot Occupancy	1 slot
Recommended Calibration Cycle	2 years

Environmental Parameters

Storage Temperature Range	-40 °C to +70 °C
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Operating Conditions

Warm-up Time	20 min
Operating Humidity	15% to 95% R.H. (non-condensing, up to 40 °C)

Measurement Capabilities

Logging Capacity	20000 points
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Performance

Noise (Peak-to-Peak)	< 15 fW (1250 nm to 1600 nm, 1 s averaging time, constant temperature)
Dynamic Range	100 dB

Optical Input

Compatible Connector Adapters	Keysight 81000xI series (FC, SC, ST, LC, MU, Bare Fiber, etc.)
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TECHNOLOGY

InGaAs Optical Power Sensor

APPLICATIONS

Fiber Optic Power Measurement, Component Characterization, Insertion Loss Measurement

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