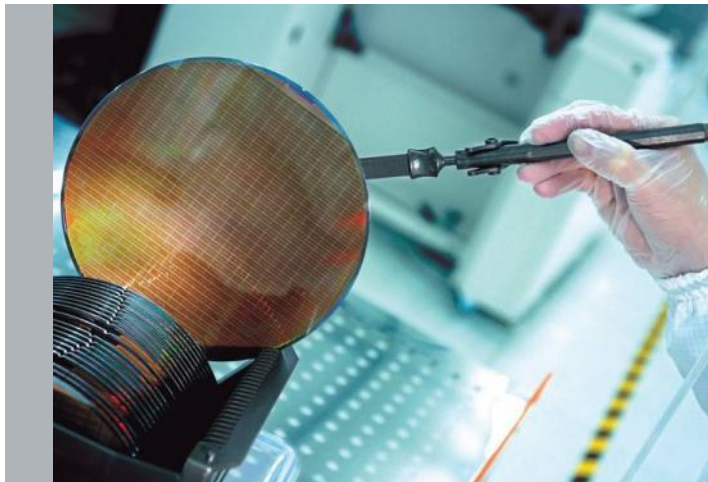


TBS1000B(-EDU) Oscilloscopes

Presented by TestEquity LLC



Tektronix[®]

Tektronix Scopes: The #1 Tool for Education and Entry-level Applications

- For years the TDS1000 and TDS2000 have been the most popular scopes in education and entry-level, general-purpose applications, with an installed base of over 600,000 units
- To refresh the portfolio Tektronix launched the new generation TBS1000 value oscilloscopes
 - TBS1000 2 CH models launched in October 2012
 - TBS1000 4 CH models launched in July 2013



Tektronix TBS1000B / Tbs1000B-EDU oscilloscopes address value-conscious, customers who are constantly looking for instruments with more performance and new features... offered at attractive prices.

Introducing *Two New Oscilloscopes....*



TBS1000B-EDU



The world's first dedicated teaching oscilloscope



TBS1000B

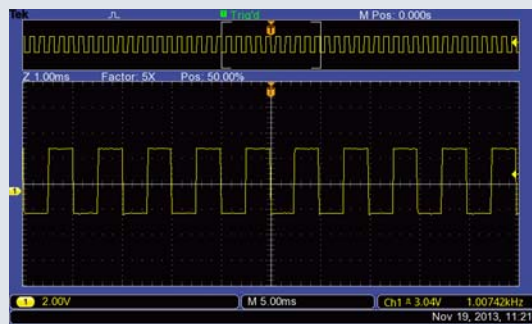


The best value, all-around oscilloscope available

Unprecedented Value, Performance and Functionality

NEW TBS1000B/-EDU models replace existing 2-Channel TBS1000 models

Performance



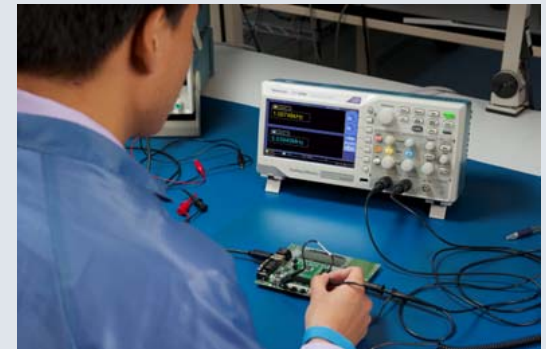
- 50, 70, 100, 150 and 200 MHz bandwidth models
- 2 analog channels
- Best-in-class, always-on sampling rate up to 2 GS/s, independent of how many channels are being viewed
- Standard dual-channel frequency counter
- 3% DC gain accuracy, 10 mV/dv through 5 V/div

Ease-of-Use



- User interface based on the industry leading Tektronix MSO/DPO oscilloscopes
- Lightweight, compact design
- 34 automated measurement types
- USB connectivity and OpenChoice Desktop PC Software

Value



- Prices starting at \$520 (US MSRP)
- Commercial and Education variants with unique features that satisfy different requirements.
- 5 year warranty

Each Series' Models Offer Impressive Performance Specifications and Features

■ TBS1000B-EDU

- Education customers
- Basic EE Teaching Labs in Academia
- Corporate Education

“The world’s first dedicated teaching oscilloscope making oscilloscope-based teaching and learning more effective than ever before.”

■ TBS1000B

- Commercial customers
- Value-minded R&D Engineers
- Manufacturing Technicians
- Repair/Service Engineers

“The best-value general purpose oscilloscope for every-day use. One of these scopes belongs on every engineer’s bench.”



