The Instrument at a Glance

The HP 83485A optical/electrical plug-in module provides:

- 12.4 GHz and 20 GHz optical channel
- 12.4 GHz and 20 GHz electrical channel
- Switchable SDH/SONET filter for transceiver compliance testing
- Trigger channel input to the mainframe

The HP 83485B optical/electrical plug-in module provides:

- 30 GHz optical channel
- 18 GHz and 40 GHz electrical channel
- Switchable SDH/SONET filter for transceiver performance testing
- Trigger channel input to the mainframe

Specifications

The following are specifications used to test the HP 83485A/B plug-in module. Specifications are valid after a 1 hour warm-up period. See the *HP 54701A Active Probe Service Guide* for complete probe specifications.

Vertical specifications

HP 83485A Electrical Channel Vertical Specifications

Bandwidth (−3 dB) on electrical or optical channel	dc to 12.4 or 20 GHz, user selectable
dc Accuracy—single marker (<5°C temp. change from last user vertical cal.)	
12.4 GHz	±0.4% of full scale ±2 mV ±1.5% of reading-channel offset
20 GHz	±0.4% of full scale ±2 mV ±3% of (reading-channel offset)
dc Difference—two marker accuracy on same channel (<5°C temp. change from last user vertical cal.)	
12.4 GHz	±0.8% of full scale ±1.5% of delta reading
20 GHz	±0.8% of full scale ±3% of delta reading
Transition Time (10%–90%) characteristic, calculated from T=0.35/BW, electrical	
12.4 GHz	*28.2 ps*
20 GHz	*17.5 ps*
Maximum RMS Noise	
12.4 GHz	0.5 mV (0.25 mV typical)
20 GHz	1.0 mV (0.5 mV typical)
Scale Factor	full scale is eight divisions
Minimum	1 mV/div
Maximum	100 mV/div
Display Resolution	256 points
dc Offset Range	±500 mV
Nominal Input Impedance	50 Ω
Connectors	3.5mm (m), channel and trigger
Input Reflection/Return Loss	≤5% for 30 ps rise time
Number of Channels	1
Dynamic Range/Maximum Specified Input Power	±400 mV relative to channel offset
Maximum Safe Input	±2V + peak ac (+16 dBm)

HP 83485A Optical Channel Vertical Specifications

Bandwidth (−3 dB) on electrical or optical channel	dc to 12.4 or 20 GHz (user selectable)
dc Accuracy—single marker (<5°C temp. change from last user vertical cal.)	
12.4 GHz, filtered[1]	±25 μW ±2% of reading-channel offset
20 GHz,[1]	±25 μW ±4% of reading-channel offset
dc Difference—two marker accuracy on same channel (<5°C temp. change from last user vertical cal.)	
12.4 GHz, filtered[1]	±2% of delta reading
20 GHz[1]	±4% of delta reading
Transition Time (10%–90%) characteristic, calculated from T=0.48/BW, optical	
12.4 GHz	*40 ps*
20 GHz	*25 ps*
STM-16/OC-48 filter	*190 ps*
STM-4/OC-12 filter	*750 ps*
Maximum RMS Noise	
12.4 GHz, filtered	12 μW (8 μW typical)
20 GHz	25 μW (15 μW typical)
Scale Factor	full scale is eight divisions
Minimum	20 μW/div
Maximum	500 μW/div
Display Resolution	256 points
dc Offset Range	+1 to −3 mW (referenced two divisions below center screen)
Connectors	User selected option, 9/125 μm single mode fiber
Input Reflection/Return Loss	>33 dB for HMS-10/HP interface connector
Filtered Response	Measured response conforms to ITU-TS G.957 and GR-253-CORE for STM-16, OC-48 (Option 034) or STM-4, OC-12 (Option 032)

1 Referenced to average power meter.

HP 83485A Optical Channel Vertical Specifications (continued)

Calibrated Wavelengths	1310 nm and 1550 nm
Average power Monitor	
Specified Operating Range	−30 dBm to +3 dBm (1 μW to 2 mW)
Factory Calibrated Accuracy (20° C-30° C)	±5% of reading ±100 nW ± connector uncertainty
User Calibrated Accuracy[1] <5° C temp change	±2% of reading ±100 nW ± power meter accuracy
Number of Channels	1
Dynamic Range/Maximum Specified Input Power	2 mW
Maximum Safe Input	10 mW peak
Wavelength Range	1200-1600 nm

1 A user calibration can be performed with average optical power levels from 100 to 2000 μW, however, the instrument optical accuracy specification is only vaild for average optical calibration powers form 500 to 2000 μW.

