

Digital Real-Time™ Oscilloscopes

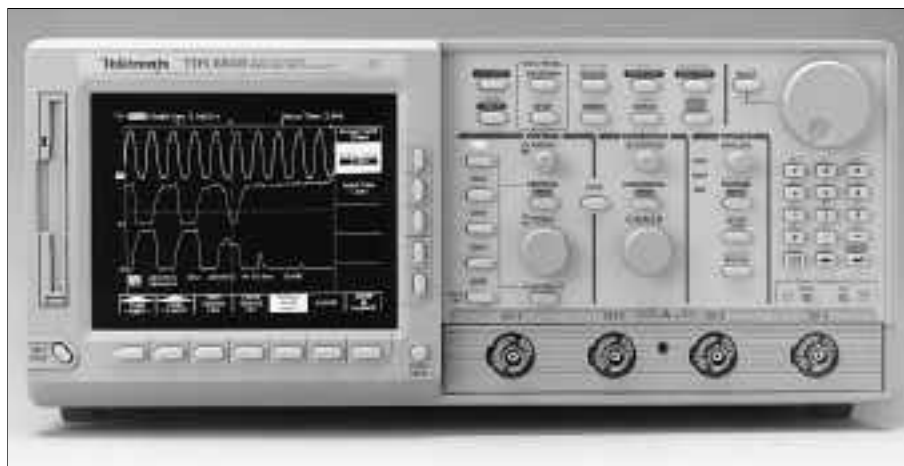
TDS 684B • TDS 680B • TDS 644B • TDS 620B • TDS 640A

★ Features

- 1 GHz and 500 MHz Bandwidth
- 5 GS/s and 2.5 GS/s Sample Rates
- 4 and 2 Input Channels
- 8-Bit Vertical Resolution
- Greater than 11-Bits with Averaging
- Record Length to 15,000 Points
- 1 mV/div to 10 V/div Sensitivity
- 1.5% Vertical Accuracy
- Waveform Math and Advanced Waveform DSP
- 1 ns Peak Detect (not available w/TDS 640A)
- Channel Deskew (not available w/TDS 640A)
- Fully Automated Measurement System
- Waveform Pass/Fail Template Testing
- Color VGA Display
- 3.5 in. DOS Format Floppy Drive
- RS-232, Centronics, GPIB and VGA I/O Ports

Ⓐ Applications

- Digital Design Characterization and Verification
- Telecommunications/Datacommunications
- Transient Event Capture
- High Energy Physics



TDS 684B

Your designs may be digital but at today's speeds, many of your toughest problems aren't. Crosstalk noise. Transmission effects. Ground bounce. Not to mention sub-nanosecond edges. Today's design problems require high bandwidth oscilloscopes that can measure up to these challenges. The Digital Real-Time™ architecture of the TDS 600 Series simplifies capturing intermittent signals or non-recurring problems like glitches or metastable states caused by setup and hold time violations.

TDS 600 Series provides design engineers excellent single shot accuracy for multi-channel, high speed signal characterization. Additional features and specifications of the TDS 600 Series are explained in the TDS Reference section of the Tektronix Test and Measurement Catalog or on the World Wide Web at www.tek.com.

	TDS 640A	TDS 620B	TDS 644B	TDS 680B	TDS 684B
Total Channels	4	2 + 2	4	2 + 2	4
Sample Rate (all channels simultaneously)	2 GS/s	2.5 GS/s	2.5 GS/s	5 GS/s	5 GS/s
Real-time Bandwidth	500MHz	500MHz	500MHz	1 GHz	1 GHz
Maximum Record Length per Channel	2,000 pts	15,000 pts	15,000 pts	15,000 pts	15,000 pts
Vertical Resolution	8-Bits; >11-Bits with averaging				
Time Measurement Accuracy	<110 ps @ 2 GS/s	<100 ps @ 2.5 GS/s	<100 ps @ 2.5 GS/s	<50 ps @ 5 GS/s	<50 ps @ 5 GS/s
Advanced Waveform DSP/Math	Std.	Std.	Std.	Std.	Std.
Standard Probes	4 P6139A	2 P6139A	4 P6243	None	None
Display Type	7 in. mono	7 in. mono	7 in. color	7 in. mono	7 in. color
Disk Drive	Std.	Std.	Std.	Std.	Std.
GPIB Port	Std.	Std.	Std.	Std.	Std.
RS-232 & Centronics	Std.	Std.	Std.	Std.	Std.
VGA I/O Port Printer Ports	Std. Mono	Std. Mono	Std. Color	Std. Mono	Std. Color



See Tektronix on the World Wide Web:
<http://www.tek.com>



ISO 9001 Tektronix measurement products
are manufactured in ISO
registered facilities.



Product(s) complies with IEEE Standard
488.2-1987, and with Tektronix Standard
Codes and Formats.

Digital Real-Time™ Oscilloscopes

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CHARACTERISTICS

TIME BASE SYSTEM

Time Bases – Main and Delayed.

