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Find the *Tektronix SD-24* at our website: ***Click HERE***

Digital Sampling Oscilloscope

11801B

This product is no longer carried in our catalog.



Features

- DC to 50 GHz Bandwidth
- 7 ps Rise Time
- 8 Channels, Expandable to 136 (with SM-11)
- 10 fs Sampling Interval (0.01 ps)
- Modular Architecture
- 200 kS/s Sample Rate
- Dual Time Base
- Non-volatile Waveform and Setting Storage
- FFT
- Predefined Telecom Masks (Opt. 1T)
- TDR
- Automatic Measurements:
  - Jitter/Noise, Statistical
  - Histograms, Mask Testing
  - Pulse with Statistics
- Programmable for ATE Applications
- Color Display

Benefits

- Comprehensive Waveform Processing

Applications

- Semiconductor Testing
- TDR Characterization of Circuit Boards, IC Packages and Cables

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Tektronix Measurement products are manufactured in ISO registered facilities.



The 11801B Series complies with IEEE Standard 488.1-1987, and with Tektronix Standard Codes and Formats.

For additional information or to order, contact your local Tektronix representative.

Sampling Heads

SD-14: 2.5 GHz high impedance (100 kilohm/0.475 pF) dual-channel probe sampler

SD-20: 20 GHz single-channel loop-through head

SD-22: 12.5 GHz dual-channel low noise head

SD-24: 20 GHz dual-channel TDR/sampling head

SD-26: 20 GHz dual-channel sampling head

SD-30: 40 GHz single-channel sampling head

SD-32: 50 GHz single-channel sampling head

S**D-42:** 6.4 GHz O/E converter (55 ps optical pulse response FWHM)

SD-46: 20 GHz O/E converter (22 ps optical pulse response FWHM)

SD-51: 20 GHz trigger head

Characteristics

Vertical System*

** Vertical system specifications of 11801B with SD-14 non-applicable. See 11800 Series Sampling Head specifications.*

Rise Time/Bandwidth: Determined by the sampling head used.

Vertical Resolution: 8-Bits full screen (78 µV/LSB at 2 mV/div deflection factor).

Amplifier Gain Accuracy: ±1% of all settings.

Deflection Factors: 2 to 255 mV/div in 1 mV/div increments.

Offset Range: ±2 V.

Horizontal System

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Main and Window Time Base: 1 ps/div to 5 ms/div, settable to 1-2-5 sequence or in 1 ps increments.

Record Length: 512, 1024, 2048, 4096, and 5120 samples.

Windows: Any number of window records may be placed on any number of main records, up to a maximum of eight displayed traces. All window records have the same duration, but may be independently positioned on any main record. Windows may be set to automatically track a moving edge on the main record.

Maximum Sample Rate: 200 kS/s.

Trigger System*

** 11801B external trigger requires 23 ns pre-trigger or DL 11 Delay Lines to view trigger point (45.5 ns with Option 1M).*

Trigger Bandwidth: 3 GHz.

Trigger Sensitivity:
DC, 1X </=3 GHz: 100 mV;
AC, 1X 300 kHz to 3 GHz: 100 mV;
DC, 10X </=3 GHz: 1 V;
AC, 10X 300 kHz to 3 GHz: 1 V.

Delay Jitter: 1.3 ps +4 ppm of a position typical. 2.0 ps +5 ppm of position maximum (RMS).

Internal Clock: 100 kHz (drives TDR, Internal Clock Output, and Calibrator).

Trigger Level Range: ±1.0 V (±10 V with 10X trigger attenuator activated).

Trigger Input Range: ±1.5 V (+15 V, 5 V_{RMS} maximum with 10X).

Trigger Holdoff: 5 µs to 2.5 second.

Measurement System

Waveform Processing Functions: Add, subtract, multiply, divide, absolute, average, differentiate, envelope, exponent, integrate, natural log, log, signum, square root, smoothing, and filter.

Measurement Set: Max, Min, Mid, P-P, Mean, RMS, Amplitude, Extinction Ratio, Overshoot, Undershoot, Noise*, Rise, Fall, Spectral Magnitude, Spectral Frequency, THD, SNR, Frequency, Period, Prop Delay, Cross, Width, Phase, Duty Cycle, Jitter*, Area +, Area -, and Energy. Measurements are constantly updated; mean and standard deviation available on all measurements.

