TPP0250 & TPP0500B
250 MHz and 500 MHz 10X Passive Probes

Instructions



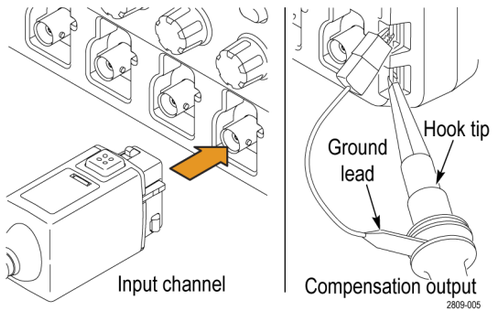
Tektronix

071-3164-00

Operating Information

The TPP0250 & TPP0500B 10X Passive Probes are high impedance probes with 10X attenuation that are designed for use with Tektronix MDO3000, MDO/MSO/DPO4000B & MSO/DPO5000 series ground-referenced oscilloscopes.

Connect the probe as shown in the illustrations below.



Compensating the Probe

You should compensate the probe after you attach it to an oscilloscope for the first time, or after you have changed the probe tip cartridge.

1. Connect the probe to an oscilloscope channel.
2. On MSO/DPO5000 instruments:

   a. Connect the probe to the probe compensation output terminals on the oscilloscope front panel.

   b. Select Vertical > Probe Cal....

   c. Select the channel number tab of the channel that you connected the probe to.

   d. In the Calibration section, click Calibrate Probe.

   On MDO3000 and MDO/MSO/DPO4000B instruments:

   a. Press the Channel Menu front panel button for the channel that you connected the probe to.

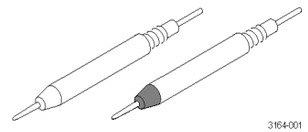
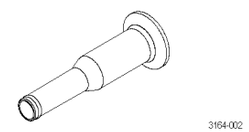
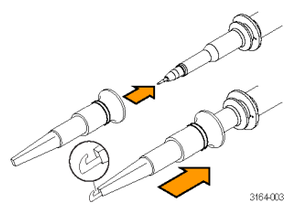
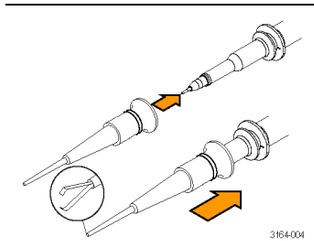
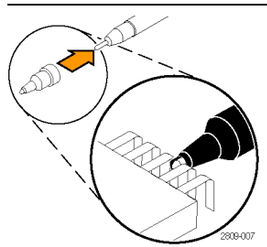
   b. Push the More button until Probe Setup is selected.

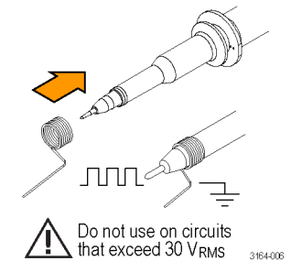
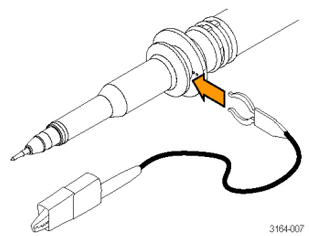
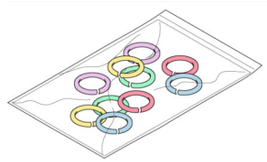
   c. Push the Calibrate Probe button and follow the on-screen instructions.

If the probe compensation fails, verify that the signal and ground connections are secure at the Probe Comp connections on the oscilloscope. Also check that the ground connection is secure at the probe head, the rigid or pogo tip is secured tightly in the probe head, and the hook tip is securely connected to the tip.

Standard Accessories

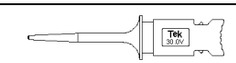
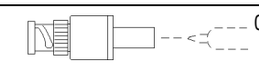
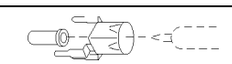
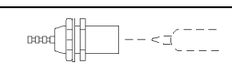
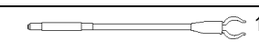
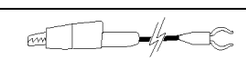
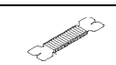
⚠ ***WARNING.*** *To avoid electric shock when using the probe or accessories, keep fingers behind the finger guard of probe body and accessories.*

