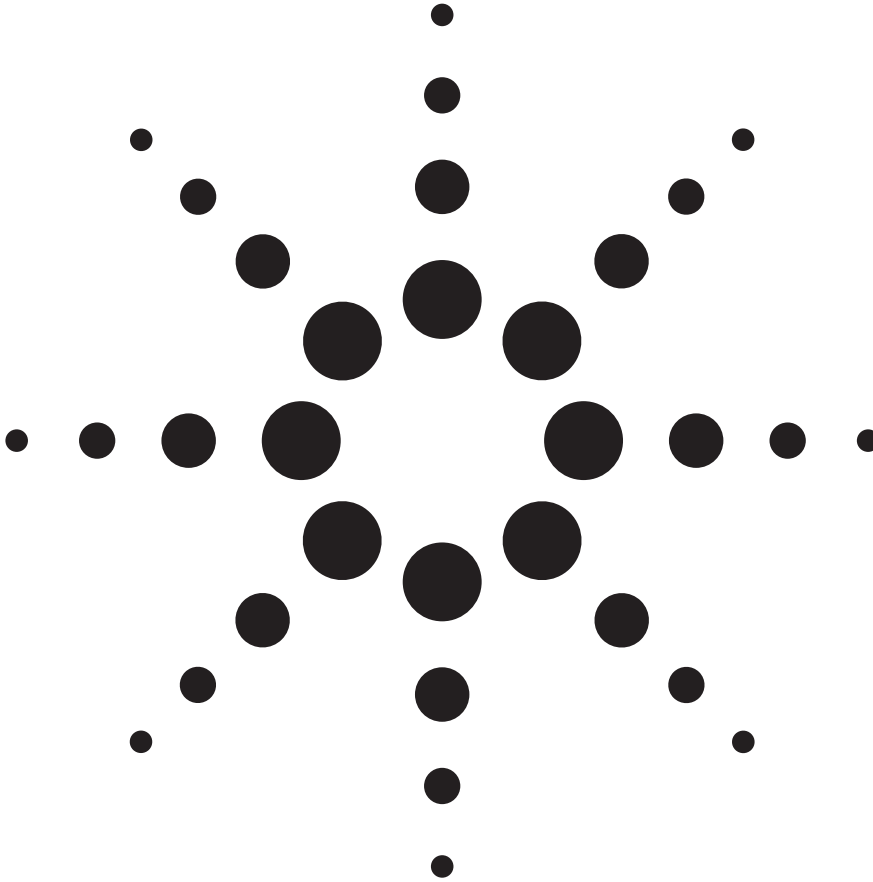


# Agilent Rack OTDR E6053A, E6058B E6059A/B, E6060A, E6062A Technical Specifications



Specifications describe the instrument's warranted performance, measured with typical PC-type connectors. Uncertainties due to the refractive index of the fiber are not considered. Characteristics and typical data provide information about the non-warranted instrument performance.

The Agilent Rack- OTDR is produced to the ISO 9001 international quality system standard as part of Agilent's commitment to continually increasing customer satisfaction through improved quality control.



**Agilent Technologies**

## Single-Mode Modules

### Agilent E6053A, E6058B; E6059A/B, E6060A and E6062A

#### Optical Performance <sup>[1]</sup>

Module	Agilent E6053A					Agilent E6058B				
Central wavelength	1310/1550 ± 25 nm					1310/1550 ± 25 nm				
Fiber type	single-mode					single-mode				
Pulsewidth	10 ns	100 ns	1 μs	10 μs	20 μs	10 ns	100 ns	1 μs	10 μs	20 μs
Dynamic range (dB) <sup>[2]</sup>	19/17	24/22	30/29	35/34	na	24/22	29/27	35/34	42/41	<b>45/43</b>

