TA511 PicoBNC 1400 V Differential Probe User Guide

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TA511 PicoBNC 1400 V Differential Probe

FAQ

Frequently Asked Questions

- **Q:** Can the TA511 PicoBNC+ 1400 V Differential Probe be used by non-professionals?
  - **A:** No, this product is designed for professional use by trained and qualified technicians only to ensure safety and proper operation.
- **Q:** What should I do with the probe at the end of his life?
  - **A:** Properly disposes of the product either by returning it to the manufacturer or through WEEE-compliant collection and treatment to protect the environment.
- **Q:** Can I use accessories not supplied by Pico Technology with this probe?
  - **A:** It is recommended to use only accessories supplied or recommended by Pico Technology to maintain optimal protection provided by the product.

INTRODUCTION

The TA511 is designed for making high-voltage measurements within electrical circuits and systems operating up to ±1400 V (DC + AC peak) and is to be used in conjunction with PicoScope oscilloscopes with BNC+ interface. This product has been designed for safe use but must be operated with caution. The points listed below and throughout this guide must be carefully followed for safe operation.

DISPOSAL

Your help and efforts are required to protect and keep our environment clean. Therefore either return this product at the end of life to the manufacturer or ensure WEEE-compliant collection and treatment yourself.

SAFETY

- To prevent possible electrical shock, fire, personal injury, or damage to the product, carefully read this safety information before attempting to install or use the product. In addition, follow all generally accepted safety practices and procedures for working with and near electricity.
- The product has been designed and tested in accordance with the harmonized standard publication EN 61010-031 as defined on the Declaration of Conformity. The product left the factory in a safe condition.

The following safety descriptions are found throughout this guide:

- A WARNING identifies conditions or practices that could result in injury or death.
- A CAUTION identifies conditions or practices that could result in damage to the product or equipment to which it is connected.

SYMBOLS

These safety and electrical symbols may appear on the product or in this guide

Symbol	Description
	Chassis terminal
	Possibility of electric shock
	Caution*
	Static awareness. Static discharge can damage parts
CAT II	Measurement Category II is applicable to test and measuring circuits connected directly to socket outlets and similar points of the low-voltage utility power installation
CAT III	Measurement Category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage utility power installation
CAT IV	Measurement Category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage utility power installation
	Do not dispose of this product as unsorted municipal waste

*Appearance on the product of this symbol indicates a need to read this safety document or the product operating instructions or both.

WARNING

- This product is for professional use by trained and qualified technicians only.
- To prevent injury or death use the product only as instructed and use only accessories supplied or recommended by Pico Technology. Protection provided by the product may be impaired if used in a manner not specified by the manufacturer.

MAXIMUM TERMINAL RATINGS

Observe all terminal ratings and warnings marked on the product. The marked voltage is the maximum that may be applied across that terminal without risk of personal injury or damage to the instrument.

WARNING

- To prevent electric shock, do not attempt to connect to or measure voltages outside of the specified full-scale measurement range, or with an applied common mode voltage that is outside of specification. Do not exceed the absolute maximum voltage on any terminal.
- The measurement range is the maximum voltage that the probe can accurately measure. The common mode range is the maximum voltage that can be applied to both differential inputs with respect to the scope chassis. The absolute maximum voltage is the maximum that can be applied to any terminal with respect to earth.
- Signals exceeding the voltage limits in the table below are defined as “hazardous live” by EN 61010.

Safe Voltage Limits of EN 61010		
±60 V DC	30 V AC RMS	±42.4 V pk max.

- The TA511 High Voltage Differential Probe can measure hazardous live voltages up to the maximum full-scale measurement voltage of ±1400V (DC + AC peak).
- Accessories suited for use with, or connection to, hazardous live voltages are all clearly marked with their maximum allowable voltage and, where applicable, their CAT rating.

WARNING

uTo prevent electric shock, take all necessary safety precautions when working on equipment where hazardous live voltages may be present.

WARNING

- Always follow relevant industry standard safety procedures and use appropriate Personal
- Protective Equipment (PPE) where applicable. Safety training is recommended in these cases and should be separately gained.
- Never exceed the maximum voltage marked on a CAT-rated accessory, whether or not the accessory is being used for mains or high-energy measurements.

CAUTION

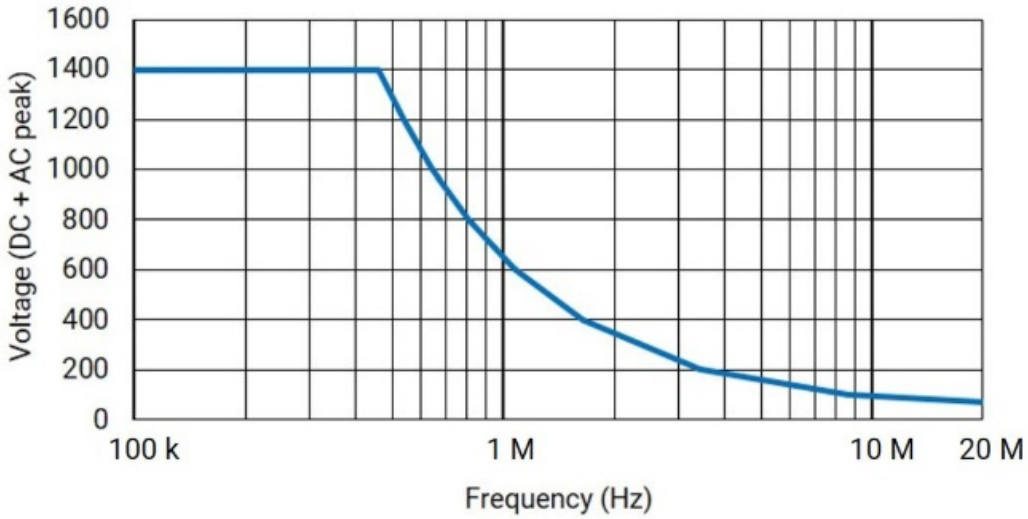
- To avoid causing permanent damage to the probe and other connected equipment, do not exceed the voltage rating of any cable, connector or accessory.
- PicoBNC+ accessories are designed for use with Pico Technology PicoBNC+ oscilloscopes only. To avoid possible damage or inaccurate readings, do not attempt to connect PicoBNC+ accessories to other equipment.