Time/div Range – 200 ps/div to 10 s/div.
Except TDS 640A: 500 ps/div to 5 s/div.

Time Base Accuracy – Over Any Interval
>1 ms ± 100 ppm.

Record Length per Channel – 500 to 15,000
pts. Except TDS 640A: 500 to 2,000 pts.

VERTICAL SYSTEM

Vertical Resolution – 8-Bits (>11-Bits with
averaging).

Maximum Input Voltage – 300 V CAT II ± 400
V peak. Derate at 20 dB/decade above 1 MHz.

DC Gain Accuracy – 1.50%

Bandwidth Selections – 20 MHz, 250 MHz,
and Full.

Input Impedance Selections – 1 M Ω in par-
allel with 10 pF, or 50 Ω (AC and DC cou-
pling).

Input Coupling – AC, DC or GND.

Acquisition Modes – Peak Detect (TDS 620B,
TDS 644B: 1 ns; TDS 680B, TDS 684B:
<1 ns), Sample, Single Sequence, Envelope,
Average.

TRIGGERING SYSTEM

Trigger Types – Edge (main and delayed);
Pulse (Width, Glitch, Runt, Slew Rate*¹, Time
Out*¹); Logic (Pattern, State, and Setup &
Hold Time Violation*¹); HDTV Video
(optional).

Automatic Measurements – 25 (on entire
record or gated region).

Waveform Functions – Interpolation (sin(x)/x
or linear), Average, Envelope, Auto Setup.

Measurement Accuracy – TDS 680B/684B:
<50 ps typical @ 5 GS/s single shot;
TDS 620B/644B: <100 ps typical @ 2.5 GS/s
single shot. TDS 640A: <110 ps @ 2 GS/s
single shot.

Advanced Waveform Functions – FFT,
Integration, Differentiation, Waveform (math
or acquired) Limit Testing.

RECOMMENDED ACCESSORIES

K420 – Instrument Cart.

P6243 – 1 GHz Active Probe.

P6563A – 500 MHz, 20X SMD Probe.

SureFoot® – Surface Mount Device Interconnects.

P6245 – 1.5 GHz, FET Probe.

WaveStar™ – Software (WSTR31).

*¹ Not available in TDS 640A.

ORDERING INFORMATION

TDS 684B

Four-channel Color 1 GHz, 5 GS/s Per Channel
Digital Real-Time Oscilloscope.

TDS 680B

Two-channel Monochrome 1 GHz, 5 GS/s Per
Channel Digital Real-Time Oscilloscope.

TDS 644B

Four-channel Color 500MHz, 2.5 GS/s Per Channel
Digital Real-Time Oscilloscope.

Includes: Four P6243 FET Probes.

TDS 640A

Four-channel Monochrome 500MHz, 2.0 GS/s Per
Channel Digital Real-Time Oscilloscope.

Includes: Four P6139A Passive Probes.

TDS 620B

Two-channel Monochrome 500MHz, 2.5 GS/s Per
Channel Digital Real-Time Oscilloscope.

Includes: Two P6139A Passive Probes.

All Include (except where noted): User Manual
(070-9869-00);
Quick Reference Guide (070-9382-00);
Programmer's Manual in MS-Help format on flop-
py disk (063-2773-00);
Technical Reference Manual (070-9874-02);
Front Cover (200-3696-00);
North American Power Cord (161-0230-01);
Accessory Pouch (TDS 644B/TDS 684B Only: 016-
1268-00).

OPTIONS AVAILABLE (EXCEPT WHERE NOTED)

Opt. 05 – Video Trigger, NTSC, PAL, HDTV,
FlexFormat™.

Opt. 1K – Model K420 Instrument Cart.

Opt. 1R – Rackmount Kit.

Opt. 2D – (TDS 620B only) Delete Standard two
P6139A Probes.

Opt. 24 – Add four P6139A 10X Passive Probes.

Opt. 26 – (TDS 684B only) Add four P6245 1.5
GHz, 1pF FET Probes.

Opt. 27 – (TDS 680B only) Add two P6245 1.5 GHz,
1 pF FET Probes.

Opt. 4D – (TDS 644B only) Delete Standard four
P6243 FET Probes.

Opt. D1 – Calibration Data Report.

INTERNATIONAL POWER PLUG OPTIONS

Opt. A1 – Opt. A5 available.

MEASUREMENT SERVICE OPTIONS

Opt. C3 – Three years of Calibration Services.

Opt. C5 – Five years of Calibration Services.

Opt. D3 – Test Data (requires Opt. C3).

Opt. D5 – Test Data (requires Opt. C5).

Opt. R5 – Repair warranty extended to cover five
years.

For further information, contact Tektronix:

World Wide Web: <http://www.tek.com>; **ASEAN Countries** (65) 356-3900; **Australia & New Zealand** 61 (2) 888-7066; **Austria, Eastern Europe, & Middle East** +43 2236 8092 0; **Belgium** +32 (2) 715.89.70;
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