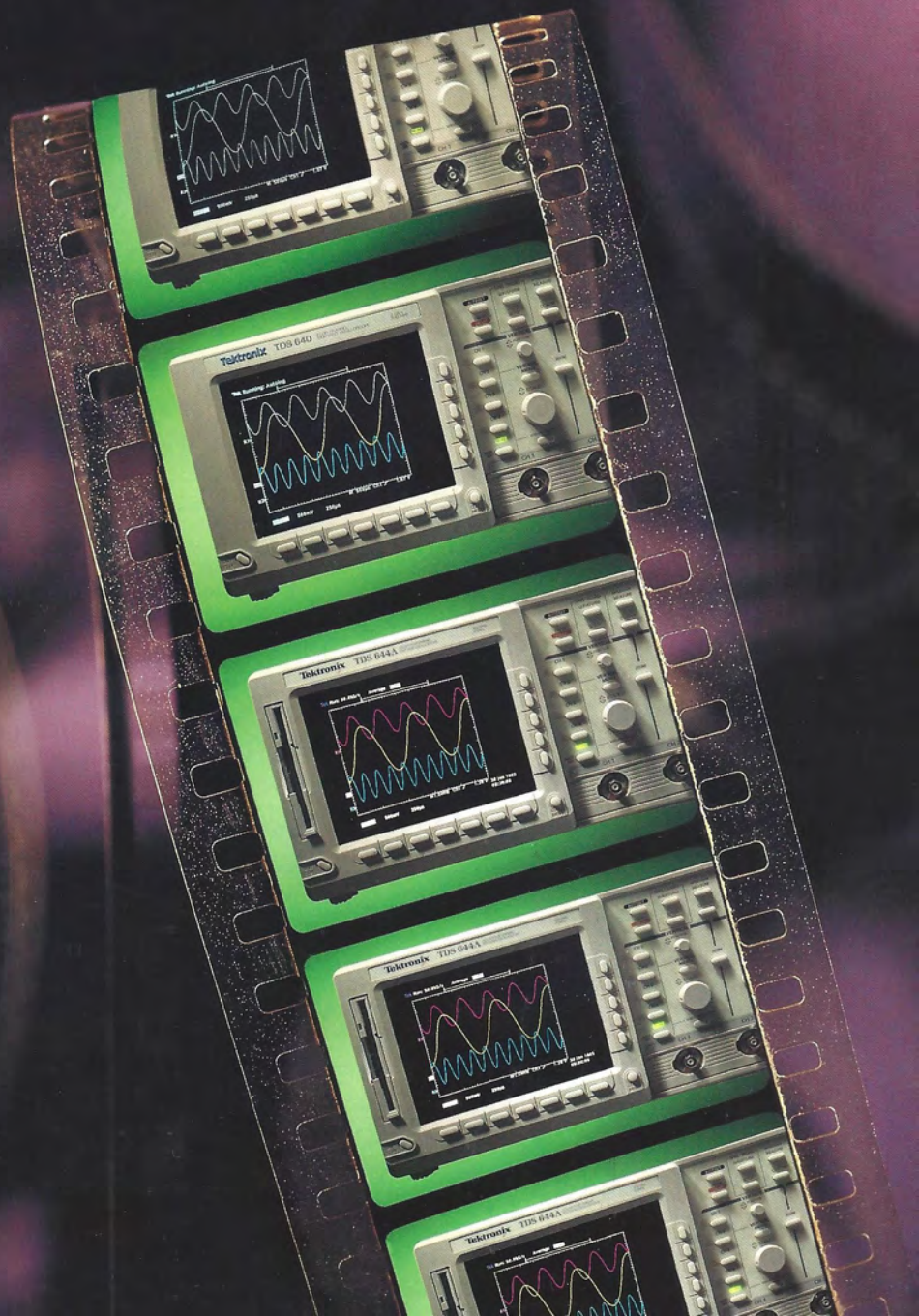
Tektronix

Tektronix Colorizes A Classic

TDS 500/600 Series Digital Oscilloscopes



Meeting Your Performance Needs

As your electronic systems become more sophisticated and complex, you need an oscilloscope that delivers the highest level of performance. With applications ranging from power supplies to advanced digital systems, scopes must include a broad range of functionality to cover your diverse and changing measurement needs. The added pressure of getting your product to market quickly means you want a scope that doesn't slow you down.

