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› TNP Products PP-150 Oscilloscope Probe User Manual

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TNP Products PP-150 Oscilloscope Probe User Manual

Model: PP-150 | Brand: TNP Products

1. INTRODUCTION

The TNP Products PP-150 Oscilloscope Probes are designed for accurate signal measurement in various electronic testing applications. These probes offer X1 and X10 attenuation ratios, making them compatible with a wide range of digital and analog oscilloscopes up to 100MHz bandwidth. Their robust, injection-molded construction ensures durability and flexibility for diverse testing environments.



Unlock High-Frequency Performance

Achieve accurate readings with high-performance probes

Image 1.1: The PP-150 probe connected to test equipment, highlighting its capability for high-frequency performance.

2. PACKAGE CONTENTS

Verify that all items listed below are included in your package:

- 2x PP-150 Oscilloscope Probes (X1/X10, 100MHz)
- 2x Mini Alligator Clips and Ground Leads
- 2x Interchangeable Probe Clip Tips
- 1x Screw Driver (for compensation adjustment)
- 8x Marker Bands (colorized cable identifiers)
- 4x Tip Locating Sleeves

What's Included?

Probes That Redefine
Diagnostic Excellence

6x Marking Bands



Image 2.1: All components included in the PP-150 Oscilloscope Probe package.

3. SPECIFICATIONS

Feature	Specification
System Bandwidth	X1: DC-6MHz; X10: DC-100MHz
Attenuation Ratio	X1 / X10
Input Resistance	1M ohms (X1); 10M ohms (X10)
Input Capacitance	X1: 85pF-115pF; X10: 18.5pF-22.5pF
Compensation Scope	20pF-40pF
Maximum Input Voltage	X1: <200V DC + Peak AC; X10: <600V DC + Peak AC
Cable Length	120 cm

Feature	Specification
Operating Temperature	-10°C to +50°C
Non-Operating Temperature	-20°C to +75°C
Humidity	Under 85%

4. SETUP AND CONNECTION

Follow these steps to properly set up and connect your oscilloscope probes:

- 1. Connect to Oscilloscope:** Attach the BNC connector of the probe to the input channel of your oscilloscope. Ensure a secure connection.
- 2. Attach Ground Lead:** Connect the alligator clip ground lead from the probe to the ground terminal of your oscilloscope or the circuit under test.
- 3. Select Attenuation:** Use the X1/X10 switch on the probe body to select the desired attenuation ratio.
 - X1 (1:1) Mode:** Provides a direct signal to the oscilloscope. Suitable for low-frequency signals and when maximum sensitivity is required. The bandwidth is limited to 6MHz in this mode.
 - X10 (10:1) Mode:** Attenuates the signal by a factor of 10. This mode increases the input impedance, reduces loading effects on the circuit, and extends the bandwidth up to 100MHz. It is generally preferred for most measurements.
- 4. Probe Compensation:** Before taking measurements, compensate the probe to match the input capacitance of your oscilloscope.
 - Connect the probe to the oscilloscope's calibration output (usually a square wave).
 - Set the oscilloscope to display the calibration signal.
 - Using the provided screwdriver, adjust the compensation trimmer on the probe body until the square wave displayed on the oscilloscope has flat tops and bottoms with no overshoot or undershoot.

Pro-Level Accuracy

Designed for advanced users needing premium signal clarity



Modular Design

Includes a 12cm alligator clip ground wire for easy setup and grounding during testing

X1/X10 Attenuation

Offers selectable X1/X10 attenuation for flexible measurement ranges, adapting to different signal levels.



Image 4.1: Detail of the probe's X1/X10 attenuation switch and modular design.

Crafted for precise and reliable
signal capturing

Comes with an adjusting tool for fine-tuning capacitance, ensuring optimal performance and precise measurements

Image 4.2: The adjustable compensation feature on the probe's BNC connector.

