Micsig SM-DP703

Micsig High Voltage Differential Probe DP/DP Series User Manual

Comprehensive guide for the Micsig DP/DP Series High Voltage Differential Probes, including models DP703, DP1503, DP3003, DP704, DP1504, DP3004, DP705, DP1505, DP3005.

1. Introduction

This manual provides detailed instructions for the safe and effective use of the Micsig DP/DP Series High Voltage Differential Probes. These probes are designed for measuring high voltage differential signals with oscilloscopes, offering features such as low noise floor, excellent high-voltage amplitude-frequency characteristics, and industry-leading common mode rejection capability.
The DP/DP Series probes are built with cutting-edge SigOFIT technology, ensuring high accuracy, excellent bandwidth flatness, and low noise performance. They feature a BNC interface and Type-C power input for versatile connectivity.

2. Package Contents

Verify that all items listed below are present in your package. If any items are missing or damaged, contact Micsig support.

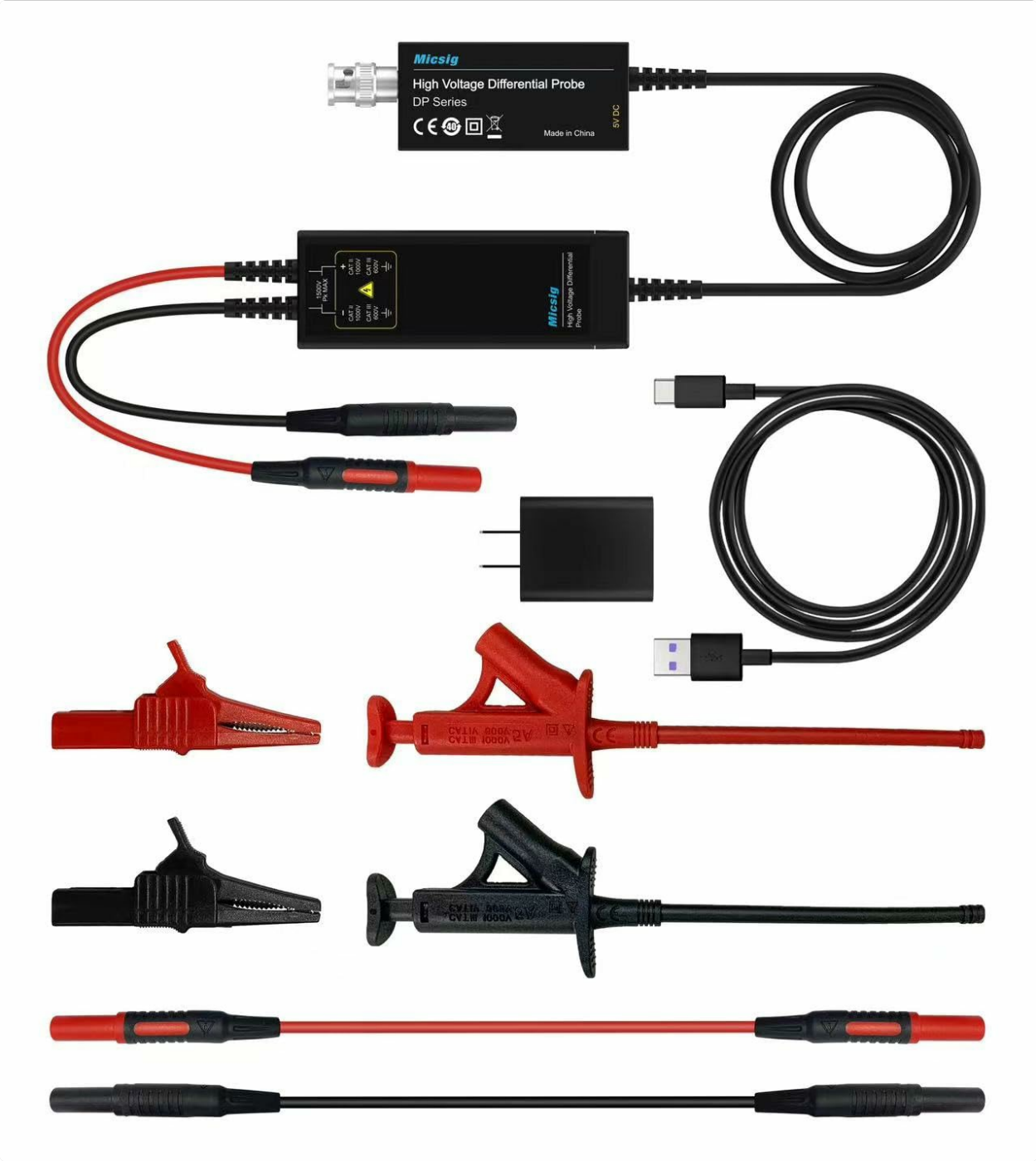


Image 2.1: The complete package contents of the Micsig High Voltage Differential Probe DP/DP Series, including the probe unit, input leads, power adapter, and USB-C cable.

- High Voltage Differential Probe Unit
- Input Test Leads (Red and Black)