Enabling Teaching

Built-in access to fully customizable courseware content



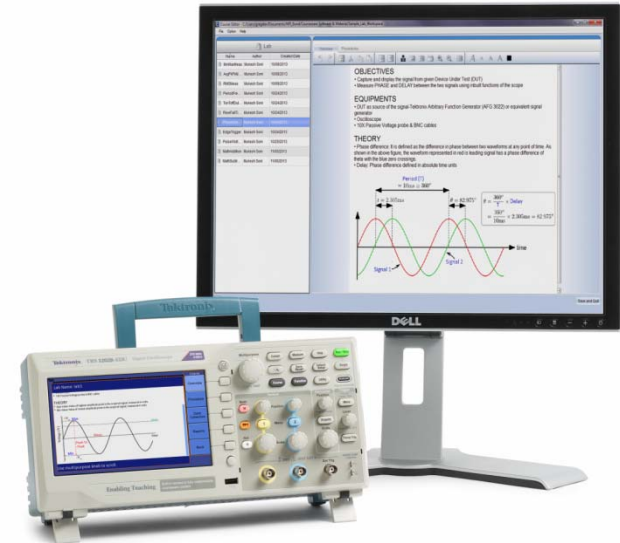
Enabling Efficiency

Rich set of automated measurements and analysis functions

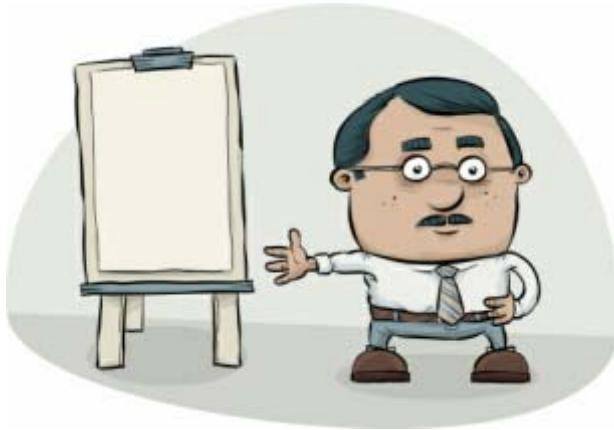
Innovative Courseware Functionality



- **First** oscilloscope with integrated courseware capability
 - Lab content can be loaded directly onto the oscilloscope
 - Students can review lab content, perform step-by-step instructions, record lab results and create lab reports, all on the scope
- **First** oscilloscope with a web-based content eco-system
 - A courseware web page has been created to promote sharing of lab content
 - Users can search, download, upload and comment on lab material
- **First** oscilloscope with “Auto-set Enable/disable” functionality
 - Insures that students take the time to learn an oscilloscope’s basic operation
- Starting price - **\$520**



Key Challenges Faced by Educators & Students



- Educators need to:
 - Create new lab experiments and share information with students
 - Prepare and organize laboratory exercises that support a variety of courses and topics
 - Adapt and customize existing laboratory exercises to address new technologies
 - Minimize the cost of printing lab manuals

- Students Need:

- Easily accessible reference material to reinforce theories examined in lab experiments
- Clear instructions on procedures and set-ups when performing lab exercises
- An easy way to record results and create lab reports from the data



New Courseware Feature Solves Those Problems

Courseware *Eco-System*

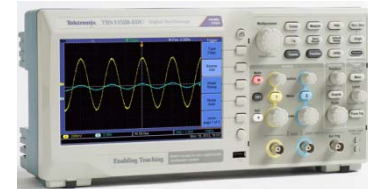
Course Editor SW



Courseware Webpage



Courseware Enabled
Oscilloscope



The courseware
eco-system
assists
professors

- Engineering professors can quickly create or update lab exercises and distribute the material to students using the oscilloscope
- Up to 8 courses, each with multiple labs, can be uploaded onto the scope
- A Tektronix courseware web page has been created to offer a global platform where academicians can share lab experiments and ideas

The courseware
eco-system
assists
students

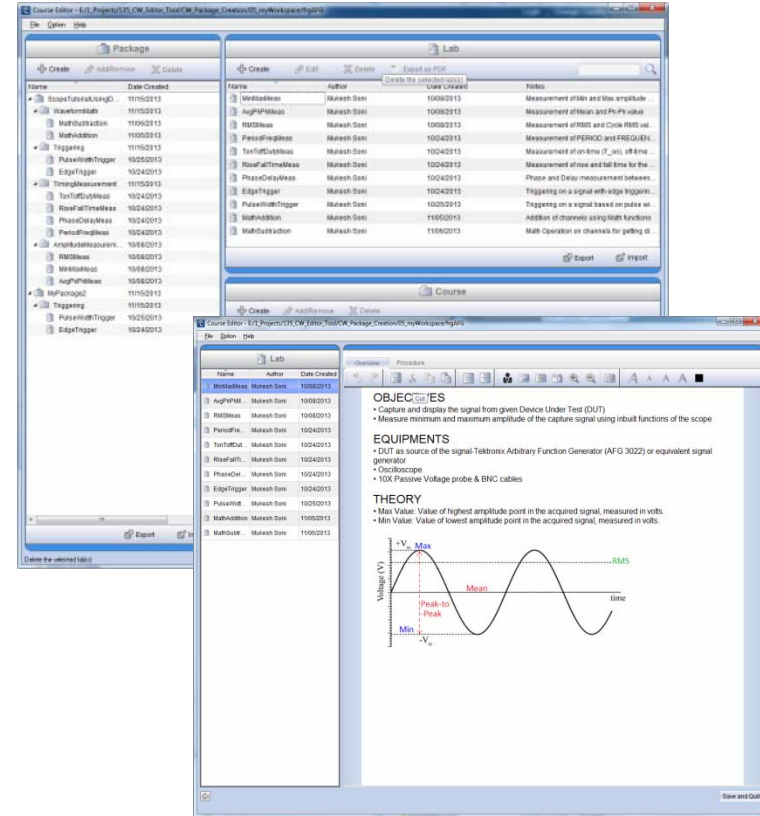
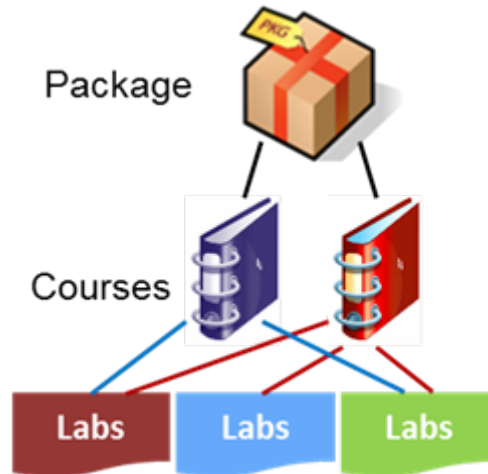
- Students can review, perform and document lab experiments right on the scope
- Provides easily accessed, step-by-step instructions for lab experiments and progress can be documented right on the scope
- Creates HTML lab reports which simplifies the submission and review process and supports a paperless laboratory