Once the probes are set up and compensated, you can begin taking measurements:

1. **Connect to Circuit:** Carefully connect the probe tip to the test point on your circuit. Ensure a stable connection to avoid erroneous readings.
2. **Observe Waveform:** Adjust the oscilloscope's vertical and horizontal settings to properly display the waveform.
3. **Interpret Readings:** Remember to account for the attenuation ratio (X1 or X10) when interpreting voltage readings. If using X10 mode, the actual voltage is 10 times the displayed voltage. Most modern oscilloscopes automatically adjust for this setting if the probe is properly configured in the scope's menu.
4. **Use Accessories:** Utilize the included accessories such as the interchangeable probe clip tips and marker bands for convenience and organization during complex measurements.

Reliable Probing for Critical Tasks

Designed for precise and clean
signal capture every time

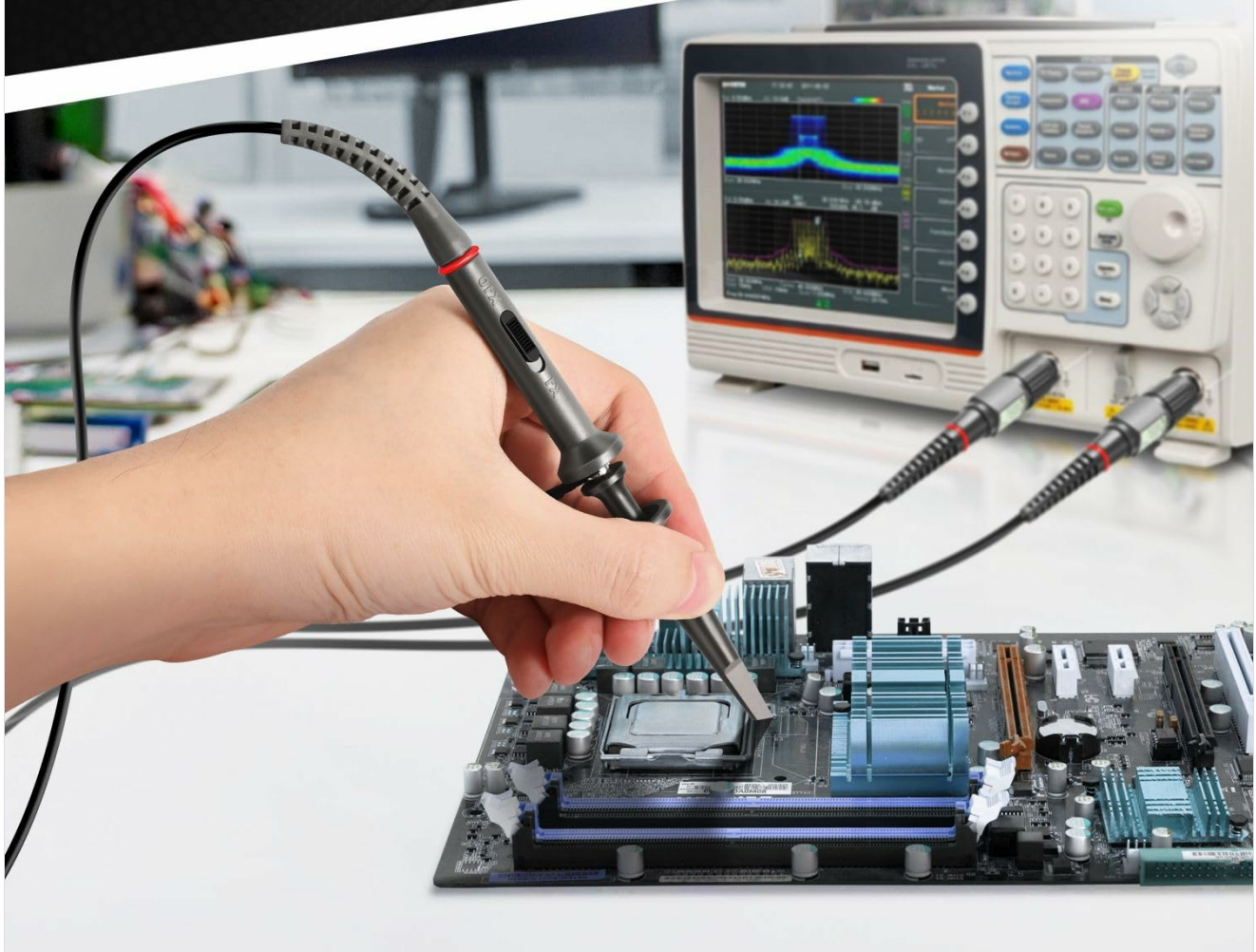


Image 5.1: The PP-150 probe in action, performing a measurement on a circuit board.

6. SAFETY INFORMATION

The TNP Products PP-150 probes are designed with international safety standards in mind. Adhere to the following safety guidelines to prevent injury and damage to equipment:

- Do not exceed the maximum input voltage ratings for each attenuation mode (X1: <200V DC + Peak AC; X10: <600V DC + Peak AC).
- Always connect the ground lead before connecting the probe tip to the circuit under test.
- Ensure your oscilloscope is properly grounded.
- Avoid touching exposed metal parts of the probe or circuit while power is applied.
- Use the probes only in dry conditions. Avoid exposure to moisture.
- If the probe appears damaged, do not use it.



Image 6.1: Key features emphasizing safety and performance of the PP-150 probes.

7. MAINTENANCE

Proper maintenance ensures the longevity and accuracy of your probes:

- **Cleaning:** Clean the probe body with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Storage:** Store the probes in a clean, dry environment, away from direct sunlight and extreme temperatures.
- **Inspection:** Periodically inspect the probe cable, connectors, and tip for any signs of wear or damage. Replace if necessary.
- **Compensation Check:** Re-check probe compensation periodically, especially if you notice discrepancies in measurements or if the probe has been subjected to significant temperature changes.

