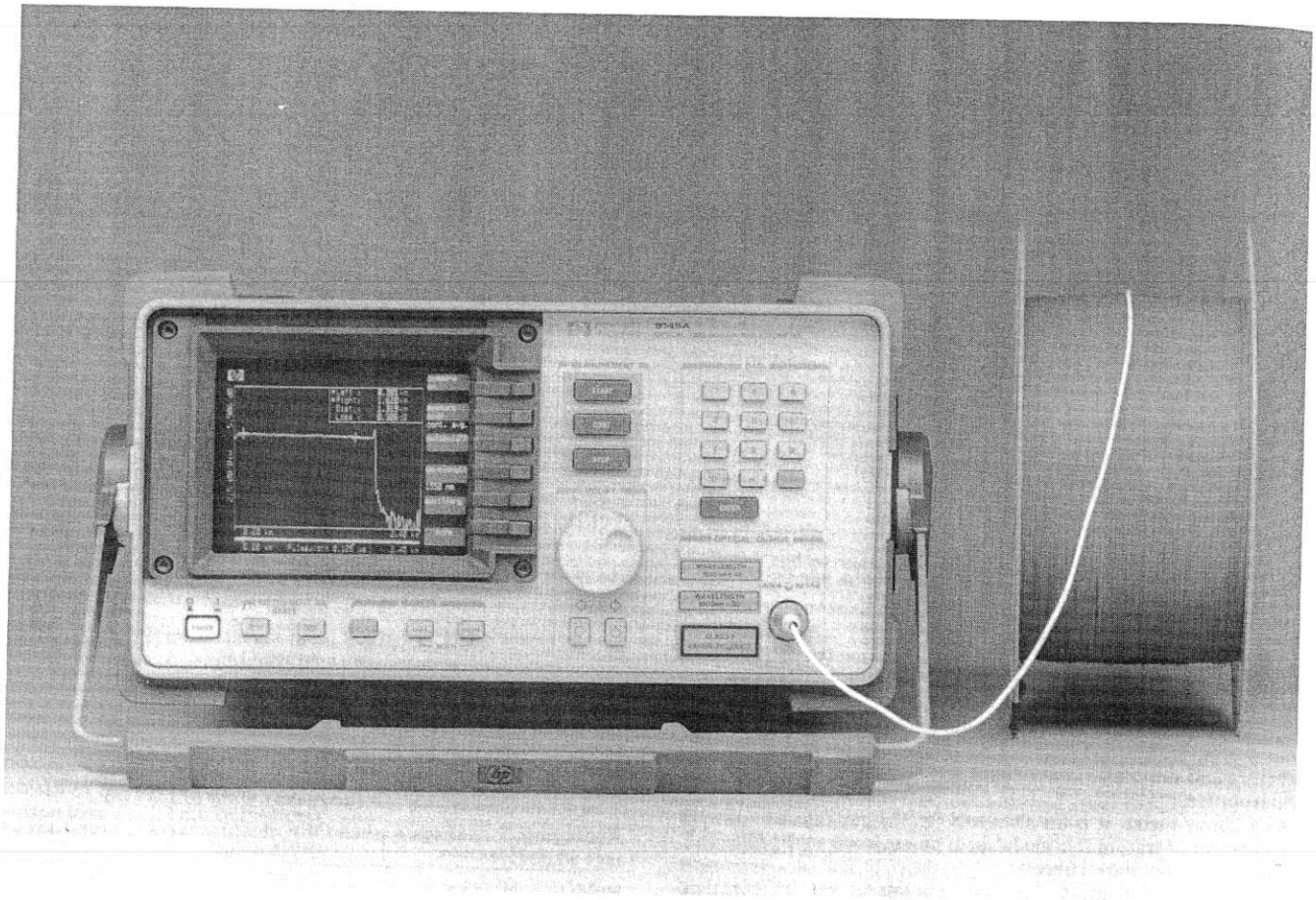
LIGHTWAVE TEST EQUIPMENT

Optical Time Domain Reflectometer

HP 8145A option 002 (1300nm), option 003 (1550nm), option 023 (1300nm/1550nm)

- Dynamic range of 28 dB (1300 nm)/26 dB (1550 nm) with single-mode fiber
- Customer-installable laser modules (1300 nm or 1550 nm)
- Easy-to-learn softkey-guided menu concept
- Non-volatile memory for more than 100 waveforms
- Rugged and light-weight



HP 8145A

DESIGNED FOR HP-IB SYSTEMS

The HP 8145A is a high-performance optical time domain reflectometer for field maintenance and bench applications. A unique data correlation technique increases the dynamic range to more than 28 dB at 1300 nm (26 dB at 1550 nm, regardless, whether the 1300 nm module is installed) single-mode and drastically reduces the measurement time.

For field maintenance, the HP 8145A features lightweight and rugged design. It can be operated on batteries (12 to 30 V dc), due to its low power consumption, or mains (90 to 260 V ac). Display resolution is 0.01 dB and 1m over the entire range of 200 km.

You no longer need unhandy dataloggers and external disk drives, which are sensitive to temperature changes, humidity, and dust. A plug-in non-volatile memory module (HP 81450A) stores more than 100 traces, each with all related measurement information. If immediate documentation is required, any data set can be directly printed or plotted out using a Thinkjet printer, Quietjet printer, or any HP-IB plotter without a controller.

For bench applications, including performance tests on optical fibers and cables in design and production, the HP 8145A OTDR offers an excellent set of features.

