KEYSIGHT TECHNOLOGIES (AGILENT HP)

81634A

The Keysight 81634A is a high-performance InGaAs optical power sensor module designed for use with the 8163A/B, 8164A/B, and 8166A/B optical mainframes. It features a large 5 mm detector diameter and offers exceptional power range, high linearity, and low noise, making it suitable for precise optical power measurements in both single-mode and multimode fiber applications.

SPECIFICATIONS

General

Interfaces	None (uses mainframe interfaces: GPIB, LAN, USB)
Display	None (uses mainframe display)
Warm-up Time	40 min
Recommended Calibration Interval	2 years

Physical

Power Supply	Powered by mainframe backplane slot
Operating Temperature	0 °C to +40 °C °C
Dimensions (W×H×D)	75 mm × 32 mm × 125 mm mm

Optical Characteristics

Sensor Element	Indium Gallium Arsenide (InGaAs)
Detector Diameter	5 mm
Wavelength Range	800 nm to 1700 nm
Power Measurement Range	-90 dBm to +10 dBm
Maximum Continuous Input Power	+16 dBm (40 mW)
Fiber Type Compatibility	Single-mode (9/125 µm) and Multimode (up to 100/140 µm, NA ≤ 0.3)
Optical Return Loss	> 55 dB

Accuracy & Calibration

Calibration Uncertainty at Reference Conditions	±2.5% (at 1310 nm and 1550 nm, 23 °C ±5 °C)
Spectral Uncertainty (1000 nm to 1600 nm)	±3.0%
Spectral Uncertainty (800 nm to 1700 nm)	±5.0%
Power Linearity (+10 dBm to -70 dBm)	±0.015 dB
Power Linearity (-70 dBm to -80 dBm)	±0.030 dB
Noise Peak-to-Peak	< 50 fW (1200 nm to 1600 nm, 1 s averaging time)
Zero Set	±50 fW
Zero Drift	±50 fW (over 1 hour at constant temperature)

Measurement & Acquisition

Averaging Time Range	100 µs to 10 s
Data Logging Memory Capacity	20,000 points

Physical & Mechanical

Optical Connector Adapter Type	Keysight 81000xI series (FC, SC, ST, LC, MU, bare fiber)
Module Slot Width	Single-slot module

System Integration

Compatible Mainframes	Keysight / Agilent 8163A/B, 8164A/B, 8166A/B

Environmental

Storage Temperature Range	-40 °C to +70 °C
Operating Humidity Range	15% to 95% R.H. (non-condensing)

Optical Performance

Polarization Dependence	< ±0.01 dB (1250 nm to 1580 nm)

Performance

Spectral Ripple due to Interference	< ±0.005 dB (typically, 1460 nm to 1620 nm)

Compliance & Standards

EMC Compliance	EN 61326-1
Safety Compliance	IEC 61010-1 / EN 61010-1

TECHNOLOGY

InGaAs Optical Power Sensor

APPLICATIONS

Fiber Optic Power Measurement