PC Courseware Editor Tool



PC Courseware Editor Tool

- A program with a familiar Windows interface makes it easy to create or update lab material
- Enables the exporting of lab material to a USB drive for transfer to the oscilloscope
- Includes a feature for adding instructor profiles to labs
- Bundles multiple labs to create a course
- Bundles up to 8 courses to create a package for uploading into a TBS1000B-EDU oscilloscope



Courseware Feature on the Oscilloscope

Courseware on the TBS1000-EDU

- Import courseware material created with the PC application by using a USB drive
- Press the front panel “Course” button to access the Course and Lab options

Lab Details

- The Overview section is used to provide an explanation of the lab material, supporting theory and required equipment

Tek

Course Name: ScopeTutorialWithAFG1

Available Labs.

- MinMaxMeas
- AvgPkPkMeas
- RMSMeas
- PeriodFreqMeas
- TonToffDutyMeas
- RiseFallTimeMeas
- PhaseDelayMeas
- EdgeTrigger
- PulseWidthTrigger
- MathAddition
- MathSubtraction

Use multipurpose knob to select the folder.

Course

- ScopeTutorialWithAFG1
- Measurement Labs
- Waveform Labs
- Math and Trigger Labs
- more - page 1 of 2

Tek

Lab Name: MinMaxMeas

OBJECTIVES

- * Capture and display the signal from given Device Under Test (DUT)
- * Measure minimum and maximum amplitude of the capture signal using inbuilt functions of the scope

EQUIPMENT

- * DUT as source of the signal-Tektronix Arbitrary Function Generator (AFG 3022) or equivalent signal generator
- * Oscilloscope
- * 10X Passive Voltage probe & BNC cables

THEORY

- * Max Value: Value of highest amplitude point in the acquired signal, measured in volts.
- * Min Value: Value of lowest amplitude point in the acquired signal, measured in volts.

Waveform graph showing Voltage (V) vs. time. Labels include $+V_m$, Max, Mean, and RMS.

Use multipurpose knob to scroll.

MinMaxMeas

- Overview
- Procedure
- Data Collection
- Reports
- Back

Courseware Feature on the Oscilloscope



Lab Details (con't)

- The Procedure section is used to provide step by step instructions on how to proceed through the lab
- The Data Collection option opens the oscilloscope screen where results can be saved in the form of screen images that can be associated with a specific step in the procedure
- The Reports option will automatically create an HTML report document and a folder with all of the captured screen images
 - Student can now easily turn in “soft copy” lab reports