** Available only in statistical measurement mode.*

Measurement Parameters: (Proximal, mesial, distal, and start/stop levels): May be set to absolute levels.

Cursors: Paired or split dots, vertical bars, and horizontal bars.

TDR System (SD-24 only)

Combined TDR/Acquisition Reflected Rise Time: 35 ps or less.

TDR Step Amplitude: Adjustable to ±250 mV (polarity of either step may be inverted).

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Time Coincidence Between TDR Steps: Adjustable to less than 1 ps.

Source Resistance: 50 ±0.5 ohm.

Typical Aberrations: (at ±250 mV Amplitude) 10 ns to 20 ps before step: +/-3% or less; Less than 300 ps after step: +10%, -5% or less; 300 ps to 5 ns after step: ±3% or less; Elsewhere: ±1% or less.

CRT And Display Features

CRT: 9 inch diagonal, magnetic deflection, vertical raster scan orientation. Color.

Colors: Eight-color default color set included; or colors are user-selectable from palette of 262,144 colors.

Video Resolution: 552 horizontal by 704 vertical displayed pixels.

Power Requirements

Line-voltage Ranges: 90 to 132 V_{RMS}, 180 to 250 V_{RMS}.

Line Frequency: 48 to 440 Hz.

Maximum Power Consumption: 214 W.

Environmental And Safety

Temperature:
Operating: 0 to +50 degree C
Nonoperating: -40 to +75 degree C.

Humidity:
Operating and Nonoperating: up to 95% relative humidity, up to 50 degree C. Per MIL-T-28800E, Type III, Class 5.

Altitude, Vibration, Shock Nonoperating, Bench Handling: Meets MIL-T-28800E, Type III, Class 5.

Electromagnetic Compatibility: (with sampling heads or optional blank panels installed in all sampling head compartments) Meets the Requirements of: MIL-STD-461B; FCC Part 15, subpart J, Class A; VDE 0871/6.78 Class B.

Safety: Listed UL 1244, CSA Bulletin 556B September 1973.

Time Base Accuracy - Typical Specifications

Range*, ** = Interval >/=1 ns: Base: 4 ps + Interval Specification: 0.004%* Interval + Position Specification 0.0004%* Position

Range*, ** = Interval =100 ps: Base: 2.5 ps + Position Specification: 0.0004%* Position

Range*, ** = Interval </=10 ps: Base: 1 ps + Position Specification: 0.0004%* Position

** For intervals <100 ps, the above holds for time/div </=20 ps/div.*

*** For other intervals not listed above, linearly interpolate the cardinal points.*

Physical Characteristics

11801B Cabinet:
Width: 448 mm (17.6 in.)
Height: 238 mm (9.4 in.)
Depth: 599 mm (23.6 in.)
Net Weight: 22.3 kg (49 lb.)
Shipping Weight: 25.9 kg (57 lb.)

SM-11 Cabinet:
Width: 448 mm (17.6 in.)
Height: 238 mm (9.4 in.)
Depth: 558 mm (22.0 in.)
Net Weight: 20.0 kg (44 lb.)
Shipping Weight: 23.6 kg (52 lb.)

11801B Rackmount:
Width: 483 mm (19.0 in.)
Height: 222 mm (8.8 in.)
Depth: 550 mm (21.6 in.)
Net Weight: 23.2 kg (51 lb.)
Shipping Weight: 26.8 kg (59 lb.)

SM-11 Rackmount:
Width: 483 mm (19.0 in.)
Height: 222 mm (8.8 in.)
Depth: 550 mm (21.6 in.)
Net Weight: 20.9 kg (46 lb.)
Shipping Weight: 24.5 kg (54 lb.)

Ordering Information

11801B Digital Sampling Oscilloscope
Includes: User Manual (070-8783-00), Programmer Manual (070-8784-00), Service Manual (070-8781-00), 12 inch SMA-SMA Cable, 2 ea. 8 1/2 inch SMA-SMA Cable, 1 Wrist Strap.

Opt. 1R: Rackmount
Includes: Hardware, tooling, and instructions for converting Bench Model to Rackmount Configuration. Available with 11801B and SM-11.

Opt. 1M: Multi-channel Conversion.
Modifies 11801B to permit operation with up to four SM-11 Multi-channel Units

Opt. 1T: Predefined Telecom Masks.
AutoMask offers 38 standards-defined masks in memory for instant recall.

