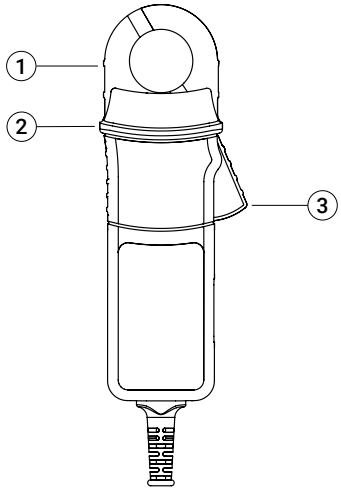
TA300 AC/DC Current Probe

User's Guide

Introduction

The TA300 is a 100 kHz bandwidth, single-range 40 A AC or DC current probe using the D9 connector specific to the PicoScope 4444 differential oscilloscope. On connection with the scope, the probe is instantly sensed and the vertical range automatically set up in PicoScope software. The probe is also powered by the scope through the D9 connector.

Note: When using the PicoScope 4444 with USB power (no AC adaptor connected), sensor power is limited to a maximum of 3 x TA300 probes at once.



1. Jaws
2. Tactile barrier
3. Jaw trigger

Safety information

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.

WARNING
To prevent injury or death, use the product only as instructed. The protection provided by the product may be impaired if used in a manner not specified by the manufacturer.

Safety: Conforms to EN 61010-1 and EN 61010-2-032, CAT III 300 V, Class II, Pollution degree 2, indoor use.

EMC: Conforms to EN 61326-2-2.

The symbols used on this instrument are:

⚠	Caution: refer to accompanying documents
ϟ	Application around and removal from **UNINSULATED HAZARDOUS LIVE** conductors is permitted. Use of the probe on **uninsulated conductors** is limited to 300 V AC RMS or DC, and frequencies below 1 kHz.
⧈	Equipment protected by double insulation (Class II)

~	Alternating current
⎓	Direct current
⏚	Earth (ground) terminal
CAT II	Measurement Category II is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage mains installation.
CAT III	Measurement Category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage mains installation.
CE	Complies with relevant European Directives

WARNING

Use caution during the installation and use of this product; high voltages and currents may be present in the circuit under test.

WARNING

The TA300 current probe has a tactile barrier provided for user safety. To prevent injury or death, do not hold the current probe beyond the tactile barrier when in use.

WARNING

The TA300 current probe is marked with its maximum voltage rating, which applies when clamped over an uninsulated conductor. To prevent injury or death, do not use the current probe on an uninsulated conductor operating outside the probe's marked voltage protection levels.

WARNING

To prevent injury or death, if the probe has a  symbol or is not marked with any symbol, always de-energize any uninsulated conductor before you install or remove the probe.

A current probe with the  symbol may be safely installed on or removed from an uninsulated conductor while the conductor is energized (live).

WARNING

When measuring currents in uninsulated circuits connected directly to the utility power supply, always use probes with the appropriate CAT ratings.

To prevent injury or death, always follow the CAT rating of the probe and do not use a non CAT-rated current probe to measure utility power current.

Always use extreme caution when working around bare conductors or bus bars. Contact with the conductor could result in electric shock. Always follow relevant industry-standard safety procedures and use appropriate Personal Protective Equipment (PPE) where applicable. Safety training is essential in these cases and should be separately gained.

⚠ CAUTION

To avoid damage to the probe and inaccurate readings, do not use a current probe on a circuit that exceeds the probe's maximum rated frequency, or the maximum rated current at the measurement frequency.
All current probes have a maximum current rating which may be derated depending on the measurement frequency in accordance with the following table:

Probe	Probe maximum current (I) by frequency (f)	Auto power-off	Power supply/ battery	Connection
TA300	I_{RMS} x f ≤ 400 000	N/A	Oscilloscope powered	9-way D plug

Environment

This product is for indoor 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 unit in appropriate environments as below:

Probe	Operating temperature	Storage temperature	Operating humidity	Storage humidity	Pollution degree	Max. altitude
			(non-condensing)			
TA300	0 to 50 °C	−20 to +85 °C	15 to 85 %RH		2	2000 m

Operating instructions

Connecting the probe to the PicoScope 4444

Connect the TA300 to the required channel of the PicoScope 4444 via the D9 connector. The oscilloscope will identify, power and activate the probe automatically.

Zeroing the probe

The output zero offset of the probe may change due to thermal shifts and other environmental conditions. Offset is controlled via the PicoScope software: open the Channel Options menu and adjust the DC Offset controls. When zeroing the probe, close its jaws and keep it away from the current-carrying conductor.

Current measurement

1. Connect the output lead to the oscilloscope.
2. Zero the probe.
3. Clamp the jaws of the probe around the conductor, ensuring a good contact between the closing faces of the jaws.
4. Observe and take measurements as required. Positive output indicates that the current flow is in the direction shown by the arrow on the probe.

Care of the product

The product contains 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 one year warranty.

Inspect the probe and all connectors and cables before use for signs of damage.

Cleaning: Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Dirt or moisture in the terminals can affect readings.

Specifications

Electrical data (at 23 ±5 °C, 70 %RH maximum)	
Nominal current	40 A AC peak or DC
Measuring range (s)	40 A
Overload capacity	500 A (60 s)
Output sensitivity	100 mV/A
Accuracy[1]	±1% of reading ±2 mA
Resolution	±1 mA
Gain variation	±0.02% of reading/°C
Frequency range	DC to 100 kHz (−0.5 dB)
Power supply	5 V nominal via PicoScope 4444
Load impedance (minimum)	> 100 kΩ and ≤ 100 pF
General data	
Conductor size	25 mm diameter
Output cable and connectors	2 m long screened cable terminated with D9 plug
[1]Accuracy quoted is for conductor in center of aperture	

Warranty and returns

Your probe is supplied with a one-year return-to-manufacturer warranty. You may also return your probe for any reason within 14 days of purchase for a refund. For terms and conditions, visit picotech.com/about.

Legal information

Information regarding Pico's software licenses, liability, privacy policy, trademarks and other legal matters is available (in English only) at picotech.com/about/legal-information.

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