Tektronix' TDS 500 and 600 Series digital oscilloscopes successfully meet your most demanding requirements for performance, functionality and ease of use. No other digital scope can match the TDS Series classic combination of an inviting graphical user interface, that boosts your productivity, with the most advanced acquisition and triggering capabilities—providing waveform fidelity you can confidently rely on.

Finally, Affordable Color

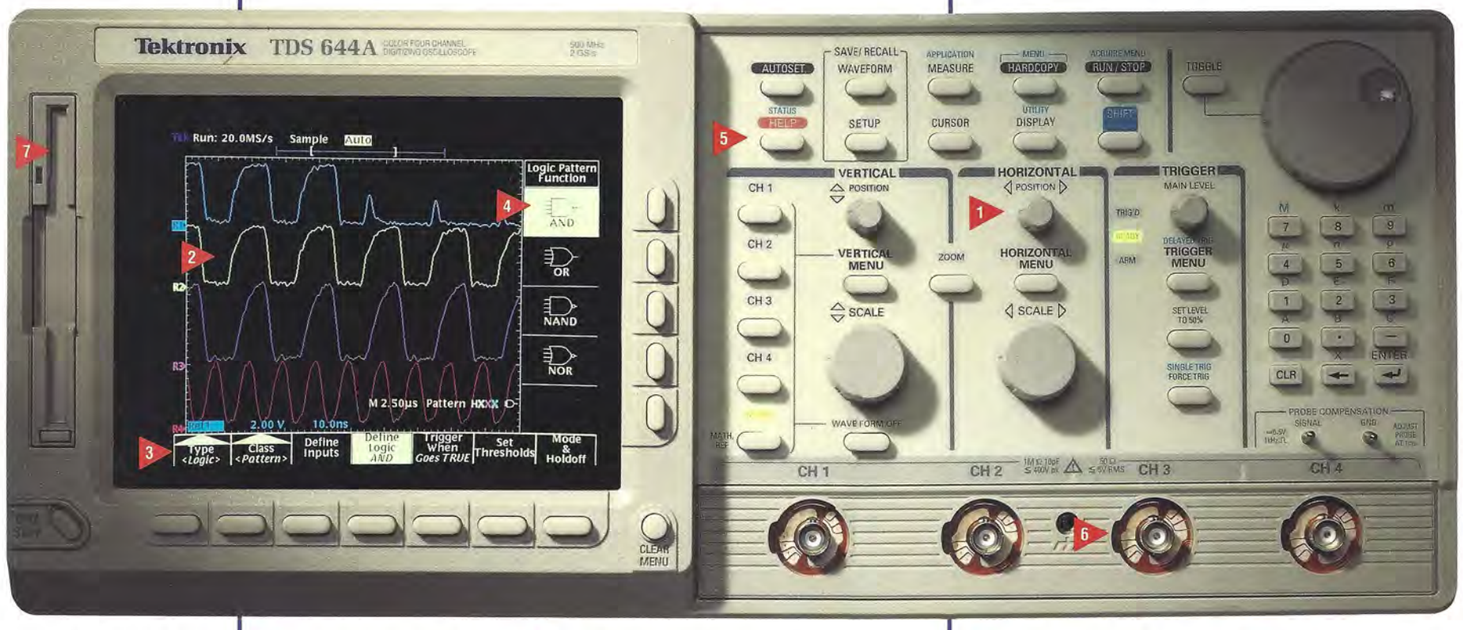
Although the TDS 500 and 600 Series represent a new standard in digital scopes, we continue to extend their performance to meet your most challenging needs. For example, to make it easier for you to interpret multiple channels, measurements, and readouts; we've added a colorful new twist with the TDS 544A and 644A scopes.