Module	Agilent E6059A					Agilent E6059B				
Central wavelength	1550 ± 25 nm					1550 ± 25 nm				
Fiber type	single-mode					single-mode				
Pulsewidth	10 ns	100 ns	1 μs	10 μs	20 μs	10 ns	100 ns	1 μs	10 μs	20 μs
Dynamic range (dB) <sup>[2]</sup>	17	22	29	37	<b>39</b>	22	27	34	41	<b>43</b>

Module	Agilent E6060A					Agilent E6062A				
Central wavelength	1625 ± 20 nm					1550/1625 ± 25/20 nm				
Fiber type	single-mode					single-mode				
Pulsewidth	10 ns	100 ns	1 μs	10 μs	20 μs	10 ns	100 ns	1 μs	10 μs	20 μs
Dynamic range (dB) <sup>[2]</sup>	18	24	30	<b>40</b>	na	22/18	27/24	34/30	41/40	<b>43</b>

In all Agilent OTDR single-mode modules, the following pulsewidths are selectable: 10 ns, 30 ns, 100 ns, 300 ns, 1 μs, 3 μs, 10 μs (20 μs is only selectable with the Agilent E6058B, E6059A, E6059B, E6062A@1550nm)  
 All Agilent OTDR modules are equipped with a CW-Source capability at the selected wavelength.  
 Typ. values are printed in **BOLD**.

#### Note:

<sup>[1]</sup> Guaranteed specifications measured at 22 °C ± 3 °C. Bold values are typical specifications.

<sup>[2]</sup> Measured with a standard single-mode fiber at SNR = 1 noise level and with 3 minutes averaging time. Optimize mode: dynamic.

## Characteristics

### Resolution

Module	all single-mode modules
Event deadzone <sup>[3]</sup>	<b>3m</b>
Attenuation deadzone <sup>[4]</sup>	<b>10m @ 1310nm / 12m @ 1550nm / 14m @ 1625nm</b>

### Distance accuracy

Offset error	Scale error	Sampling error
± 1 m	± 10 <sup>-4</sup>	± 0.5 sampling spacing

### Loss/reflectance accuracy

Backscatter measurements 1 dB steps	Reflectance measurements <sup>[7]</sup>
± 0.05 dB	± 2.0 dB

**Minimum sample spacing:** 8 cm.  
**Modulation:** 270 Hz, 1 kHz, and 2 kHz squarewave.  
**Pulsewidth:** selectable, from 10 ns to 20  $\mu$ s.

**CW-Source mode:**  
**Output power level:** -3dBm.  
**Stability:** <sup>[8]</sup>:  $\pm 0.1$  dB ( $\pm 0.15$  dB @ 1625 nm)

**General**

**Laser safety class:**  
 21 CFR Class I, IEC825 Class 3A.  
**Operating temperature:**  
 0 °C to +50 °C.  
**Storage temperature:**  
 -40 °C to +60 °C.  
**Humidity:** 95 % R.H. from 0 °C to +40 °C.  
**Recommended recalibration period:** 2 years

**Note:**

- <sup>[3]</sup> Reflectance  $\leq$  -35 dB at 10 ns pulsewidth, and with span  $\leq$  400 m at 8 cm sample spacing, optimize resolution.
- <sup>[4]</sup> Typical specification @ Reflectance  $\leq$  -50 dB at a pulsewidth of 30 ns, span  $\leq$  4 km.  
 Guaranteed specification @ Reflectance  $\leq$  -35 dB at a pulsewidth of 30 ns and with a span of  $\leq$  4 km. Optimize mode: resolution:  
 20m @ 1310 nm: Agilent E6053A & E6058B  
 25m @ 1550 nm: all single-mode modules  
 28m @ 1625 nm: Agilent E6060A / Agilent E6062A.
- <sup>[5]</sup> Distance accuracy: offset error + scale error \* distance + sampling error.
- <sup>[6]</sup> SNR  $\geq$  15 dB and with 1  $\mu$ s, averaging time maximum 3 minutes.
- <sup>[7]</sup> -20 dB to -60 dB.