- Alligator Clips (Red and Black)
- USB Type-C Power Cable
- Power Adapter
- User Manual (this document)

3. Product Components

Familiarize yourself with the main components of the differential probe.

Image 3.1: A close-up view of the Micsig High Voltage Differential Probe unit, showing the main body, input terminals, and output BNC connector.

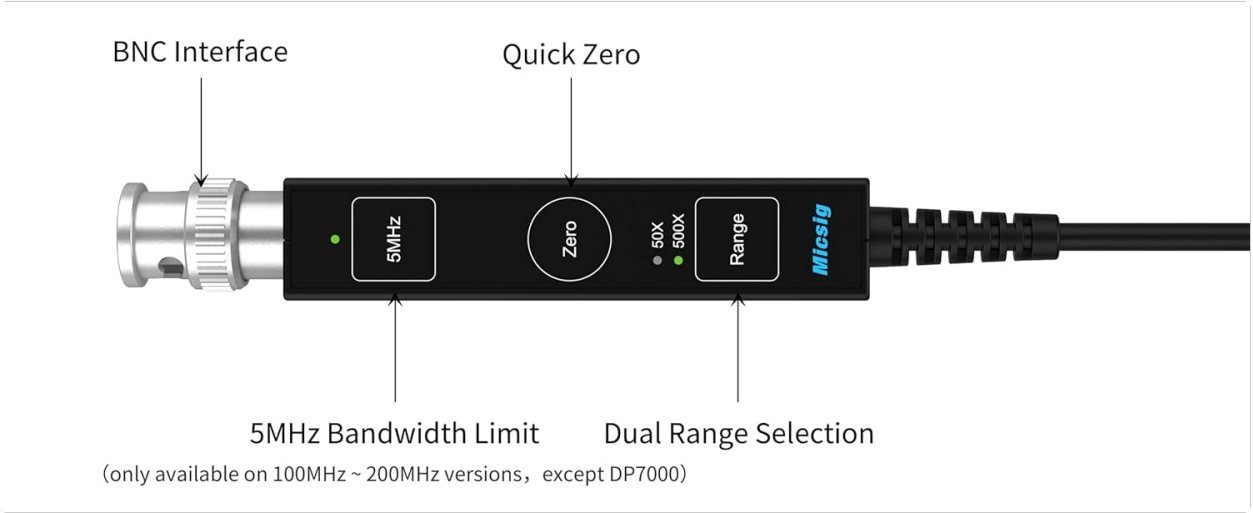


Image 3.2: Detailed view of the Micsig High Voltage Differential Probe's output section, highlighting the BNC Interface, 5MHz Bandwidth Limit button, Quick Zero button, and Dual Range Selection button.

- **Probe Unit:** The main body containing the differential amplifier circuitry.
- **Input Terminals:** Connect the test leads to these terminals (red for positive, black for negative).
- **BNC Interface:** Connects the probe output to the oscilloscope input.
- **5MHz Bandwidth Limit Button:** (Available on 100MHz-200MHz versions, except DP7000) Limits the bandwidth to 5MHz for noise reduction when measuring lower frequency signals.
- **Quick Zero Button:** Used to quickly zero the probe's output offset.
- **Dual Range Selection Button:** Toggles between different attenuation ranges (e.g., 50X, 500X) to accommodate various input voltage levels.

- **Type-C Power Input:** For connecting the USB Type-C power cable.