With their user-definable colors, the TDS 544A and 644A greatly enhance your efficiency by simplifying your interpretation of display data. Color quickly helps you organize waveforms, cursors and measurements on a busy display.

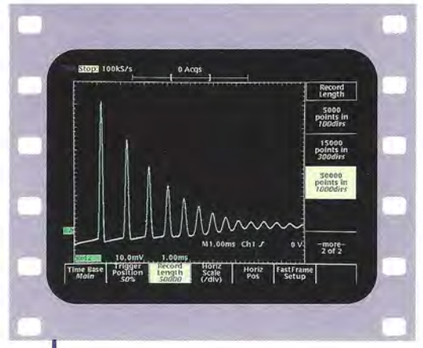
Color is especially useful when looking at multiple, overlapped waveforms. You can even quickly assess waveform timing and amplitude distribution with the new color grading feature.

Now you might think you'd have to pay a premium for color, but this is no ordinary color display when it comes to price or performance. We've kept the costs down so you can own a full-color scope for almost the same price as a monochrome TDS 540 or 640.

Developed by Tektronix, the NuColor™ display also provides unmatched contrast and convergence. Lightweight and compact, it is even more rugged than conventional, shadow-mask color displays.



1. Dedicated buttons and knobs for frequently used operations streamline scope operation.
2. The VGA color display, with 16 levels of intensity and 640 x 480 lines, reveals even the subtlest details. Color displays come standard with the TDS 544A and 644A.
3. The straightforward menu structure simplifies the use of advanced features.
4. Self-explanatory graphics and engineering symbols help you to quickly understand different menu options.
5. With the press of the Help button, the scope will display a concise explanation for every control and menu option.
6. With the TDS 500 Series you get extended record lengths up to 50,000 points per channel and a maximum single-channel sampling rate of 1 GS/s. The TDS 600 series delivers 2 GS/s and a 2000-point record length for each channel. Both offer up to four independent channels.
7. An embedded 3.5" disk drive streamlines waveform storage and documentation. The DOS format ensures compatibility with most PCs for use with standard word processing packages.



With its optimal 50,000 point record length, the TDS 500 Series scopes easily capture a great amount of detailed information on complex waveforms.

A Classic Foundation You Can Rely On

The easy-to-use TDS graphical user interface comes standard with all the scopes in the TDS 500 and 600 Series. Based on years of research in how people use scopes, this friendly interface dramatically streamlines scope operation for the novice or expert user. A balanced use of buttons and knobs, simplified menu structure and universally understood icons quickly lead you to the functionality you want. But if you have a question about any advanced capability, push the Help button for a description of every available function.

Advanced acquisition capabilities and deep memories deliver the signal fidelity and accuracy needed for demanding applications such as high-speed multiprocessor design. Both the TDS 500 and 600 series offer a 500 MHz bandwidth with 8-bit vertical resolution—performance you need for those fast clock rates and high-speed edges in today's advanced electronics.

With the TDS 500 Series, you can configure record lengths up to 50,000 points with a maximum of 1 GS/s sample rate on a single channel. You need this type of resolution when looking at long, complex signals or elusive single-shot events. But if you require exceptional timing accuracy and resolution for defining signal characteristics or timing relationships, then use the TDS 600 Series scopes with their 2 GS/s sample rate on all channels–delivering a timing measurement accuracy of 100 ps.

Capturing The Details

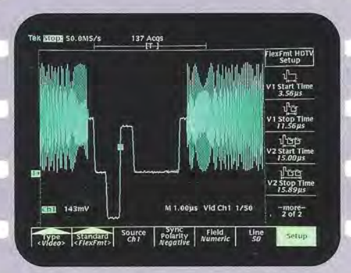
With edge speeds getting faster and anomalies becoming more elusive, you need a scope with powerful acquisition and extended trigger modes. The TDS 500 and 600 Series gives you just that along with 500 MHz bandwidths, a wide dynamic range, fast sampling rates, 8-bit resolution, and fast overdrive recovery on up to four independent input channels.