WARNING

- Use extreme caution when working with high voltages. To prevent electric shock, take all necessary safety precautions when working on equipment where hazardous live voltages may be present.
- To prevent electric shock, do not exceed the voltage rating marked on any accessory. If an accessory is not marked with a voltage rating on either the connector, cable or body, or if a protective finger guard is removed,

then do not exceed the EN 61010 “hazardous live” limits.

- When connecting one or multiple accessories and probe together, the lowest voltage rating in the chain applies to that probe.
- The applicable CAT-rating of a combination of a probe assembly and accessory is the lower of those CAT-ratings.
- To prevent electric shock, do not touch exposed connections and components when power is present.
- To avoid overloading the probe, note that its maximum input voltage rating decreases as the frequency of the applied signal increases.



INSTRUCTIONS FOR USE

Please refer to the documentation provided with the BNC+ oscilloscope to learn how to connect the probe. Upon connection to the BNC+ oscilloscope, the PicoScope software will recognize and then power the probe, leaving you to just select the desired measuring range. Connect and power the probe from the BNC+ oscilloscope before probing a voltage.

ENVIRONMENT SPECIFICATIONS

This product is suitable for indoor or outdoor use, in dry locations only.

WARNING

- To prevent injury or death, do not use in wet or damp conditions, or near explosive gas or vapor.

CAUTION

- To prevent damage, always use and store your probe in appropriate environments as below.

	Storage	Operating
Temperature	–20 °C to 60 °C	0 to 45 °C
Humidity	5 to 95 %RH (non-condensing)	25 to 85 %RH (non-condensing)
Altitude	2000 m	
Pollution degree	2	

TECHNICAL SPECIFICATIONS

Voltage rating	Measurement range: ±1400 V (DC + AC peak) Common mode range: ±1400 V (DC + AC peak) Absolute max. voltage: 1400 V (DC + AC peak)
Category rating	1000 V CAT III
Bandwidth	20 MHz
Output connection	BNC+ interface
Input resistance	16.3 MΩ
Common mode rejection ratio, typical	–70 dB @ 50 Hz –55 dB @ 20 kHz

PRODUCT WARRANTY

Pico Technology warrants this oscilloscope accessory for normal use and operation within specifications for a period of one year from date of shipment and will repair or replace any defective product which was not damaged by negligence, misuse, improper installation, accident or unauthorized repair or modification by the buyer. This warranty is applicable only to defects due to material or workmanship. Pico disclaims any other implied warranties of merchantability or fitness for a particular purpose. Pico will not be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of use or data, interruption of business and the like), even if Pico has been advised of the possibility of such damages arising from any defect or error in this manual or product.

CARE OF THE PRODUCT

The product and accessories contain no user-serviceable parts. Repair, servicing, and adjustment require specialized test equipment and must only be performed by Pico Technology or an approved service provider. There may be a charge for these services unless covered by the Pico warranty.
Inspect the instrument and all probes, connectors, cables, and accessories before use for signs of damage.

WARNING

- Do not use if the red/black input leads are damaged. Examine the input leads for damaged insulation, exposed metal, or if the wear indicator shows white.

WARNING

- To prevent injury or death, do not use the probe or accessories if they appear to be damaged in any way, and stop use immediately if you are concerned by any abnormal operations.

WARNING

- To prevent electric shock do not tamper with or disassemble the probe, case parts, connectors, or accessories.

WARNING

- When cleaning the product, use a soft cloth and a solution of mild soap or detergent in water.
- To prevent electric shock, do not allow liquids to enter the probe casing or accessories, as this will compromise the electronics or insulation inside.

CAUTION

- Take care to avoid mechanical stress or tight bend radii for all connected leads. Mishandling will cause deformation of sidewalls and will degrade the performance and measurement accuracy.
- Avoid mechanical shock to the probe in general to guarantee accurate performance and protection.

TA511 ACCESSORIES

Part	Description
TA005	Dolphin clip 1000 V CAT III, black
TA006	Dolphin clip 1000 V CAT III, red
TA310	Multimeter style prod 1000 V CAT III, black
TA311	Multimeter style prod 1000 V CAT III, red

Contacts

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Documents / Resources

	pico TA511 PicoBNC 1400 V Differential Probe [pdf] User Guide TA511 PicoBNC 1400 V Differential Probe, PicoBNC 1400 V Differential Probe, Differential Probe, Probe

References

- PC Oscilloscope, Data Logger & RF Products | Pico Technology
- User Manual