Courseware Web Page on tek.com



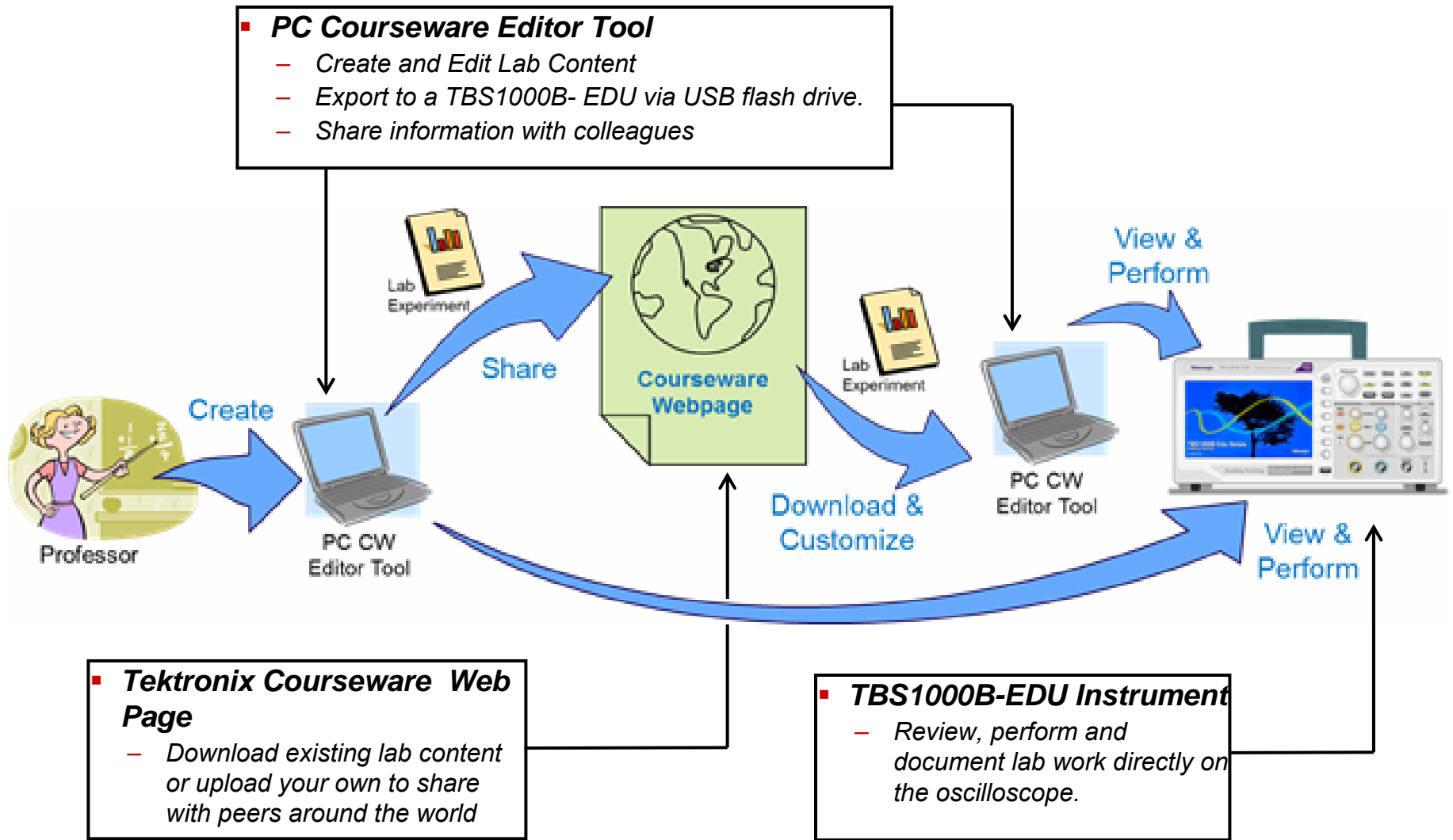
Courseware Web Page

- Is a repository of lab content posted by Tektronix and educators around the world
- Users can search for courseware material by type, language, keyword or author
- Courseware materials can be downloaded and used as-is or modified
- Users can also upload courseware content to share with peers in the educational community
- Users will also be able to comment on material they've downloaded

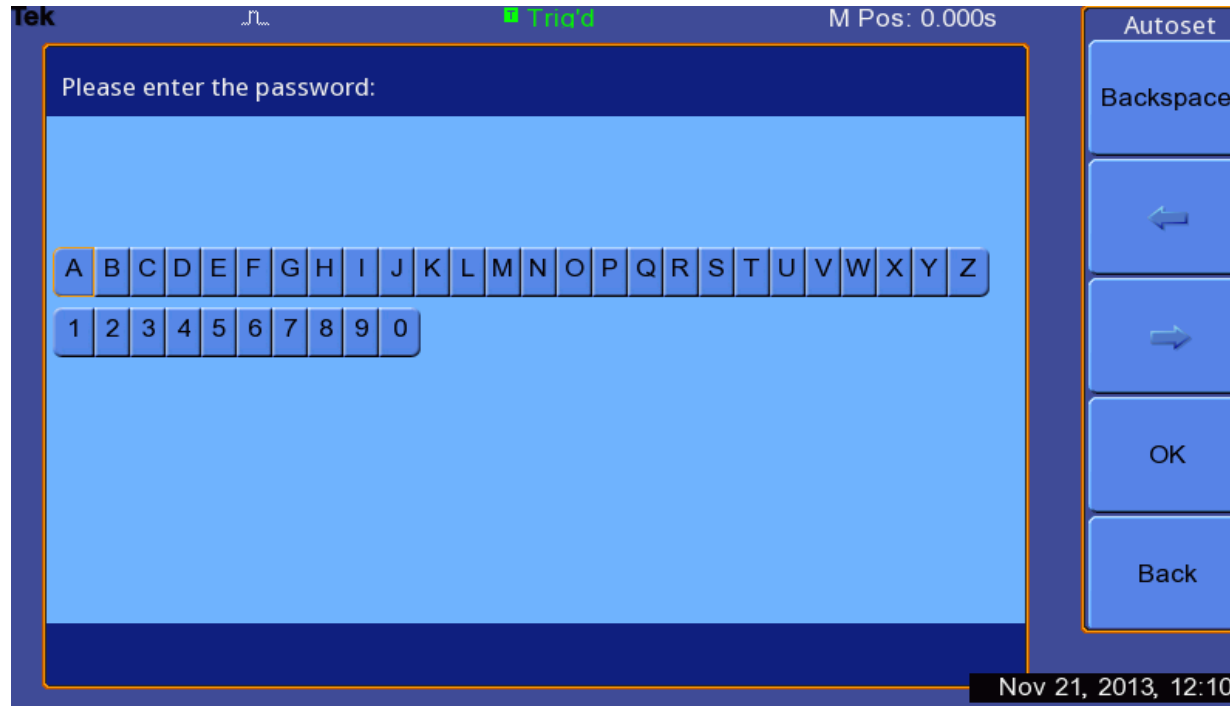
The screenshot shows the 'Courseware Resources for Educators' page. The header includes the Tektronix logo, navigation links (HOME, PRODUCTS, APPLICATIONS, SERVICE, SUPPORT, PURCHASE, ABOUT US, MY ACCOUNT), and a search bar. The main content area is titled 'Courseware Resources for Educators' and features a sub-header 'Enabling teaching with the TBS1000B-EDU'. Below this, there is a paragraph explaining the benefits of the instrument and a link to 'Log in or register to access these courseware resources:'. A list of resources is provided: Courseware files contributed by your peers, Sample files created by Tektronix, User manuals, and Updates for the PC Courseware Editor tool. To the right, there is an image of the TBS1000B-EDU oscilloscope and a computer monitor displaying a waveform. A search sidebar on the right includes a search bar, a language dropdown (English), a terms input field, and a 'Go' button. Below the search bar, there are sections for 'Find by Category' (Academic Labs, Industrial App Notes, Edu-Kit based Labs, Case Study/Academic Projects, Scope Tutorials) and a 'Developer Toolbox' with links to Courseware Home, Search Courseware, How-to Video, User Manuals, Software Updates, and Contribute!

