Optical Head Specifications

	81533B + 81520A	81533B + 81521B	81533B + 81521B Option 001[a]	81533B + 81524A	81533B + 81525A
Sensor Element	Si, 5 mm	Ge, 5 mm	Ge, 5 mm	InGaAs, 5 mm	InGaAs, 5 mm
Wavelength Range	450 to 1020 nm	900 to 1700 nm	900 to 1700 nm	800 to 1650 nm	800 to 1650 nm
Power Range	+10 to –100 dBm	+3 to –80 dBm	+3 to –64 dBm	+3 to –90 dBm	+27 to –70 dBm (1250 to 1650 nm) +23 to –70 dBm (800 to 1650 nm)
Uncertainty (Accuracy) **at Reference Conditions**[b]	±2.2% (600 to 1020 nm)	±2.2% (1000 to 1650 nm)	±2.2% (1000 to 1650 nm)	±2.2% (1000 to 1600 nm)	±3.0% (900 to 1600 nm)
Total Uncertainty[c]	±4% ±0.5 pW (600 to 1020 nm)	±4% ±50 pW (1000 to 1650 nm)	±4% ±600 pW (1000 to 1650 nm)	±4% ±5 pW (1000 to 1600 nm)	±5% ±500 pW (900 to 1600 nm)
Linearity (Power) 18° to 28°C, Constant Temp.	+3 to –80 dBm ±0.04 dB, ±0.5 pW	0 to –60 dBm ±0.04 dB, ±50 pW	0 to –44 dBm ±0.04 dB, ±600 pW	+3 to –70 dBm ±0.04 dB, ±5 pW	+10 to –50 dBm[d] ±0.04 dB, ±500 pW
Operating Temp. Range, Constant Temp.	±0.15 dB, ±0.5 pW	±0.15 dB, ±50 pW	±0.15 dB, ±600 pW	±0.15 dB, ±5 pW	±0.15 dB, ±500 pW[d]
Noise (Peak-to-Peak) (Avg. Time 1 second)	<0.5 pW (700 to 900 nm)	<50 pW (1200 to 1600 nm)	<600 pW (1200 to 1600 nm)	<5 pW (1000 to 1600 nm)	<500 pW (900 to 1600 nm)
Operating Temperature	0° to +40°C	0° to +40°C	0° to +40°C	0° to +40°C	0° to +35°C[e]
Display Resolution	0.001 dB/dBm (0.0001 dB/dBm on printout), 0.01 to 10 pW (depending on power range) The display may vary by ±1 count; ±3 counts in –50 dBm range of sensor modules				
Applicable Fiber Type	Parallel beam, 9/125 µm to 100/140 µm, NA ≤0.3				
Dimensions	37.5 mm diameter, 140 mm length (1.5 in × 5.5 in)				
Weight	Net: 0.45 kg (1.0 lb)/ Shipping: 1 kg (2.2 lb)				
Recalibration Period	Two years				
Warm-up Time	20 minutes				

a. For single-mode fiber with NA ≤0.1, straight fiber end, 1250 to 1570 nm; polarization sensitivity: 0.003 dB p-p.
b. At the following reference conditions:
- Power level 10 µW (–20 dBm) CW.
- Parallel beam, 3 mm spot diameter on detector.
- Ambient temperature 23° ±5°C.
- At day of calibration (add 0.3% for aging over one year; 0.6% for two years).
- Spectral width of source <10 nm.

c. At the following operating conditions:
- Parallel beam, 3 mm spot on detector or connectorized fiber with NA ≤0.2.
- Ambient temperature 0° to +40°C, non-condensing.
- Within one year after calibration (add 0.3% for second year).

d. Add ±0.007 dB/dB between 10 and 27 dBm.
e. 30°C for >20 dBm input power.

Supplementary Performance Characteristics

Add 1% to total uncertainty for full wavelength range.
Outside the specified wavelength range, the noise will increase by up to five times the values shown in this table.
For fiber applications with NA between 0.2 and 0.3, use specific lenses and add 0.5% uncertainty for the 850 ±50 nm, 1300 ±50 nm, and 1550 ±50 nm ranges.

Analog Output	
Bandwidth	*≥dc, ≤300 to 1000 Hz, depending on range and optical head*
Output Voltage	*0 to 2 V into open*
Output Impedance	*600Ω typical*
Maximum Input Voltage	*±10 V*