Acquiring An Accurate Picture

The TDS 500 and 600 scopes combine extremely high sample rates with active FET probes—standard with the TDS 600 scopes—to capture detailed information on complex signals even with single-shot events. The P6205 FET probes greatly enhance the fidelity of the acquired signal by reducing probe loading effects.

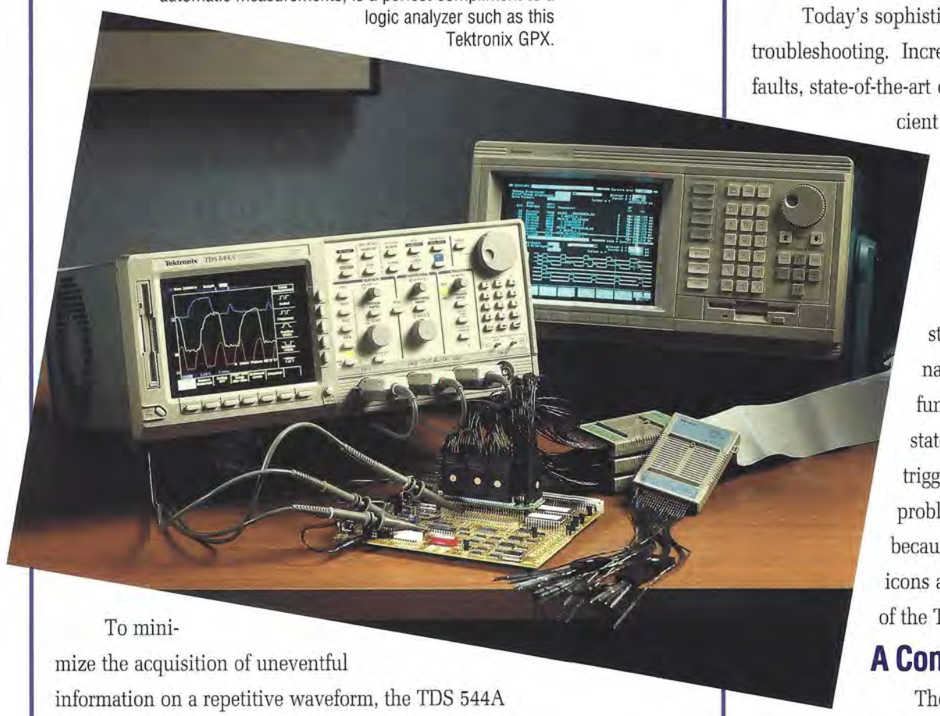
The TDS 500 Series scopes pack up to 50,000 record points behind each channel. These deep memories enhance the scope's resolution when acquiring high-speed events and help you analyze unpredictable single-shot events such as laser pulses or digital fault phenomena.

With the Video trigger option, you can trigger on all the standard video formats, such as this NTSC signal, and quickly make custom video measurements in IRE units.



Completely specify a custom HDTV video format including lines, fields and sync structure–exclusive to the Video trigger option.

The TDS 600, with its 100 ps timing accuracy and automatic measurements, is a perfect compliment to a logic analyzer such as this Tektronix GPX.



To minimize the acquisition of uneventful information on a repetitive waveform, the TDS 544A offers a new acquisition mode called FastFrame.™ With this mode, you can partition memory into several hundred segments and have each segment start with a new trigger event. Especially useful for laser research, disk drive testing, and radar, lidar and ultrasonic applications, FastFrame enables the TDS 544A to efficiently acquire a series of events as fast as 50,000 times per second.

