

## KEYSIGHT TECHNOLOGIES (AGILENT HP)

# 8153A

The Keysight (formerly HP/Agilent) 8153A Lightwave Multimeter is a modular mainframe designed for precise optical power, loss, and return-loss measurements. Supporting up to two plug-in modules or optical head interfaces, this dual-channel system offers a flexible platform with NIST-traceable calibration, making it an essential standard for optical component evaluation in laboratory and production environments.

### SPECIFICATIONS

#### General

|            |                                                                                            |
|------------|--------------------------------------------------------------------------------------------|
| Interfaces | HP-IB (IEEE-488.2 / GPIB)                                                                  |
| Display    | Dual-channel LCD; six-digit main display and eight-character auxiliary display per channel |

#### Mainframe System Specifications

|                                  |                                     |
|----------------------------------|-------------------------------------|
| Number of Module Slots           | 2 slots                             |
| Display Power Range              | +30 to -110 dBm                     |
| Data Acquisition Memory Capacity | 500 measurement results per channel |

#### Optical Power Sensor Module Specifications

|                                               |                                                   |
|-----------------------------------------------|---------------------------------------------------|
| Power Sensor Wavelength Ranges                | 450 to 1020 nm, 800 to 1700 nm (sensor dependent) |
| Power Sensor Display Resolution (Logarithmic) | 0.001 dB / 0.001 dBm                              |
| 81530A Wavelength Range                       | 450 to 1020 nm                                    |
| 81530A Power Measurement Range                | +3 to -100 dBm                                    |
| 81531A Power Measurement Range                | +3 to -90 dBm                                     |
| 81532A Power Measurement Range                | +3 to -110 dBm                                    |
| 81536A Power Measurement Range                | +3 to -70 dBm                                     |

#### Optical Head Specifications

|                                               |                                                |
|-----------------------------------------------|------------------------------------------------|
| Optical Head Wavelength Ranges                | 450 to 1020 nm, 900 to 1700 nm, 800 to 1650 nm |
| Optical Head Display Resolution (Logarithmic) | 0.001 dB / 0.001 dBm                           |

#### Interfaces & Connectivity

|                              |                    |
|------------------------------|--------------------|
| GPIB Interface Compatibility | HP-IB (IEEE-488.2) |
|------------------------------|--------------------|

#### Environmental & Safety Compliance

|                           |               |
|---------------------------|---------------|
| Storage Temperature Range | -40 to +70 °C |
|---------------------------|---------------|

## Analog Output

|                             |                                      |
|-----------------------------|--------------------------------------|
| Analog Output Voltage Range | 0 V to 2 V (into open circuit)       |
| Analog Output Impedance     | 600 $\Omega$ (nominal)               |
| Analog Output Bandwidth     | $\geq 10$ Hz (sensor/head dependent) |

## Power Requirements

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| Power Consumption     | 55 VA max.                                                 |
| Line Voltage Settings | 100 V / 120 V / 220 V / 240 V RMS ( $\pm 10\%$ switchable) |

## Environmental

|                          |                                 |
|--------------------------|---------------------------------|
| Operating Humidity Range | < 95% R.H. (from 0 °C to 40 °C) |
|--------------------------|---------------------------------|

## Interfaces

|                        |                                               |
|------------------------|-----------------------------------------------|
| GPIO Interface Subsets | SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0 |
|------------------------|-----------------------------------------------|

## Measurement Capabilities

|                               |                |
|-------------------------------|----------------|
| Wavelength Setting Range      | 450 to 1700 nm |
| Wavelength Setting Resolution | 1 nm           |

## Mainframe Display

|                               |                  |
|-------------------------------|------------------|
| Simultaneous Display Channels | Up to 2 channels |
|-------------------------------|------------------|

## Power Sensor Modules

|                         |                   |
|-------------------------|-------------------|
| 81531A Wavelength Range | 800 nm to 1700 nm |
| 81532A Wavelength Range | 800 nm to 1700 nm |
| 81536A Wavelength Range | 800 nm to 1700 nm |

## Optical Heads

|                                         |                     |
|-----------------------------------------|---------------------|
| 81520A Wavelength Range                 | 450 nm to 1020 nm   |
| 81521B Wavelength Range                 | 900 nm to 1700 nm   |
| 81524A Wavelength Range                 | 800 nm to 1650 nm   |
| 81525A Wavelength Range                 | 800 nm to 1650 nm   |
| 81533B & 81520A Power Measurement Range | +10 dBm to -100 dBm |
| 81533B & 81521B Power Measurement Range | +3 dBm to -80 dBm   |
| 81533B & 81524A Power Measurement Range | +3 dBm to -110 dBm  |

## Source Modules

|                               |                                             |
|-------------------------------|---------------------------------------------|
| Source Modulation Frequencies | 270 Hz, 1 kHz, 2 kHz (internal square wave) |
|-------------------------------|---------------------------------------------|

## Compliance & Safety

|                    |                                                                       |
|--------------------|-----------------------------------------------------------------------|
| Laser Safety Class | Class 1 (with most source modules), up to Class 3A (module dependent) |
|--------------------|-----------------------------------------------------------------------|

## TECHNOLOGY

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Fiber Optic Measurement

## APPLICATIONS

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Optical power, insertion loss, and return loss characterization of fiber-optic components

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