The screenshot shows the 'Using the Oscilloscope' courseware page. The header is identical to the previous screenshot. The main content area is titled 'Using the Oscilloscope' and includes a sub-header 'Using the Oscilloscope' and a date 'Added on 13 February 2014'. Below this, there is a 'SUMMARY' section with a 'Download *' button. The summary text describes the courseware's focus on pre-recorded demonstration signals. A list of bullet points provides instructions for using the oscilloscope. A 'Detailed Description (324.53 KB)' link is provided. To the right, there is a 'Contributed By' section with a profile picture of Mrs. Jennifer Diane Keiser Babb, Tektronix Business analyst and web developer with over 15 years' experience. Below this, there is a 'View more courseware by this author' link and a 'Developer Toolbox' with links to Courseware Home, Search Courseware, How-to Video, User Manuals, Software Updates, and Contribute!. At the bottom, there is a 'Login or register to post comments' link.

Courseware Content Ecosystem



Autoset Password Enable/Disable



- The Autoset function can be enabled/disabled via a password
- Disabling the Autoset can help students learn an oscilloscope's operation instead of allowing them to take shortcuts
- Passwords can easily be updated and changed

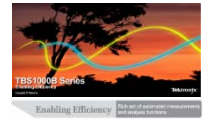
Extensive Monitoring and Analysis Tools



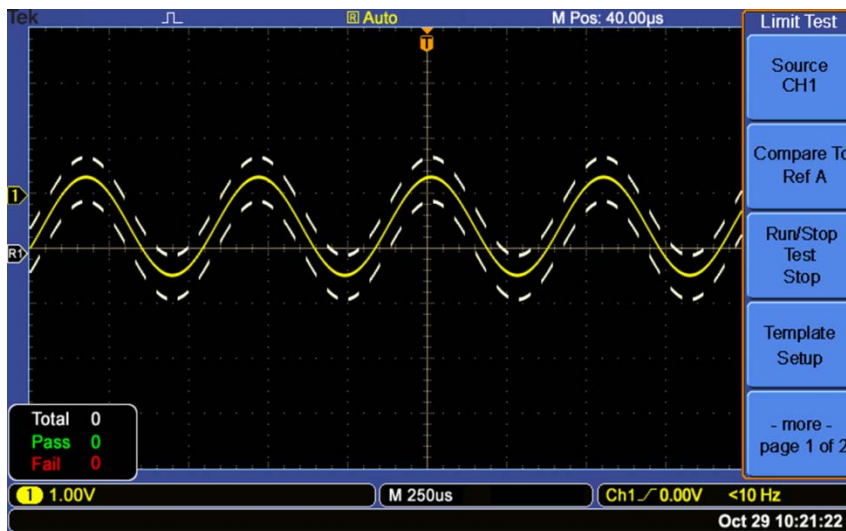
- **New** efficiency-enhancing features:
 - Enhanced Limit Test
 - Specify a tolerance band or specific high/low limits around signals of interest
 - TrendPlot™
 - Allows users to see measurement trends over long periods of time
 - No lost data - the display automatically adjusts the time and amplitude scales
 - Data Logging
 - Allows users to store triggered waveforms onto a USB memory stick
 - See changes in waveforms over long periods of time
- Starting price - **\$550**