8. TROUBLESHOOTING

If you encounter issues with your PP-150 probes, consider the following:

- **No Signal or Weak Signal:**

- Ensure the probe is securely connected to both the oscilloscope and the circuit.
- Verify the ground lead is properly connected.
- Check the attenuation switch (X1/X10). If in X10 mode, the signal will be attenuated.
- Confirm the oscilloscope's input settings (e.g., AC/DC coupling, vertical scale).

- **Distorted Waveform (e.g., rounded or spiked square wave):**

- Perform probe compensation as described in Section 4.
- Ensure the oscilloscope's input impedance matches the probe's (typically 1M Ω).

- **Noise in Signal:**

- Ensure the ground connection is short and robust.
- Minimize external electromagnetic interference.
- Check for damaged cables or connectors.

9. APPLICATIONS

The TNP Products PP-150 probes are versatile and suitable for a variety of applications, including:

- **Automotive Diagnostics:** Testing ECUs, sensors, and wiring in harsh environments.
- **Medical Facilities:** Diagnosing electrical issues in medical devices and ensuring signal performance.
- **Telecommunications:** Testing and troubleshooting routers, switches, and network hardware.
- **Field Service and Repair:** Portable design ideal for field technicians diagnosing industrial equipment.

Precision for Every Situation

Ideal for a wide range of testing applications.



Automotive Diagnostics

Ideal for testing automotive electronics in harsh environments, including ECUs, sensors, and wiring



Medical Facilities

Ideal for diagnosing electrical issues in medical devices and ensuring signal performance



Telecommunications

Ideal for testing and troubleshooting routers, switches, and network hardware



Field Service and Repair

Portable, ergonomic design ideal for field technicians diagnosing industrial equipment

Image 9.1: Diverse applications of the PP-150 oscilloscope probes.

10. WARRANTY AND SUPPORT

TNP Products stands behind the quality of its products. For warranty information, technical support, or service inquiries, please refer to the contact information provided with your purchase or visit the official TNP Products website. Please retain your proof of purchase for warranty claims.

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Name

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Email

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question