When you need to examine timing relationships or signal characteristics in detail, reach for a TDS 600 Series scope. Sampling at the blazing rate of 2 GS/s on each channel—delivering 500 ps time interval resolution—you can rest assured these scopes will capture fine details occurring on the acquired signal. Precision acquisition like this is imperative when scrutinizing setup and hold violations, glitches and metastabilities in the nanosecond region.

Fast-Action Triggering

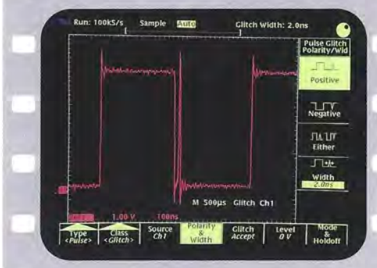
Today's sophisticated circuitry demands advanced troubleshooting. Increasingly sensitive to intermittent faults, state-of-the-art designs require powerful and efficient debug tools. The TDS 500 and 600 scopes include powerful trigger functions that quickly track down noise, glitches, metastabilities, timing problems and bus contentions.

With the Pulse trigger you can stalk elusive runts and glitches as narrow as 2 ns. Or use the Logic function to trigger on Boolean logic states or patterns. Whatever type of trigger you need, you will have no problem in selecting the proper one because of the universally recognizable icons and the straightforward organization of the Trigger menu.

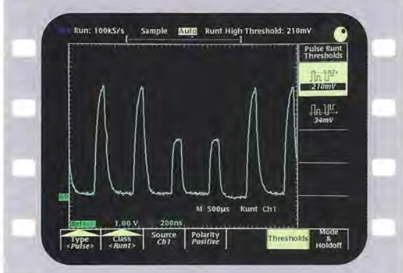
A Complete Video Solution

The TDS 544A and 644A Scopes offer a video triggering option that is a complete video measurement system. Besides covering all the standard video formats—such as NTSC, PAL and popular HDTV formats—this option includes a custom HDTV trigger option called FlexFormat.™ With FlexFormat you can specify custom sync pulses along with the line rate, number of lines and number of fields required for any custom HDTV video signal—no other scope provides FlexFormat's capabilities.

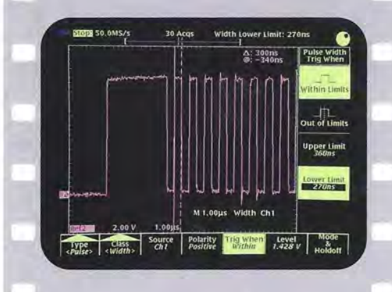
The TDS 544A and 644A Video trigger option also includes a set of features designed to streamline your video measurements. Besides triggering on a certain line in odd, even or all fields, you can specify individual color fields—a capability exclusive to these scopes. You can even trigger on a single pixel! And to simplify NTSC and PAL measurements, these scopes include calibrated graticules for these formats.



To help debug prototype circuit problems quickly, the Glitch trigger captures pulses as narrow as 2 ns.

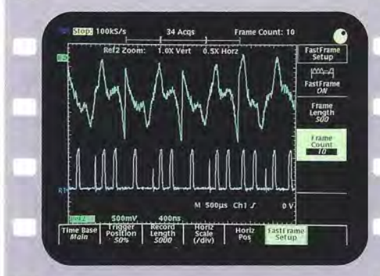


The exclusive Runt trigger isolates invalid logic levels caused, in this case, by signal crosstalk.



The Width trigger can single out complex or faulty pulses that are either too wide or too narrow.

Logic timing analysis of complex logic signals is straightforward with icon-driven state triggering.



With FastFrame, you can easily examine long series of disk drive read/write pulses in one acquisition.

Advanced Insight Into Waveform Behavior

With three processors dedicated to scope operation and data analysis, the TDS 500 and 600 Series scopes provide live waveform analysis, responsive update rates, and live measurements. Because the TDS 500 and 600 scopes have excellent amplifier overdrive recovery, you can trust their analysis and measurement capabilities on step functions and pulses.