Any previously taken trace can be recalled as reference and compared against the presently sampled one. This ensures fast and easy detection of inhomogeneities and attenuation changes.

The HP 8145A has an easy-to-learn softkey guided operating concept. The user can blank unwanted keys for even easier operation. The OTDR is also fully HP-IB programmable.

By means of two optional laser modules the HP 8145A operates at either of the wavelengths 1300 nm, 1550 nm or both. The laser modules are user-installable.

Several exchangeable connector options are available, which allow easy access to the optical output for cleaning.

HP 8145A Specifications

Optical Characteristics (single-mode fiber)

	option 002	option 003	option 023
Wavelength	1300±30 nm	1540±30 nm	both wavelength
Dynamic range one way backscatter (SNR=1)	28 dB	26 dB	28/26 dB
Fresnel reflection (4%)	42 dB	40 dB	42/40 dB

Both wavelength options are user-installable. If both are installed in the HP 8145A, they are switch-selectable. Dynamic range figures are independent of number of options installed.
Measurement time: 22dB dynamic range after 10 seconds (16 dB after 1 second) at 1300nm on fiber without end reflection (worst case condition for break detection)
Pulsewidth: 125/250/500 ns/1/2/4/8 μs
Output connector: customer-exchangeable connector interfaces.

Horizontal Parameters

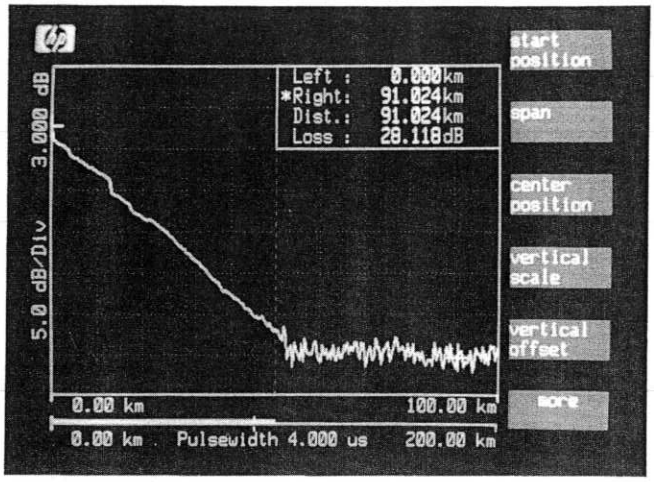
Start-km: 0.000 - 199.500 km (see "Resolution")
Span: 0.500 km - 200.000 km (see "Resolution")
Center-km: 0.250 km - 199.750 km (see "Resolution")
Resolution: 1m in all three cases for parameter setting and distance read-out
Accuracy: ±8 m, uncertainty of fiber refractive index not included, for 125 ns pulsewidth
Refractive index: 1.4000 - 1.5999, in steps of 0.0001 settable
Length correction: 1.000 - 4.000, in steps of 0.001 settable. Serves to enter actual ratio of fiber/cable length into the OTDR
Length unit: switch-selectable between km, miles and feet

Vertical Parameters

Vertical scale: 0.20 - 5.00 dB/div
Resolution: 0.01 dB for parameter setting, 0.001 dB for attenuation/loss read-out
Linearity: 0.05 dB/dB
Zoom: All combinations of horizontal and vertical parameters can be entered while the instrument is running. Serves to zoom in on any point of the waveform and allowing close examinations without interrupting the averaging process.

Documentation

Waveform memory: 12 waveforms and related instrument settings can be stored in the HP 8145A in non-volatile memory and recalled. More than 100 waveforms and related instrument settings can be stored in each HP 81450A Memory Module and recalled. The modules contain non-volatile memory and plug into the rearpanel of the HP 8145A.
ID codes: An identification code of up to 38 alpha-numerical characters can be entered for each memory location. All ID codes are displayed when the directory is called up.
Compare mode: Presently displayed waveform can be compared against any previously stored one, if the horizontal parameters are identical. Zooming capability is provided.
Hard copy: Any displayed or previously stored waveform can be output directly to a Thinkjet or Quietjet printer, or any HPGL plotter.
Instrument settings: storage and recall of 9 user-selectable instrument settings, recall of 1 standard setting.



General

CRT: 15 cm (6″), green
Laser safety class: Class 1
Recalibration period: 1 year

HP-IB Capability

All modes and parameters can be programmed
HP-IB interface function codes: SH1, AH1, T5, L3, SR1, RL1, PP0, DC1, DT1, C0
Environmental
Storage temperature: −40°C to +70°C
Operating temperature: −20°C to +65°C (−10°C to +55°C to meet specs)
Humidity: 95% R.H. from 0°C to +40°C
Power
dc: 12 - 30 V dc, 80 Wmax
ac: 100/120/220/240 Vrms ±10%, 90 VAmax, 48-400 Hz
Battery back-up (for non-volatile memory): with instrument switched off, all current modes and data will be maintained for at least 10 years at 25°C temp.
Dimensions: 190 H, 340 W, 465mm D (7.5″ x 13.5″ x 18.3″)
Weight: net, 16 kg (35.3 lbs); shipping, 22 kg (48.5 lbs)

Ordering Information

HP 8145A optical time domain reflectometer	$13,100
Opt 002 1300 nm	$10,800
Opt 003 1550 nm	$14,800
Opt 023 1300 nm/1550 nm	$21,800
Opt 050 dc power cable	$110
HP 81450A Memory module	$1,100

The connector-interfaces are available as additional accessories.
For adapter cables and other accessories see "Lightwave Test Accessories" on page 331.