4. Setup Instructions

1. **Power Connection:** Connect the USB Type-C power cable to the probe unit and the power adapter. Plug the power adapter into a suitable power outlet.
2. **Oscilloscope Connection:** Connect the BNC interface of the differential probe to an input channel of your oscilloscope using a BNC cable.
3. **Input Lead Connection:** Attach the red and black test leads to the corresponding input terminals on the differential probe. Ensure a secure connection.
4. **Attaching Probes to Circuit:** Connect the alligator clips or other appropriate accessories to the test leads. Carefully attach the red clip to the positive test point and the black clip to the negative test point of the circuit under test.
5. **Power On:** Ensure the oscilloscope is powered on and configured for the appropriate input settings (e.g., 1MΩ input impedance).

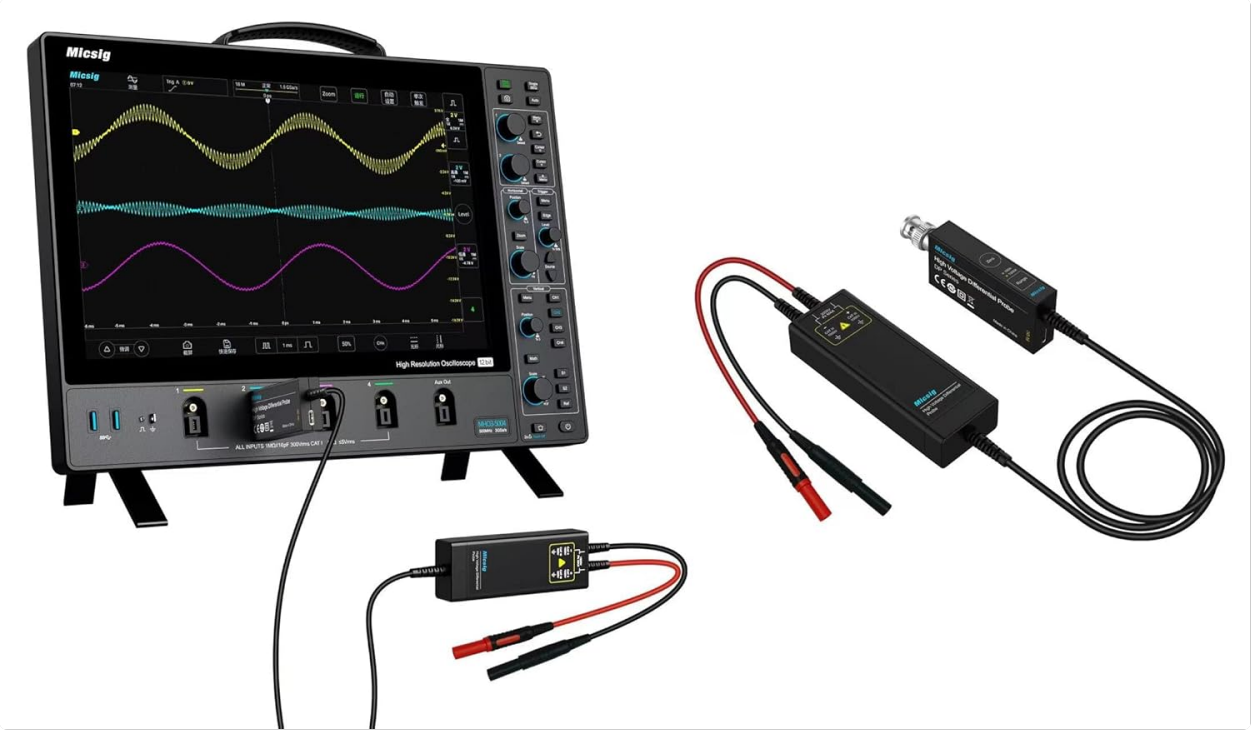


Image 4.1: The Micsig High Voltage Differential Probe connected to an oscilloscope, demonstrating a typical setup for differential voltage measurements.

5. Operating Instructions

5.1. Powering On and Initial Check

Once connected, the probe's power indicator LED should illuminate. Before making measurements, perform a

quick zero adjustment.

5.2. Quick Zero Adjustment

With the input leads disconnected from any circuit, press the**Quick Zero** button on the probe unit. This calibrates the probe to output zero volts when no differential voltage is present, ensuring accurate measurements.

5.3. Range Selection

The **Dual Range Selection** button allows you to switch between different attenuation ratios (e.g., 50X, 500X). Select the appropriate range based on the expected voltage of the signal you are measuring. A higher attenuation ratio is used for larger input voltages.