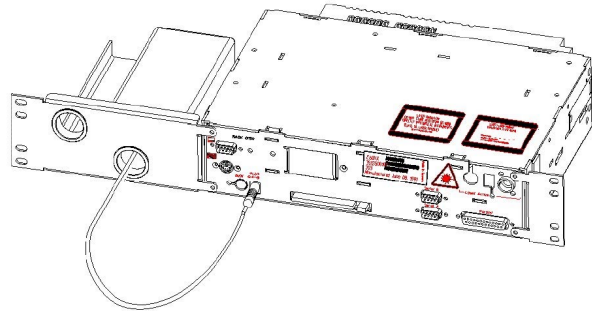


Figure 1: Rack OTDR with Rack Mount Kit and attached Power Supply

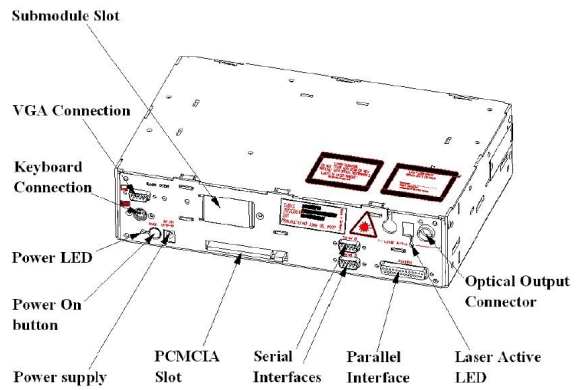


Figure 2: Rack OTDR front panel

## Horizontal parameters

**Start:** 0 km to 400 km.

**Span:** 0.1 km to 400 km.

**Readout resolution:** 0.1 m.

**Minimum sample spacing:** 8 cm.

**Refractive index:** 1.00000 - 2.00000.

**Length unit:** km, ft or miles.

**Measurement points:** up to 16000.

## Vertical parameters

**Vertical scale:** 0.1 - 10.0 dB/Div.

**Readout resolution:** 0.001 dB.

**Reflectance range:** -14 dB to -60 dB.

**Backscatter coefficient:** 10 - 70 dB at 1  $\mu$ s.

**Auto setup and analysis:** provided.

**Instrument settings:** storage and recall of user-selectable instrument settings.

## Optical Interfaces

**Output connector:** optional Diamond HMS-10, FC/PC, DIN 47256, ST, FC/APC, Biconic, SC, NEC D4 and E2000. All are user-exchangeable.

## Scan trace

**Type of events:** reflective and non-reflective events.

**Maximum number of events:** 100.

**Threshold for non-reflective events:** 0.0 to 5.0 dB, selectable in 0.01 dB steps.

**Threshold for reflective events:** -14.0 to -65.0 dB and 0.00 dB (disabled), selectable in 0.1 dB steps.

**Threshold for fiber breaks:** 0.1 to 10 dB and 0.00 dB (disabled), selectable in 0.1 dB steps.

## Built-in Applications

Automatic Multifiber Test

Trace Checker (Pass/Fail)

Optical Return loss

Fiber Break Locator

## Storage

**Flash Disk:** 440 MB with up to 13000 traces.

**Internal memory:** up to

200 traces (typ. with 4000 data points selected).

**Trace format:** Bellcore compliant according to Bellcore/Telcordia

OTDR trace formats:

-GR 196, Revision 1.0

-GR 196, Revision 1.1

-SR-4731 Revision 2.0

**Trace information:** five comment labels of up to 15 alpha-numeric characters and five comments of up to 41 alpha-numeric characters are provided for each trace.

## Interfaces

● Serial A RS232C: maximum baud rate: 115200 bps

Transmission time at 115200 bps:

Trace data: 1s (4000 data points); 4s (16000 data points)

● Serial B RS232C: can be used for optical switch control.

● Centronics: standard parallel port (SPP).

● CRT: Standard analog VGA monitor.

● Keyboard: AT or PS/2 keyboard with mini DIN connector.

