Tektronix TPP0051-TEKTRONIX

TEKTRONIX TPP0051 Passive Probe User Manual

Model: TPP0051-TEKTRONIX

1. Introduction

1.1 Product Overview

The TEKTRONIX TPP0051 is a 50 MHz, 10X passive voltage probe designed for general purpose measurements with oscilloscopes, particularly compatible with the TBS1000B series. It provides a high input impedance and low input capacitance, making it suitable for a wide range of applications from low-frequency signals to medium-frequency digital and analog circuits. This manual provides essential information for the safe and effective use of your TPP0051 probe.

1.2 Safety Information

Always observe the following safety precautions to prevent injury and avoid damage to the probe or connected equipment:

- Do not exceed the maximum input voltage rating of the probe. Refer to the specifications section for details.
- Ensure the probe is properly connected to the oscilloscope and the circuit under test before applying power.
- Avoid touching exposed conductors when power is applied to the circuit.
- Use the probe only in dry environments. Do not expose it to moisture.
- Inspect the probe and its accessories for any damage before each use. Do not use if damaged.
- Always connect the probe ground lead to the circuit ground before connecting the probe tip to the signal point.

2. Setup

2.1 Unpacking and Inspection

Upon receiving your TPP0051 probe, carefully unpack all components and inspect them for any signs of shipping damage. The package should contain the following items:

- TPP0051 Passive Probe
- Hook Tip
- Ground Lead with Alligator Clip
- Adjustment Tool
- Color Rings (for probe identification)



An image showing the Tektronix TPP0051 Passive Probe, including the main probe body with cable, a BNC connector, various probe tips, color rings for identification, and adjustment tools.

2.2 Connecting the Probe

Follow these steps to connect the TPP0051 probe to your oscilloscope:

1. Ensure the oscilloscope is powered off.
2. Connect the BNC connector of the TPP0051 probe to an input channel of your oscilloscope (e.g., Channel 1).
3. Attach the ground lead of the probe to the ground terminal of the probe body.
4. Power on the oscilloscope.
5. Set the oscilloscope input impedance to 1 MΩ. The TPP0051 probe is designed for use with 1 MΩ inputs.

3. Operating Instructions

3.1 Basic Operation

Once connected, the TPP0051 probe is ready for basic signal acquisition:

- Attach the probe tip (e.g., hook tip) to the signal point on your circuit.
- Connect the alligator clip of the ground lead to the circuit's ground reference point.
- Adjust the oscilloscope's vertical scale (Volts/Div) and horizontal scale (Sec/Div) to view the signal appropriately.
- Remember that the probe has a 10X attenuation factor. The oscilloscope will typically automatically adjust its display to show the true voltage, but always verify the displayed scale.

3.2 Probe Compensation Adjustment

Proper probe compensation is crucial for accurate measurements. This procedure ensures the probe's capacitance is matched to the oscilloscope's input capacitance, preventing signal distortion.

1. Connect the probe to an oscilloscope input channel.
2. Connect the probe tip to the oscilloscope's probe compensation output (usually a square wave signal, often labeled 'Probe Comp' or 'Cal'). Connect the ground lead to the compensation ground.
3. Observe the square wave on the oscilloscope screen.
4. Using the non-metallic adjustment tool provided, carefully turn the compensation screw on the probe body until the square wave corners are flat and sharp, with no overshoot or undershoot.
5. An overcompensated signal will show an overshoot (rounded top, sharp bottom), while an undercompensated signal will show an undershoot (sharp top, rounded bottom).

4. Maintenance

4.1 Cleaning

To maintain the performance and longevity of your probe, keep it clean. Use a soft, lint-free cloth lightly dampened with water or a mild detergent solution. Do not use abrasive cleaners or solvents. Ensure the probe is completely dry before use.

4.2 Storage

When not in use, store the probe in a clean, dry environment, preferably in its original packaging or a protective case, to prevent damage to the cable and tip.

5. Troubleshooting

5.1 Common Issues and Solutions

Problem	Possible Cause	Solution
No signal or weak signal on oscilloscope	Probe not connected properly; Oscilloscope input impedance incorrect; Probe tip not making contact; Ground lead not connected.	Ensure BNC is fully seated; Set oscilloscope input to 1 MΩ; Check probe tip contact; Connect ground lead to circuit ground.
Distorted waveform (overshoot/undershoot)	Improper probe compensation.	Perform probe compensation adjustment (refer to Section 3.2).
Noisy or unstable waveform	Poor ground connection; External interference; Damaged probe cable.	Ensure solid ground connection; Shield probe from strong electromagnetic fields; Inspect cable for damage.
Probe tip or accessories are loose	Normal wear or improper attachment.	Ensure accessories are securely attached. Replace if worn out.

6. Specifications

6.1 Technical Specifications

Parameter	Value
Model Number	TPP0051-TEKTRONIX
Bandwidth	50 MHz
Attenuation Ratio	10X
Input Resistance	10 MΩ (when terminated into 1 MΩ oscilloscope input)
Input Capacitance	13 pF
Compensation Range	10 pF to 30 pF
Maximum Input Voltage	300 V RMS CAT II
Cable Length	1.3 meters (4.3 feet)
Connector Type	BNC

Parameter	Value
Item Weight	7.5 pounds
Manufacturer	Tektronix
Date First Available	March 24, 2016

7. Warranty and Support

7.1 Warranty Information

This product is covered by the standard manufacturer's warranty. Please refer to the warranty card included with your purchase or visit the official Tektronix website for detailed warranty terms and conditions.

7.2 Customer Support

For technical assistance, troubleshooting, or service inquiries, please contact Tektronix customer support. Contact information can typically be found on the Tektronix official website or in the product packaging.

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