Extensive Monitoring and Analysis Tools



- New TrendPlot™ Function
 - Offers a method of displaying measurement changes over long periods of time
 - TBS1000B supports plotting two measurement readings simultaneously

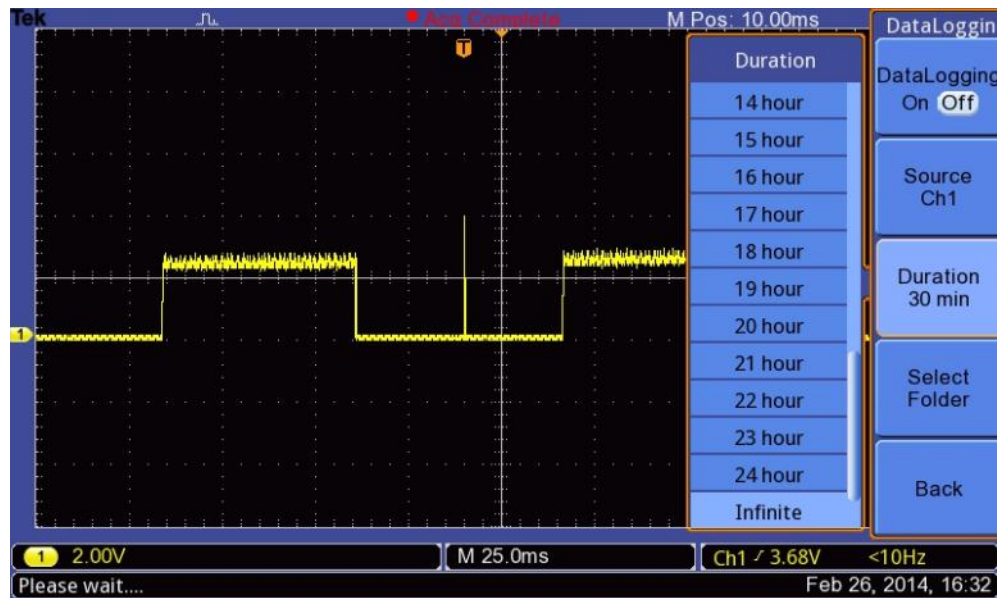


- Enhanced Limit Test Capability
 - Monitor active signals against a predefined template
 - Create templates based on one or two reference waveforms, providing more flexibility in defining pass/fail criteria

Extensive Monitoring and Analysis Tools

■ Built in Data Logging

- Set up the oscilloscope to save user- specified triggered waveforms with time stamps to a USB device.
- The source can be any input channel or math waveform
- Monitor waveforms for pre-determined time periods of up to 24 hours or choose the “Infinite” option for continuous monitoring.
- If the USB device fills up, the oscilloscope will send a prompt to insert another USB memory device to continue saving waveforms.