## General

**Operating temperature:** 0°C to 50+ °C

**Storage temperature:**

-40 °C to + 60 °C

**Humidity:** 95% R.H from 0 °C to + 40 °C.

● Laser Safety Class: 21 CFR Class 1, IEC 825 Class 3A

● Recalibration period: 2 years.

● Dimensions: 75mm H, 290 mm W, 194mm D (3.0" x 11.6" x 8.0").

● Rackmount kit: 483mm (19")

● Weight: net < 2.0 kg (6.2 lbs).

● Traffic detection: provided

● Real time clock and date: provided

## Power

**AC:** 100 - 240 Vrms  $\pm$  10% 50-60 Hz.

**DC:** 16 - 24 V.

Pd = 20VA

## Ordering Information

### Options:

- 021 Straight connector interface.
- 022 Angled connector interface.
- 023 Pigtail, 3m with SC connector

### Connector Interfaces:

- 81000AI** Connector interface Diamond HMS-10.
- 81000FI** Connector interface FC/PC/SPC.
- 81000GI** Connector interface NEC D4.
- 81000HI** Connector interface E-2000.
- 81000KI** Connector interface SC.
- 81000NI** Connector FC/APC.
- 81000SI** Connector interface DIN 47256/4108.
- 81000VI** Connector interface ST.
- 81000WI** Connector interface Biconic.

### Accessories supplied:

- Rack Mount Kit
- Rack-OTDR User's Guide
- Programming Guide
- AC/DC power supply
- Upgrade CD
- RS232 cable, 9-pin to 9-pin

### Power Cord Options:

- Opt.:900: Power Cord - United Kingdom
- Opt.:901: Power Cord - Australia and New Zealand
- Opt.:902: Power Cord - Continental Europe
- Opt.:903: Power Cord - United States (120 V)
- Opt.:905: Power Cord - Systems Cabinet Use - IEC 320 C13/C14
- Opt.:906: Power Cord - Switzerland
- Opt.:912: Power Cord - Denmark
- Opt.:917: Power Cord - Republic of South Africa and India
- Opt.:918: Power Cord - Japan
- Opt.:919: Power Cord - Israel
- Opt.:922: Power Cord - China
- Opt.:927: Power Cord - Thailand

For all Agilent-OTDR modules the following support options are available:

- W30** 3 Years of Customer Return Repair Service
  - W32** 3 Years of Customer Return Calibration Service
  - W50** 5 Years of Customer Return Repair Service
  - W52** 5 Years of Customer Return Calibration Service
- All modules come with a commercial cal. certificate.

### Agilent E6091A Toolkit II plus

OTDR Toolkit (PC Analysis Software) for OTDR Trace post processing and remote OTDR control.  
English, German, French, Chinese, Spanish, and Portuguese localization

### Agilent Technologies E6006A Power Meter Submodule

Characteristics	
Sensor element	InGaAs
Wavelength range	800 - 1650 nm
Calibrated wavelengths	850 nm, 1300 nm, 1310 nm, 1550 nm (special wavelength on request).
Power range	+ 10 to -70 dBm
Max. input power (damage level)	+ 13 dBm/20 mW
Display Resolution	0.01 dB
Display Units	dBm, dB, mW, $\mu$ W, nW, pW
Display Contents	Calibrated $\lambda$ in nm
Modulation frequency	in Hz
Reference value	in dB
Display Updates	per second 3
Optical input	User-exchangeable Connector Interface
Applicable fiber type	9/125 $\mu$ m, 50/125 $\mu$ m, 62.5/125 $\mu$ m

Related Agilent literature:

Enclosures Solutions Product Catalog for Rack Cabinets, Rack Accessories.  
P/N 5980-0450E

Agilent E6000C Mini-OTDR / E6091A Toolkit II *plus*  
P/N 5988-2238EN

Agilent E6000C Mini-OTDR Technical Specifications  
P/N 5988-2302EN

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Printed in Germany. 1<sup>st</sup> July, 2001  
p/n 5966-3115e



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