To enhance waveform analysis, you can choose between a number of specialized display modes, including variable and infinite persistence. And color grading aids in analysis of shifting waveforms. For examining phase relationships, select from an X-Y display mode.

Real-Time Signal Analysis

Tektronix' 32-bit TriStar digital signal processor, the heart of the TDS 500 and 600 scopes, delivers on-the-fly waveform processing. This proprietary processor thrives on high-speed acquisition, analyzing the acquired data in real time.

For example, the TDS 500 and 600 scopes will perform integration and differentiation and display the resulting waveform in real time. Both series offer averaging and advanced math such as real-time FFT analysis—useful for applications like examining harmonic distortion on a power supply. And because all the scopes include template testing, you can easily test signals against a "golden waveform" in your production environment. With the TDS 544A and 644A, the color grading mode clearly reveals timing violations and fault conditions in telecommunication signals.

Accurate, Automatic Measurements

Choose from 25 automatic measurements that are continuously updated and that can be customized for your application. You can quantify just about any waveform behavior you need quickly and accurately. For example, use the risetime and propagation delay measurements to instantly establish critical timing measurements when characterizing a custom ASIC or logic device. You can even measure the delay between waveforms—including the math and reference waveforms—in any combination of leading and trailing edges.

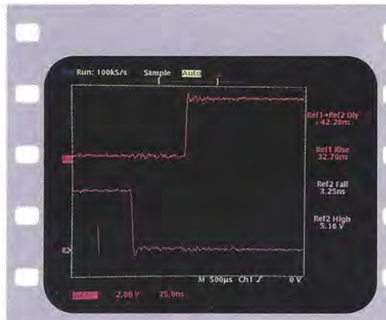
With its FastFrame acquisition capability, the TDS 544A will easily acquire a long stream of disk drive read/write pulses in one acquisition for comparative analysis.

The user-friendly interface streamlines measurements. The menu icons quickly lead you to the measurements you need. And you can display up to four live measurement readouts at any one time or all measurements in a snap-shot. To establish the reference points you need for your measurements, select from three different measurement modes—min-max, histogram or gated. The scope will alert you when the most appropriate measurement mode is not being used.

Optimized For The Desktop Publishing Environment

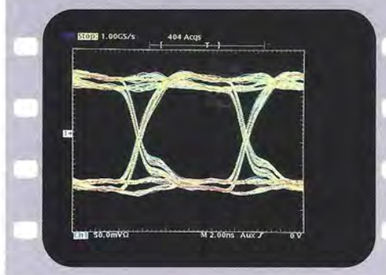
In today's demanding design and production environments, you need the ability to share and archive your findings in reports or memos. The TDS 500 and 600 Series make report generation simple with their easy-to-use documentation features.

With the embedded disk drive in the TDS 544A and 644A, you can easily upload waveforms from the scope to your document. Simply store the signal on the DOS formatted disk drive and then transfer the floppy to your PC. The DOS format makes cut-and-paste to standard word processing packages like Microsoft Word a snap. If you just need a hardcopy of the display, all the scopes offer GPIB, RS-232, and Centronics ports and interface to most printers including HPGL, PostScript and Epson. If you want color copies of your color display, then send your waveforms to the optional Tektronix color printer.



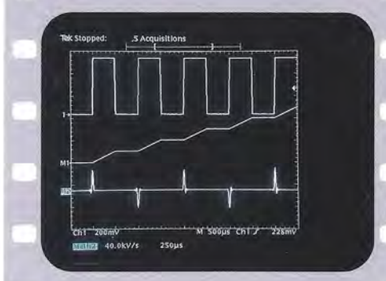
Use automatic measurements to accurately characterize a waveform such as these high-speed edges.

Calibrated vertical offset and fast overdrive recovery allow high resolution analysis of a pulse.



Color grading streamlines your determination of telecommunications signal fidelity.

The TDS 500's FFT capabilities reveal hidden signal information such as the harmonics on this switching power supply.



