

**TCP305A & TCP312A  
AC/DC Current Probes  
Instructions**

[www.tektronix.com](http://www.tektronix.com)



071-3032-00

**Tektronix**

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## **Contacting Tektronix**

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For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
- Worldwide, visit [www.tektronix.com](http://www.tektronix.com) to find contacts in your area.

## Warranty

Tektronix warrants that this product will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If any such product proves defective during this warranty period, Tektronix, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. Parts, modules and replacement products used by Tektronix for warranty work may be new or reconditioned to like new performance. All replaced parts, modules and products become the property of Tektronix.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non-Tektronix supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

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## General safety summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

To avoid potential hazards, use this product only as specified.

*Only qualified personnel should perform service procedures.*

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

### To avoid fire or personal injury

**Connect and disconnect properly.** Do not connect or disconnect probes or test leads while they are connected to a voltage source.

**Connect and disconnect properly.** De-energize the circuit under test before connecting or disconnecting the current probe.

**Connect and disconnect properly.** Connect the probe output to the measurement instrument before connecting the probe to the circuit under test. Connect the probe reference lead to the circuit under test before connecting the probe input. Disconnect the probe input and the probe reference lead from the circuit under test before disconnecting the probe from the measurement instrument.

**Observe all terminal ratings.** To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Do not connect a current probe to any wire that carries voltages above the current probe voltage rating.

**Do not operate without covers.** Do not operate this product with covers or panels removed.

**Do not operate with suspected failures.** If you suspect that there is damage to this product, have it inspected by qualified service personnel.

**Avoid exposed circuitry.** Do not touch exposed connections and components when power is present.

**Do not operate in wet/damp conditions.**

**Do not operate in an explosive atmosphere.**

**Keep product surfaces clean and dry.**

**Terms in this manual** These terms may appear in this manual:



**WARNING.** *Warning statements identify conditions or practices that could result in injury or loss of life.*



**CAUTION.** *Caution statements identify conditions or practices that could result in damage to this product or other property.*

**Symbols and terms on the product**

These terms may appear on the product:

- DANGER indicates an injury hazard immediately accessible as you read the marking.
- WARNING indicates an injury hazard not immediately accessible as you read the marking.
- CAUTION indicates a hazard to property including the product.

The following symbol(s) may appear on the product:



CAUTION  
Refer to Manual



Earth Terminal



Do not connect to or  
remove from an  
uninsulated conductor that  
is HAZARDOUS LIVE.



Breakable.  
Do not drop.

## Compliance Information

This section lists the safety and environmental standards with which the instrument complies.

### Safety Compliance

#### EC Declaration of Conformity – Low Voltage

Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities:

Low Voltage Directive 2006/95/EC.

- EN 61010-1: 2001. Safety requirements for electrical equipment for measurement control and laboratory use.
- EN 61010-2-032: 2002. Particular requirements for handheld current clamps for electrical measurement and test equipment.

#### U.S. Nationally Recognized Testing Laboratory Listing

- UL 61010-1:2004, 2<sup>nd</sup> Edition. Standard for electrical measuring and test equipment.
- IEC 61010-2-032:2002. Particular requirements for handheld current clamps for electrical measurement and test equipment.

#### Canadian Certification

- CAN/CSA-C22.2 No. 61010-1:2004. Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1.
- CAN/CSA-C22.2 No. 61010-2-032-04, 2<sup>nd</sup> Edition. Particular requirements for handheld and hand-manipulated current sensors for electrical measurement and test equipment.

#### Additional Compliances

- IEC 61010-1: 2001. Safety requirements for electrical equipment for measurement, control, and laboratory use.
- IEC 61010-2-032: 2002. Particular requirements for handheld current clamps for electrical measurement and test equipment.

#### Equipment Type

Test and measuring equipment.



<b>Pollution Degree Description</b>	<p>A measure of the contaminants that could occur in the environment around and within a product. Typically the internal environment inside a product is considered to be the same as the external. Products should be used only in the environment for which they are rated.</p> <ul style="list-style-type: none"><li>■ Pollution Degree 1. No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.</li><li>■ Pollution Degree 2. Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.</li><li>■ Pollution Degree 3. Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.</li><li>■ Pollution Degree 4. Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.</li></ul>
<b>Pollution Degree</b>	Pollution Degree 2 (as defined in IEC 61010-1). Note: Rated for indoor use only.
<b>Installation (Overvoltage) Category Descriptions</b>	<p>Terminals on this product may have different installation (overvoltage) category designations. The installation categories are:</p> <ul style="list-style-type: none"><li>■ Measurement Category IV. For measurements performed at the source of low-voltage installation.</li><li>■ Measurement Category III. For measurements performed in the building installation.</li><li>■ Measurement Category II. For measurements performed on circuits directly connected to the low-voltage installation.</li><li>■ Measurement Category I. For measurements performed on circuits not directly connected to MAINS.</li></ul> <p>Measurement category: CAT II</p>

## Environmental Considerations

This section provides information about the environmental impact of the product.