HP 83485B Electrical Channel Vertical Specifications

Bandwidth (−3 dB)	dc to 40 GHz, or dc to 18 GHz (user selectable)
dc Accuracy — single voltage marker	
18 GHz	±0.4% of full scale or marker reading (whichever is greater) ±2 mV ±1.5% of (reading-channel offset).
40 GHz	±0.4% of full scale or marker reading (whichever is greater) ±2 mV ±3% of (reading-channel offset).
Transition Time (10% to 90%, calculated from T=0.35/bandwidth)	*≤9 ps (40 GHz BW)* *≤19.5 ps (18 GHz BW)*
Maximum RMS Noise	
18 GHz	≤0.5 mV (0.25 mV typical)
40 GHz	1.0 mV (0.5 mV typical)
Scale Factor (full scale is eight divisions)	
Minimum	1 mV/div
Maximum	100 mV/div
dc Offset Range	±500 mV
Inputs:	
Dynamic Range	±400 mV relative to channel offset
Maximum Safe Input Voltage	*16 dBm peak ac ±2V dc*
Nominal Impedance	50 Ω
Reflections	≤5% for 20 ps rise time
Connector	2.4mm (m)

HP 83485B Optical Channel Vertical Specifications

Bandwidth (−3 dB)	dc to 30 GHz
dc Accuracy (Optical channel referenced to average power meter)	±50 μW ±4% of (reading-channel offset)
dc Difference (two marker accuracy, same channel, referenced to average power monitor)	±4% of delta reading
Transition Time (10% to 90%), calculated from T=0.48/bandwidth, optical	*<16 ps*
Maximum RMS Noise	<30 μW (<15 μW typical)
Scale Factor (full scale is eight divisions)	
Minimum	20 μW/div
Maximum	500 μW/div
dc Offset Range	+1 mW to −3 mW, referenced to two divisions above bottom of screen
Connector Type	9/125 μm single mode, user selectable connector option
Input Return Loss	30 dB (HMS-10/HP connector)
Filtered Bandwidth	Fourth or fifth order Bessel-Thomson filter, 3 dB frequency 7.465 GHz
Calibrated Wavelengths	1310 nm and 1550 nm
Average Power Monitor	
Specified Operating Range	−27 dBm to +3 dBm (2 μW to 2 mW)
Factory Calibrated Accuracy (20°C to 30°C)	±5% of reading ±100 nW ± connector uncertainty
User Calibrated Accuracy (<5°C temp change)	±2% of reading ±100 nW ±power-meter uncertainty
Maximum Specified Input Power	*2 mW*
Maximum Safe Input	*10 mW peak*
Wavelength Range	*1000 to 1600 nm*

Environmental specifications

Electrical and Optical Channels	
Temperature	
Operating	15°C to +35°C
Non-operating	−40°C to +70°C
Humidity	
Operating	up to 90% relative humidity at ≤35°C
Non-operating	up to 90% relative humidity at <35°C

Power Requirements
Supplied by mainframe.

Weight	
Net	approximately 1.2 kg (2.6 lb.)
Shipping	approximately 2.1 kg (4.6 lb.)

Characteristics

The following characteristics are typical for the HP 83485A/B optical/electrical plug-in module. See the *HP 54701A Active Probe Service Guide* for complete probe characteristics.

Trigger input characteristics

Electrical and Optical Channels

Nominal Impedance	*50 Ω*
Input Connector	*3.5 mm (m)*
Trigger Level Range	*±1 V*
Maximum Safe Input Voltage	*±2 Vdc + ac peak (+16 dBm)*
Percent Reflection	*≤10% for 100 ps rise time*

Refer to the *HP 83480A, 54750A User's Guide* for trigger specifications.