You can perform automatic integration and differentiation to reveal valuable signal information as shown on this monochrome TDS screen.

Besides the TDS 500 and 600 scopes, the TDS family includes the TDS 400 and 800 Series. The TDS 400 Series' compact design, four channels and 100 MS/s sample rate make it ideal for applications ranging from circuit design to service and manufacturing test. For repetitive signal applications that require exceptional precision, use the TDS 800 with its 6 GHz bandwidth, 0.04 ps timing resolution and 14-bit vertical resolution.

	TDS520	TDS540	TDS544A	TDS620	TDS640	TDS644A
Bandwidth	500 MHz					
Channels	2	4	4	2	4	4
Max Sample Rate						
1 Ch	500 MS/s	1 GS/s	1 GS/s	2 GS/s	2 GS/s	2 GS/s
2 Ch	250 MS/s	500 MS/s	500 MS/s	2 GS/s	2 GS/s	2 GS/s
4 Ch		250 MS/s	250 MS/s		2 GS/s	2 GS/s
Record Length	15K (50K optional)			2 K		
Sensitivity	1 mV-10 V					
Vertical Resolution	8 bit 11 bit Average 12 bit HiRes			8 bit 11 bit Average		
Vertical Accuracy	1%			1.5%		
Time Base Accuracy	0.0025%			0.01%		
Trigger	Edge, pattern, state, glitch, runt, pulse width					
Video Trigger	NA	NA	Optional	NA	NA	Optional
Monitor	Monochrome	Monochrome	Color	Monochrome	Monochrome	Color
Floppy Disk Drive	NA	NA	Standard	NA	NA	Standard
Probes	P6139A Passive			P6205 Active		

Three Year, Unconditional Warranty

All TDS Series oscilloscopes come with a three year, unconditional warranty. Tektronix pioneered this warranty with the TDS Series because of the exceptional quality of these scopes. Critical functionality consolidated into custom ICs and the latest in surface mount technology result in the outstanding reliability of the TDS oscilloscopes.

55W-8863-0 50M

For further information, contact:

U.S.A., Asia, Australia, Central & South America, Japan
Tektronix, Inc.
P.O. Box 500
Beaverton, Oregon 97077-0001

For additional literature, or the address and phone number of the Tektronix Sales Office nearest you, contact:
(800) 426-2200
(503) 627-7111

Canada
Tektronix Canada
50 Alliance Blvd.
P.O. Box 6500
Barrie, Ontario L4M 4V3
Canada
Phone: (705) 737-2700
FAX: (705) 737-5588

Germany
Tektronix GmbH
Colonia Allee 11
D-5000 Koeln 80
Germany
Phone: 49 (221) 96969-0
Telex: (841) 8886601
FAX: 49 (221) 96969-362

France and Africa
Tektronix S.A.
ZAC Courtaboeuf, 4 Av du Canada
B.P.13
91941 Les Ulis Cedex
France
Phone: 33 (1) 69 86 81 81
Telex: (842) 604332 TEKOR A
FAX: 33 (1) 69 07 09 37

Belgium, Denmark, Finland, Holland, Norway, Sweden and Switzerland
Tektronix Holland N.V.
P.O. Box 226
2130 AE Hoofddorp
Holland
Phone: 31(2503) 13300
Telex: (844) 74898 TEKSO NL
FAX: 31 (2503) 37271

South Europe Area, Eastern Europe and Middle East
Tektronix Espanola S.A.
Calle Condesa de Venadito, 1-5
Planta
28027 Madrid
Spain
Phone: 34 (1) 404.1011
Telex: (831) 46014 TKME E
FAX: 34 (1) 404.0997

United Kingdom
Tektronix U.K. Limited
Fourth Avenue
Globe Park
Marlow
Bucks SL7 1YD
England
Phone: 44 (0628) 486000
Telex: (851) 847277, 847378
TEKMAR G
FAX: 44 (0628) 47 4799

Tektronix sales and service offices around the world:

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