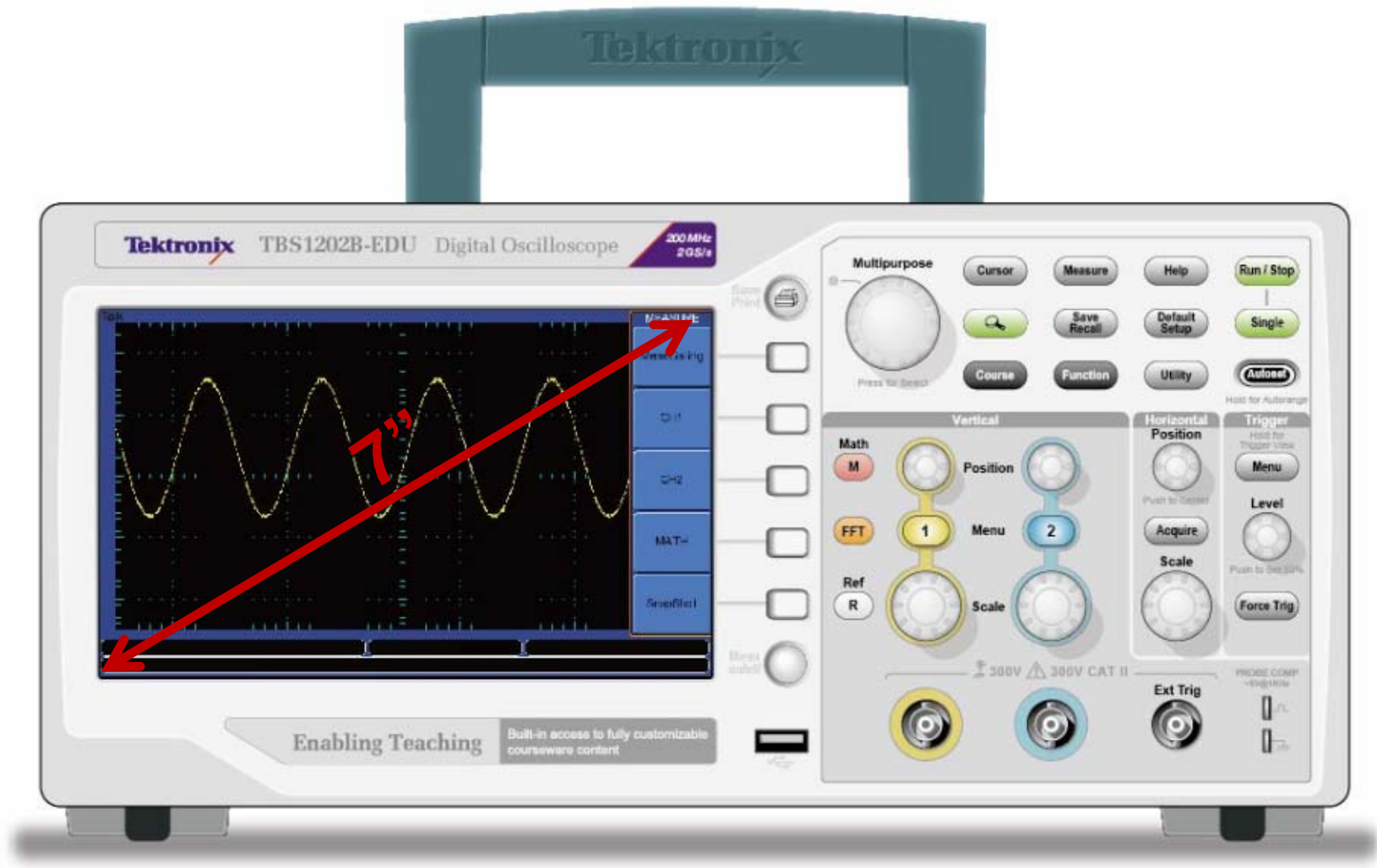
Improved Performance

- **Highest** sampling accuracy of 2GS/s always-on: only entry-level oscilloscope that offers advertised sampling rate on both channels simultaneously (not just for 1 active channel).
- **Highest** number of automated measurements: 34 automated measurement types to maximize measurement efficiency.
- **Only** scope with dual-channel frequency counter displaying frequency measurements on two channels simultaneously.
- **New DPO2k-style UI Design and Zoom Feature**
 - Dedicated Magnifier button on the front panel
 - Up to 10X Zoom
 - Convenient control using the multi-purpose knob
- **New TPP0051 50MHz probes**
 - Low cost & durable





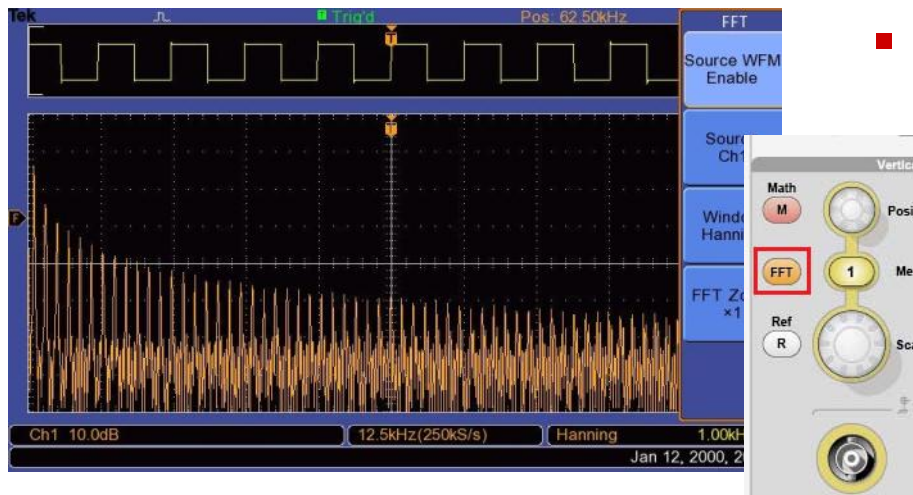
New 7" WVGA high-resolution Display & Updated User Interface





Dual Frequency Counters & Improved FFT Analysis

- Dual Channel Frequency Counter
 - **World's first** 2CH hardware based frequency counter on an oscilloscope
 - Independent trigger level settings for each channel
 - Easy-to-read, large character display



- Improved FFT Visualization
 - Dual windows to simultaneously view the frequency and time domain waveforms
 - Dedicated front panel FFT button for easy access



34 Automated Measurements & Snapshot Feature

- With 34 automated measurements, this scope offers the most measurements in its class
- Cursor measurement option is available for all measurement types
- Convenient snapshot feature for displaying all measurements results

The screenshot shows the Tektronix oscilloscope interface with the following elements:

- Header:** Tek, Ready, M Pos: 0.000s
- Measurements Table:**

Measure	Value	Measure	Value	Measure	Value
Period	xxxxx	Pos Width	xxxxx	Pos Overshoot	xxxxx
Frequency	xxxxx	Neg Width	xxxxx	Neg Overshoot	xxxxx
Peak-Peak	xxxxx	RMS	xxxxx	Burst Width	xxxxx
Mean	xxxxx	Cursor RMS	xxxxx	Pos Pulse Cnt	xxxxx
Cycle RMS	xxxxx	Pos Duty	xxxxx	Neg Pulse Cnt	xxxxx
Minimum	xxxxx	Neg Duty	xxxxx	Fall Edge Cnt	xxxxx
Maximum	xxxxx	Cycle Mean	xxxxx	Rise Edge Cnt	xxxxx
Rise Time	xxxxx	Cursor Mean	xxxxx	Area	xxxxx
Fall Time	xxxxx	High	xxxxx	Cycle Area	xxxxx
Amplitude	xxxxx	Low	xxxxx	DelayRR	xxxxx
DelayRF	xxxxx	DelayFR	xxxxx	DelayFF	xxxxx
Phase	xxxxx				
- SnapShot Panel:**
 - Source Ch1
 - Run SnapShot
 - Back
- Footer:**
 - 1 500mV 2 500mV M 10.0ms Ch1 0.00V <10Hz
 - Please wait.... Nov 21, 2013, 15:56