- **Lower Attenuation (e.g., 50X):** For smaller differential voltages, providing higher sensitivity.
- **Higher Attenuation (e.g., 500X):** For larger differential voltages, preventing saturation and ensuring safe operation.

5.4. Bandwidth Limit (Optional)

For models that support it (100MHz-200MHz versions, except DP7000), the**5MHz Bandwidth Limit** button can be pressed to reduce the probe's bandwidth to 5MHz. This is useful for reducing high-frequency noise when measuring lower frequency signals, improving signal clarity on the oscilloscope.

5.5. Making Measurements

After selecting the appropriate range and performing a quick zero, connect the probe leads to the desired test points on the circuit. Observe the waveform on the oscilloscope. Adjust the oscilloscope's vertical scale and time base as needed to properly display the signal.

6. Maintenance

- **Cleaning:** Keep the probe unit and accessories clean. Use a soft, dry cloth to wipe surfaces. Do not use abrasive cleaners or solvents.
- **Storage:** Store the probe in a dry, dust-free environment when not in use. Protect the BNC connector and input terminals from damage.
- **Cable Care:** Avoid sharp bends or kinks in the cables. Inspect cables regularly for signs of wear or damage.
- **Calibration:** While the Quick Zero function provides on-demand calibration, periodic professional calibration may be required for applications demanding the highest accuracy. Refer to Micsig's official support for calibration services.

7. Troubleshooting

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
No signal on oscilloscope	• Probe not powered on. • Incorrect BNC connection. • Oscilloscope input settings incorrect. • Probe leads not properly connected to circuit.	• Check power indicator LED and power supply. • Ensure BNC cable is securely connected to both probe and oscilloscope. • Verify oscilloscope channel is enabled and input impedance is 1MΩ. • Ensure test leads are firmly attached to the probe and the circuit.
Noisy or unstable signal	• Incorrect range selected. • External electromagnetic interference. • Probe not properly zeroed.	• Select a higher attenuation range if the signal is too large, or a lower range for better sensitivity. • Ensure proper grounding and minimize proximity to strong electromagnetic fields. • Perform a Quick Zero adjustment. • Consider using the 5MHz bandwidth limit if available and appropriate for the signal frequency.
Probe power LED off	• Power cable disconnected or faulty. • Power adapter faulty.	• Check USB Type-C cable connection and try a different cable. • Try a different power adapter or USB power source.

8. Specifications

The following table details the technical specifications for the Micsig DP/DP Series High Voltage Differential Probes.

Model	Bandwidth	Differential Voltage (DC+AC PK) Max.	CMRR	Input impedance
DP700	100MHz	70V（20X） 700V（200X）	DC：>-80dB 100kHz: >-60dB 10MHz: >-30dB 100MHz: >-26dB	16MΩ / 1.5pF(differential) 8MΩ / 3pF(each input to ground)
DP1500		150V（50X） 1500V（500X）		16MΩ / 1.5pF(differential) 8MΩ / 3pF(each input to ground)
DP3000		300V（100X） 3000V（1000X）		20MΩ / 1.5pF(differential) 10MΩ / 3pF(each input to ground)
DP7000		700V（100X） 7000V（1000X）		60MΩ / 0.78pF(differential) 30MΩ / 1.6pF(each input to ground)
DP701	150MHz	70V（20X） 700V（200X）	DC：>-80dB 100kHz: >-60dB 10MHz: >-30dB 100MHz: >-26dB	16MΩ / 1.5pF(differential) 8MΩ / 3pF(each input to ground)
DP1501		150V（50X） 1500V（500X）		16MΩ / 1.5pF(differential) 8MΩ / 3pF(each input to ground)
DP3001		300V（100X） 3000V（1000X）		20MΩ / 1.5pF(differential) 10MΩ / 3pF(each input to ground)
DP702	200MHz	70V（20X） 700V（200X）	DC：>-80dB 100kHz: >-60dB 10MHz: >-30dB 100MHz: >-26dB	16MΩ / 1.5pF(differential) 8MΩ / 3pF(each input to ground)
DP1502		150V（50X） 1500V（500X）		16MΩ / 1.5pF(differential) 8MΩ / 3pF(each input to ground)
DP3002		300V（100X） 3000V（1000X）		20MΩ / 1.5pF(differential) 10MΩ / 3pF(each input to ground)
DP703	300MHz	70V（20X） 700V（200X）	DC：>-80dB 100kHz: >-70dB 20MHz: >-40dB 120MHz: >-26dB	16MΩ / 0.5pF(differential) 8MΩ / 1pF(each input to ground)
DP1503		150V（50X） 1500V（500X）		16MΩ / 0.5pF(differential) 8MΩ / 1pF(each input to ground)
DP3003		300V（100X） 3000V（1000X）		20MΩ / 0.5pF(differential) 10MΩ / 1pF(each input to ground)
DP704	400MHz	70V（20X） 700V（200X）	DC：>-80dB 100kHz: >-70dB 20MHz: >-40dB 120MHz: >-26dB	16MΩ / 0.5pF(differential) 8MΩ / 1pF(each input to ground)
DP1504		150V（50X） 1500V（500X）		16MΩ / 0.5pF(differential) 8MΩ / 1pF(each input to ground)
DP3004		300V（100X） 3000V（1000X）		20MΩ / 0.5pF(differential) 10MΩ / 1pF(each input to ground)
DP705	500MHz	70V（20X） 700V（200X）	DC：>-80dB 100kHz: >-70dB 20MHz: >-40dB 120MHz: >-26dB	16MΩ / 0.5pF(differential) 8MΩ / 1pF(each input to ground)
DP1505		150V（50X） 1500V（500X）		16MΩ / 0.5pF(differential) 8MΩ / 1pF(each input to ground)
DP3005		300V（100X） 3000V（1000X）		20MΩ / 0.5pF(differential) 10MΩ / 1pF(each input to ground)