### Product End-of-Life Handling

Observe the following guidelines when recycling an instrument or component:

**Equipment recycling.** Production of this equipment required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. To avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle this product in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.



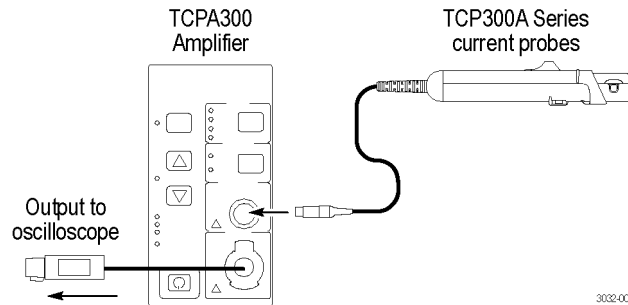
This symbol indicates that this product complies with the applicable European Union requirements according to Directives 2002/96/EC and 2006/66/EC on waste electrical and electronic equipment (WEEE) and batteries. For information about recycling options, check the Support/Service section of the Tektronix Web site ([www.tektronix.com](http://www.tektronix.com)).

### Restriction of Hazardous Substances

This product is classified as an industrial monitoring and control instrument accessory, and is not required to comply with the substance restrictions of the recast RoHS Directive 2011/65/EU until July 22, 2017.

# TCP305A & TCP312A AC/DC Current Probes

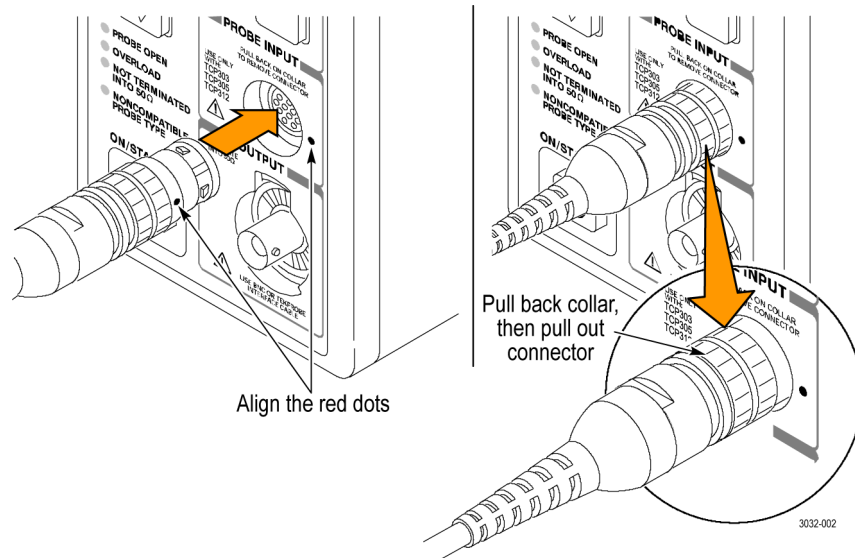
TCP305A and TCP312A Current Probes are designed to work with the TCPA300 Current Probe Amplifier. These instructions briefly describe the probes. For more information, refer to the *TCPA300/400 Amplifiers & TCP300/400 Series AC/DC Current Probes User Manual* that ships with the amplifier.



**WARNING.** To reduce risk of shock or fire, refer to the *TCPA300/400 Amplifiers & TCP300/400 Series AC/DC Current Probes User Manual* before using the probe.

## Connect and Degauss

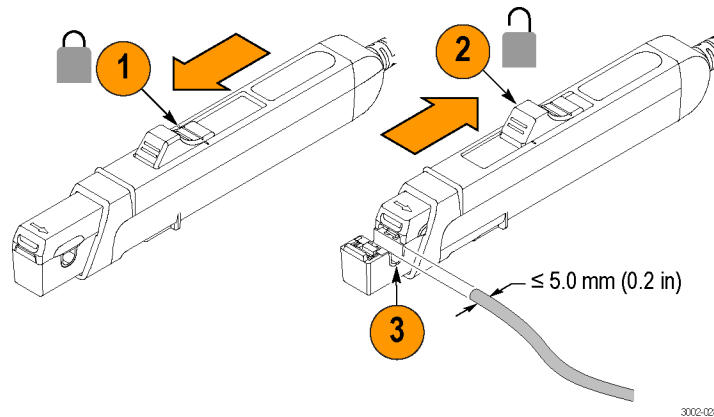
To connect the current probe to the amplifier, align the red dots on the two connectors and gently push the probe connector in. Do not twist the connector. To disconnect the probe, first pull back the collar and then pull out the connector.



Degauss the probe before you take measurements: Close the probe slider, press the PROBE DEGAUSS AUTOBALANCE button on the amplifier, and then wait 5 seconds for the LED to turn green. See your amplifier manual for complete details.

