Tektronix TBS2074B

Tektronix TBS2074B Digital Oscilloscope User Manual

Model: TBS2074B | Brand: Tektronix

1. Introduction

The Tektronix TBS2000B series digital oscilloscopes are designed to provide high-level signal display and measurement, which are critical functions for any oscilloscope. The TBS2074B model, with its 70MHz bandwidth and 4 channels, offers an intuitive user experience and powerful analysis capabilities. This manual provides essential information for setting up, operating, maintaining, and troubleshooting your TBS2074B oscilloscope.

Figure 1.1: Front view of the Tektronix TBS2074B Digital Oscilloscope.

2. Key Features

The TBS2074B oscilloscope is equipped with features designed to enhance usability and measurement accuracy:

- **Bandwidth and Sample Rate:** 70MHz bandwidth with a maximum sample rate of 2GS/s (half channel) or 1GS/s (all channels).
- **Large Display:** Features a 9-inch WVGA color display with 15 horizontal divisions, allowing for 50% more signal visibility on a single screen.
- **Record Length:** A 5M-point record length enables the capture of long-duration data.
- **TekVPI Probe Interface:** Supports active, differential, and current probes with automatic scaling and unit settings.
- **Automatic Measurements:** Includes 32 powerful automatic measurement functions for comprehensive waveform analysis.
- **FFT Function:** Provides fast waveform analysis capabilities.
- **Search/Mark Function:** Easily identify events within captured waveforms.
- **HelpEverywhere:** Context-sensitive help is available directly on the device.
- **Built-in Handbook:** An online handbook explains oscilloscope basics and operation procedures.
- **Multi-language Support:** User interface and front panel overlays support 10 languages.
- **Connectivity:** Supports Wi-Fi and 10/100BASE-T Ethernet for easy data sharing and remote control.

3. Setup

3.1 Unpacking

Carefully remove the oscilloscope and all accessories from the packaging. Verify that all components listed in the packing list are present and undamaged. Retain the original packaging for future transport or storage.

3.2 Connecting Power

Connect the provided power cord to the AC input on the rear panel of the oscilloscope and then to a suitable power outlet. Ensure the power source meets the voltage and frequency requirements specified on the device label.

Figure 3.1: Rear panel of the oscilloscope with power input and connectivity ports.

3.3 Initial Power On

Press the power button located on the front panel. The oscilloscope will perform a self-test and then display the main waveform screen. Allow a few moments for the system to fully initialize.

4. Operation

4.1 User Interface Overview

The TBS2074B features a large 9-inch display and an intuitive front panel with dedicated controls for vertical, horizontal, and trigger settings. Navigation buttons and a rotary knob allow for easy menu access and parameter adjustment.

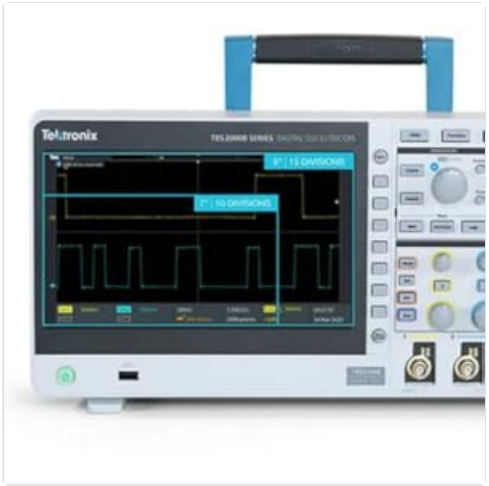


Figure 4.1: The oscilloscope display highlighting the 15 horizontal divisions for extended signal view.

4.2 Basic Measurements

To perform a basic measurement:

1. Connect the appropriate probe to one of the input channels (CH1-CH4) on the front panel.
2. Connect the probe tip to the circuit point you wish to measure.
3. Adjust the vertical scale (Volts/Div) and horizontal scale (Sec/Div) knobs to display the waveform clearly.
4. Use the Trigger controls to stabilize the waveform on the screen.
5. Press the 'Measure' button to access automatic measurement options.

Figure 4.2: Connecting probes to the oscilloscope input channels.

4.3 Advanced Functions

The TBS2074B offers advanced analysis tools:

- **Automatic Measurements:** Select from 32 different automatic measurements (e.g., Peak-to-Peak, Frequency, Rise Time) to quickly quantify waveform characteristics.
- **FFT Analysis:** Use the Fast Fourier Transform (FFT) function to analyze the frequency components of your signal.
- **Search/Mark:** Utilize the search and mark feature to automatically identify and navigate to specific events or anomalies within a long waveform record.

Figure 4.3: The automatic measurement selection menu on the oscilloscope display.

Figure 4.4: Waveform display demonstrating the search and mark function.

5. Connectivity

The TBS2074B offers various connectivity options for data transfer and remote control:

- **Front Panel USB 2.0 Host Port:** Easily save waveform data, screenshots, or instrument settings to a USB flash drive.
- **Rear Panel USB 2.0 Device Port:** Connect the oscilloscope to a PC for remote control and data transfer using compatible software.
- **10/100BASE-T Ethernet Port:** Enables remote control and data sharing over a local area network (LAN).
- **Wi-Fi Interface:** Supports wireless communication for convenient data access and sharing.