***The previous model DP10007 has been upgraded to DP700.**
***The previous model DP10013 has been upgraded to DP1500.**
***The previous model DP20003 has been upgraded to DP3000.**
Note: These models have not only been upgraded in performance (see parameter table), but also in appearance, which has been newly designed and made more compact and exquisite. When placing orders, please handle them according to the new model numbers.

Image 8.1: Detailed specifications table for various models within the Micsig DP/DP Series, including Bandwidth, Differential Voltage (DC+AC PK), CMRR, and Input Impedance.

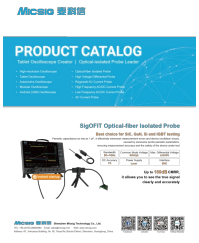
Note: Specific models may have variations in performance. Refer to the table for details. When placing orders, please handle them according to the new model numbers.

- **Manufacturer:** Shenzhen Micsig Technology Co., Ltd.
- **Model Number (DP703):** SM-DP703
- **Package Dimensions:** Approximately 11.02 x 9.45 x 3.15 inches
- **Weight:** Approximately 2.2 Pounds
- **Date First Available:** September 13, 2024

9. Warranty and Support

Micsig products are designed for reliability and performance. For warranty information, technical support, or service inquiries, please refer to the official Micsig website or contact your local distributor.
For the most up-to-date information and support resources, please visit theMicsig Official Store on Amazon or the manufacturer's website.

Related Documents

	Micsig DP Series High Voltage Differential Probes - Technical Specifications and Overview Explore the Micsig DP Series High Voltage Differential Probes, offering bandwidths from 100MHz to 500MHz with a maximum differential input voltage of 7000Vpk. Features include ultra-small design, low noise, high CMRR, and standard BNC interface for broad oscilloscope compatibility.
	Micsig DP Series High Voltage Differential Probes - Specifications and Features Explore the Micsig DP Series High Voltage Differential Probes, offering bandwidths from 100MHz to 500MHz, high voltage capabilities up to 7000Vpk, low noise, and excellent accuracy for demanding applications.
	Micsig DP Series High-Voltage Differential Probe Quick Guide A quick guide to the Micsig DP Series High-Voltage Differential Probes, covering operation steps, warranty, safety precautions, characteristics, and appearance. These probes offer selectable bandwidths from 100MHz to 500MHz with a maximum differential input voltage of 7000Vpk.
	Micsig Product Catalog: Oscilloscopes and Probes Explore the comprehensive Micsig product catalog featuring high-resolution tablet oscilloscopes, modular oscilloscopes, automotive oscilloscopes, and a wide range of specialized probes for various testing applications.