## Slider and Conductor Jaw

1. When the slider is in the closed (locked) position, you can degauss the probe.

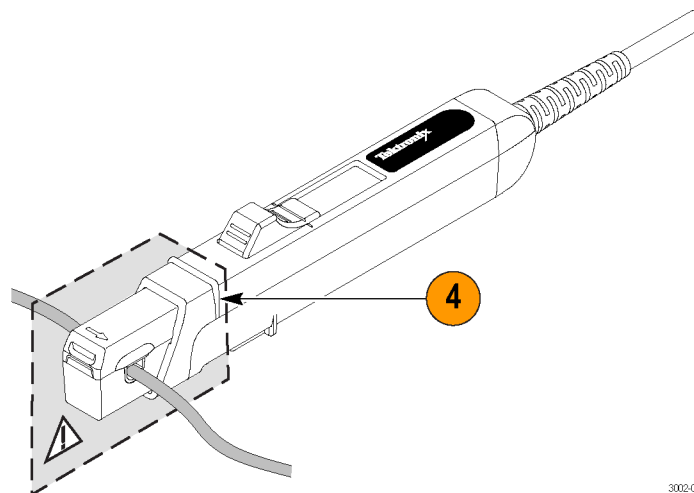


2. Move the slider to the unlocked position to insert and remove conductors to and from the jaw.
3. The jaw can accept a 5 mm (0.2 in) diameter maximum conductor size.



**WARNING.** To prevent probe damage, do not force conductors larger than 5 mm (0.2 in) diameter into the jaw.

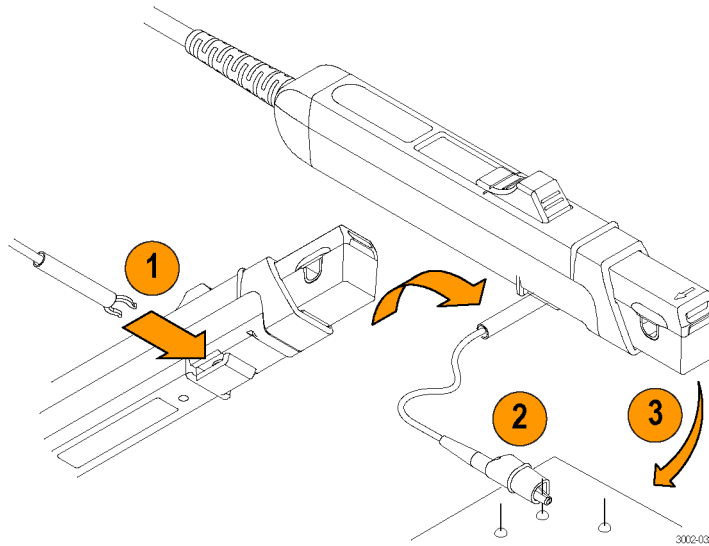
4. Close the jaw around the conductor and lock the slider. When you are taking measurements, keep your fingers behind the demarcations on the probe, and away from the shaded area.



**WARNING.** Do not connect the current probe to any wire that carries voltages or currents that exceed the rating of the probes.

## Ground Lead

The 6-inch ground lead grounds the shield around the probe transformer at the probe end of the cable. This allows you to move the ground connection closer to the circuit you are measuring, thereby improving high frequency response. The ground lead clips onto the ground connector on the bottom of the probe.



The ground lead on the current probes is intended to be used in high  $dV/dt$  environments. The probes have a grounded shield between the conductor under test and the current sense transformer. Any capacitively-coupled current will then flow in the ground instead of the transformer windings.

When you take high frequency measurements, connect the probe ground lead to the probe ground connector and attach the alligator clip directly to RF ground to improve EMI rejection at high frequencies (2 MHz and above). This will reduce ringing and help bypass capacitively-coupled RF currents which can flow into the probe cable. In some cases, it may be helpful to move the ground lead or reposition the probe away from noise sources in the circuit under test.

## Related Documentation

The *TCPA300/400 Amplifiers & TCP300/400 Series AC/DC Current Probes User Manual*, Tektronix part number 077-1183-xx, contains a complete list of specifications, accessories, and operating information for the probes. It is a pdf file that is included on the documentation CD that ships with the amplifiers. The manual can also be downloaded from the Tektronix Web site.

To download manuals and other product information, go to [www.tektronix.com/manuals](http://www.tektronix.com/manuals).

## Specifications

- TCP305A: DC–50 MHz, 50 A DC
- TCP312A: DC–100 MHz, 30 A DC

## Standard Accessories

The following accessories are shipped with the probes:

<b>Accessory</b>	<b>Tektronix part number</b>
Probe ground lead, 6 inch length	119-3521-xx
Instruction sheet	071-3032-xx
Certificate of traceable calibration	—

## Recommended Accessories

The following accessories can be ordered for your probes:

<b>Accessory</b>	<b>Tektronix part number</b>
Deskew fixture	067-1478-xx
High frequency current loop	067-2396-xx
Travel case	016-1922-xx