International Power Plug Options

Opt. A1: Universal Euro 220 V, 50 Hz

Opt. A2: United Kingdom 240 V, 50 Hz

Opt. A3: Australian 240 V, 50 Hz

Opt. A4: North American 240 V, 60 Hz

Opt. A5: Switzerland 220 V, 50 Hz

Service Assurance Options

Opt. R2: Adds two years of post-warranty Repair Protection

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Opt. C5: Adds five years of Calibration Services

Probes

50 ohm Divider (Z0) Probe: 9 GHz. Order P6150

Active Probes: (requires 1103 power supply)
10X, DC - 1 GHz, >/=10 Megohm Input Impedance, 1.9 pF. Order P6204
10X, DC - 4 GHz, >/=100 kilohm Input Impedance, 0.4 pF. Order P6217
1103 Power Supply

Current Probe: (requires BNC to SMA Adapter)
DC - 50 MHz, 0-20 A (DC + peak AC). Order AM 503S
DC - 15 MHz, 0-100 A (DC + peak AC). Order AM 503S Opt. 03.
25 kHz-1 GHz, Max Current of 0.5. A_{RMS}. Order CT-1

Optical-to-Electrical Converters:
DC - 6.4 GHz, 1000-1700 nm. Order SD42
DC - 20 GHz, 1200-1650 nm. Order SD46
DC - 1 GHz, 1100-1700 nm. Order P6703A
DC - 700 MHz, 450-1050 nm. Order P6701A
DC - 300 MHz, 1000-1700 nm, High Gain. Order P6713
DC - 250 MHz, 450-1050 nm, High Gain. Order P6711

Cart

Order K465

Cables And Extenders

Sampling Head Extender Cable:
1 m. Order 012-1220-00
2 m. Order 012-1221-00

Additional Accessories

Power Strip: Four Outlet, 6 ft., Noise/Surge Suppression. Order 131-5342-01

SMA Accessory Kit:
2 ea. 2X and 5X Attenuators;
2 ea. SMA Terminations, Male Short Circuit, Female Short Circuit, Male 50 ohm, Female 50 ohm,
2 ea. 50 ohm Signal Cables (2 ns),
2 ea. 500 ps Semi-rigid Cable,
2 ea. Male-to-Male adapters,
2 ea. SMA Male-to-BNC Female,
2 ea. Female-to-Female, 1 ea. 50 ohm Power Divider,
1 ea. Combination Wrench (.312, 6 point). Order 020-1693-00

3.5 mm Accessory Kit:
1 ea. 50 ohm Reference Air Line,
1 ea. Male-to-Male Adapter,
1 ea. Female-to-Female Adapter,
1 ea. 26.5 GHz 50 ohm Terminator (Male),
1 ea. 26.5 GHz 50 ohm Terminator (Female),
1 ea. 26.5 GHz Short Circuit (Male),
1 ea. 26.5 GHz Short Circuit (Female),
2 ea. 50 ohm Attenuators (6 dB 26.5 GHz, 2.9 mm),
2 ea. 50 ohm Attenuators (20 dB 26.5 GHz, 2.9 mm),
1 ea. Power Divider (26.5 GHz, 2.9 mm),
2 ea. Flexible Signal Cables (2 ns, Male-to-Male),
2 ea. Signal Cables (500 ps, Male-to-Male, 2.9 mm Semi-rigid),

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1 ea. Torque Wrench,
1 ea. Combination Wrench (0.312, 6 point),
1 ea. Combination Wrench (0.281, 6 point). Order 020-1692-00

2X Attenuator: SMA Male-to-Female. Order 015-1001-00

5X Attenuator: SMA Male-to-Female. Order 015-1002-00

Power Divider: Order 015-1014-00

Blank Sampling Head: Order 200-3395-00

ECL Terminator: Provides the bias and termination for ECL device outputs. At 10 GHz bandwidth and 1% precision attenuation, accurate AC and DC measurements are ensured. Attenuation: 10X ±1.0% @ DC, 20 dB ±3 dB, DC to 10 GHz Aberrations: ±3% max with 100 ps rise time. Order 015-0558-00

DC Block (Coupling Capacitor): Order 015-1013-00

Slip-on Connector: Order 015-0553-00

Connector Savers:
(SMA) Order 015-0549-00
(APC) Order 015-0552-00

DL-11 Service Manual: Order 070-7050-01

SM-11 Service Manual: Order 070-7049-01

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