Figure 5.1: Close-up view of the rear panel connectivity ports.

Figure 5.2: The oscilloscope connected to a laptop for data transfer or remote control.

6. Maintenance

6.1 Cleaning

To maintain the performance and appearance of your oscilloscope, regularly clean the exterior surfaces. Use a soft, damp cloth with a mild detergent. Avoid abrasive cleaners or solvents that could damage the plastic components or display.

6.2 Storage

When not in use, store the oscilloscope in a clean, dry environment, away from direct sunlight and extreme temperatures. If storing for extended periods, it is recommended to use the original packaging or a protective case.

7. Troubleshooting

This section provides solutions to common issues you might encounter with your TBS2074B oscilloscope.

Problem	Possible Cause	Solution
No power	Power cord not connected; Power outlet fault; Internal fuse blown	Check power cord connection; Test power outlet; Contact service for fuse replacement
No waveform displayed	Probe not connected; Incorrect vertical/horizontal settings; Trigger not set correctly	Ensure probe is connected; Adjust Volts/Div and Sec/Div; Adjust trigger level or mode
Unstable waveform	Incorrect trigger source or level; Signal noise	Verify trigger source and adjust trigger level; Use averaging or bandwidth limit to reduce noise

If you encounter issues not covered here, or if the suggested solutions do not resolve the problem, please contact Tektronix customer support.

8. Specifications

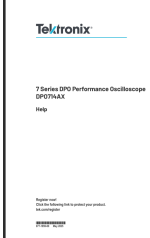
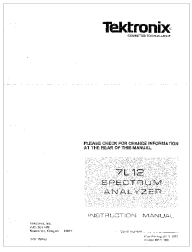
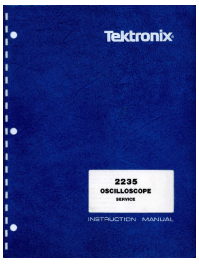
Detailed technical specifications for the Tektronix TBS2074B Digital Oscilloscope:

Specification	Value
Manufacturer	Tektronix
Model Number	TBS2074B
Bandwidth	70 MHz (Upgradeable to 200 MHz with option)
Analog Channels	4
Max Sample Rate	2 GS/s (half channel), 1 GS/s (all channels)
Record Length	5 M points
Display	9-inch WVGA Color Display
Automatic Measurements	32 types
Probe Interface	TekVPI
Connectivity	USB 2.0 Host (front), USB 2.0 Device (rear), 10/100BASE-T Ethernet, Wi-Fi
Item Weight	3 Kilograms
Package Dimensions	50 x 40 x 26 cm
Included Components	Standard Accessory KIT
Batteries Used	No
First Available Date (Amazon.co.jp)	2020/5/11

9. Warranty and Support

Tektronix products are designed for reliability and performance. For information regarding warranty coverage, technical support, and service, please refer to the official Tektronix website or contact your local Tektronix representative. Keep your purchase receipt as proof of purchase for warranty claims.
For further assistance, visit the official Tektronix support page:www.tek.com/support

Related Documents - TBS2074B

	[Tektronix 7 Series DPO Performance Oscilloscope DPO714AX Help Guide] Comprehensive help guide for the Tektronix 7 Series DPO Performance Oscilloscope, model DPO714AX. Learn about features, operation, configuration, and troubleshooting for this advanced test and measurement instrument.
	[Tektronix 7L12 Spectrum Analyzer Instruction Manual] This document provides comprehensive instructions for operating, testing, calibrating, and servicing the Tektronix 7L12 Spectrum Analyzer, a dual-width plug-in unit for 7000-Series Oscilloscopes. It details specifications, front panel controls, operational procedures, calibration methods, and applications for RF signal analysis.
	[Tektronix 5 Series B MSO: Specifications and Performance Verification] Detailed specifications and performance verification procedures for the Tektronix 5 Series B MSO oscilloscopes, including models MS054B, MS056B, and MS058B. Essential technical data for engineers and technicians.
	[Tektronix 2235 Oscilloscope Service Manual] Comprehensive service manual for the Tektronix 2235 Oscilloscope. Includes detailed specifications, operating instructions, theory of operation, performance checks, adjustment procedures, maintenance, troubleshooting, and parts lists for qualified service personnel.
	[Tektronix 3 Series Mixed Domain Oscilloscope Help (MD032, MD034)] User guide for the Tektronix 3 Series Mixed Domain Oscilloscope (MD032, MD034), detailing features, operation, configuration, and troubleshooting for this advanced test and measurement instrument.
	[Tektronix 3 Series MDO Oscilloscope MD032 & MD034: Specifications and Performance Verification] Detailed specifications and performance verification procedures for the Tektronix 3 Series Mixed Domain Oscilloscopes (MDO32 and MDO34), covering analog and digital channel performance, acquisition systems, trigger capabilities, and more.