TBS1000B/-EDU Series

Models	Education model	TBS1052B-EDU	TBS1072B-EDU	TBS1102B-EDU	TBS1152B-EDU	TBS1202B-EDU
	Commercial model	TBS1052B	TBS1072B	TBS1102B	TBS1152B	TBS1202B
Bandwidth(MHz)		50	70	100	150	200
Sample rate		1 GS/S p.ch		2 GS/s p.ch		
Channel Count		2	2	2	2	2
Accuracy		3%, 2mV				
Record Length		2.5k p.ch				
UI Features		DPO-like Look & Feel, Zoom Function				
Display		7 inch WVGA				
Waveform Math		-,+,x, improved FFT				
Trigger		Edge, Video, Pulse				
# of Measurements		34				
Connectivity		USB-D, USB-H, PC-SW, API				
Special Apps	Education model	Frequency Counter, Courseware Integration				
	Commercial model	Frequency Counter, Trend Plot, Enhanced Pass/Fail, Data Logging				
Probe		TPP0051	TPP0101		TPP0201	
Warranty		5year				

Note – Feature improvements over the TBS1000 series are highlighted in Red



Ordering Information

Oscilloscope Models		US MSRP
TBS1052B	50MHz, 2 Channel, 1GS/s sample rate, w/o courseware	\$550
TBS1052B-EDU	50MHz, 2 Channel, 1GS/s sample rate, with courseware	\$520
TBS1072B	70MHz, 2 Channel, 1GS/s sample rate, w/o courseware	\$890
TBS1072B-EDU	70MHz, 2 Channel, 1GS/s sample rate, with courseware	\$790
TBS1102B	100MHz, 2 Channel, 2GS/s sample rate, w/o courseware	\$1,190
TBS1102B-EDU	100MHz, 2 Channel, 2GS/s sample rate, with courseware	\$1,090
TBS1152B	150MHz, 2 Channel, 2GS/s sample rate, w/o courseware	\$1,490
TBS1152B-EDU	150MHz, 2 Channel, 2GS/s sample rate, with courseware	\$1,390
TBS1202B	200MHz, 2 Channel, 2GS/s sample rate, w/o courseware	\$1,790
TBS1202B-EDU	200MHz, 2 Channel, 2GS/s sample rate, with courseware	\$1,690

Options & Accessories		US MSRP
Opt. P2220	Change the two 10X standard probes to two P2220 1X/10X probes	\$100
Opt. D1	Service Option: Calibration Data Report	\$10
TEK-USB-488	GPIB to USB converter	\$779
AC2100	Soft Carrying Case for Instrument	\$131
HCTEK4321	Hard Plastic Carrying Case for Instrument (requires AC2100)	\$804
RM2000B	Rackmount Kit	\$389

Note: MSRP may change over time, please check TEK.COM for the latest prices.



Additional Accessories

- **Passive probes**
 - TPP0201 standard for 200MHz and 150MHz model
 - TPP0101 standard for 100MHz and 70MHz model
 - New TPP0501 standard 50MHz models & offered at significantly lower after-market prices
 - 1X/10X probe option

- **Free Software & Support material**
 - Included on the Product CD and downloadable from tek.com
 - OpenChoice Software(released by firmware update)
 - Courseware Editor
 - LabView Driver
 - IVI-C Driver
 - PC Courseware Editor Tool
 - Example Courseware labs
 - ABC's of Probes & XYZ's of Oscilloscopes application notes
 - Link to courseware landing page

- **Warranty**
 - Standard 5 year warranty for all models

TBS1000B-EDU/TBS1000B Series Oscilloscopes

TBS1000B-EDU



The world's first dedicated teaching oscilloscope

TBS1000B



The best value, all-around oscilloscope available

TBS1000B/-EDU Series Common Feature

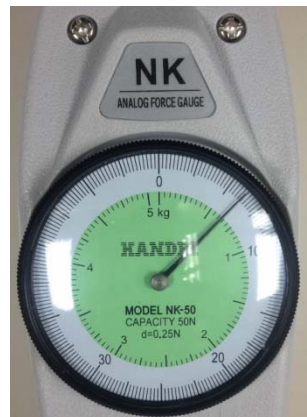


Rubberized footing increases stability

- The TBS1000B(-EDU) oscilloscopes use a Santoprene rubberized material that provides increased stability
- The TBS1000B(-EDU) models are three times more stable than TBS1000



TBS1000



TBS1000B