Item	Description
	**Probe tips** The rigid tip (gray tip) is pre-installed on the TPP0250 probe. The pogo tip (white tip) is pre-installed on the TPP0500B probe, and is spring-loaded for compliant testing of circuit boards. Reorder numbers: 206-0649-xx (rigid tip) 206-0650-xx (pogo tip)
	**Insulator sleeve** Unscrew this sleeve to replace the probe tips. (See procedure on next page). Reorder Tektronix part number 204-1226-xx
	**Hook tip** Press the hook tip onto the probe tip and then clamp the hook onto the circuit. Rating: 300 V CAT II Reorder Tektronix part number 013-0362-xx
	**Micro hook tip** Use this tip to access test points in tight spaces. Press the hook tip onto the probe tip and then extend the pincers around the circuit. Rating: 300 V CAT II Reorder Tektronix part number 013-0363-xx
	**Universal IC cap** Use this cap to prevent shorting the probe tip between IC pins. Snap the cap onto the probe tip, and then spin the cap to expose the probe tip toward the IC lead. Reorder Tektronix part number 013-0366-xx

Item	Description
	**Ground springs** To limit aberrations on high frequency signals caused by ground path inductance, bend the spring to reach nearby ground connections (<0.75 in, long; <0.25 in, short). Reorder Tektronix part numbers: 016-2028-xx (long, 2 ea.) 016-2034-xx (short, 2 ea.)
	**Ground lead, with alligator clip** Secure the lead to the probe head ground and then to your circuit ground. Reorder Tektronix part number 196-3521-xx
	**Color bands** Use these bands to identify the oscilloscope channel at the probe head. Reorder Tektronix part number 016-0633-xx (5 pairs)

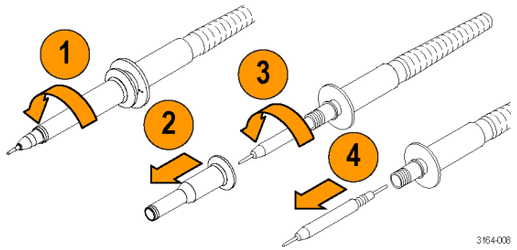
Optional Accessories

The accessories shown below are available for the probes and are rated ≤30 V unless indicated otherwise.

Accessory		Part number
MicroCKT Test Tip		206-0569-xx
BNC to Tip Adapter, Unterminated		013-0367-xx
Circuit Board Test Point/PCB Adapter		016-2016-xx
Chassis-Mount Probe Test Jack		131-4210-xx
6" Clip-on Ground Lead		196-3198-xx
12" Alligator Ground Lead		196-3512-xx
Wire, spool, 32 AWG		020-3045-xx

Interchanging the Probe Tip

WARNING. *To reduce the risk of shock, disconnect the probe before changing the probe tips.*



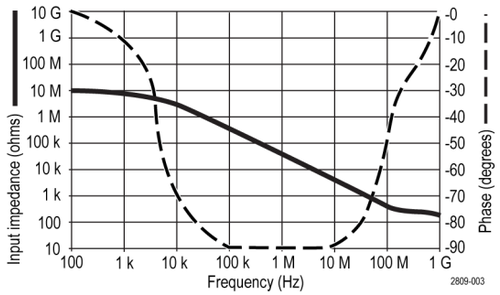
For optimal performance, do a probe compensation after the tip has been replaced.

Specifications

Table 1: Electrical and mechanical specifications

Characteristic	TPP0250	TPP0500B
Bandwidth (–3 dB)	250 MHz	500 MHz
System rise time (typical)	<1.4 ns	<700 ps
System input capacitance	Rigid tip: 3.9 pF ±0.3 pF Pogo pin tip: 5.1 pF ±0.5 pF	
System attenuation accuracy	10:1 ±2.2%	
Probe series resistance @DC	9.75 MΩ ±0.5%	
System input resistance @DC	10 MΩ ±2%	
Propagation delay	~5.67 ns	
Maximum input voltage	300 V_{RMS} CAT II	
Cable length	1.3 m ±3 cm	

Performance Graphs



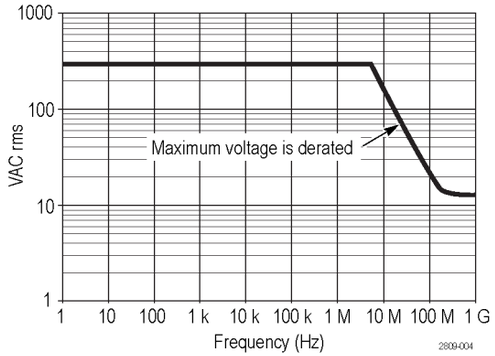


Table 2: Environmental specifications

Characteristics	Description
Temperature	
Operating	–15 °C to +65 °C (+5 °F to +149 °F)
Nonoperating	–62 °C to +85 °C (–80 °F to +185 °F)
Humidity	
Operating	5% to 95% relative humidity (%RH) up to +30 °C, 5% to 75% RH above +30 °C up to +65 °C. Noncondensing
Nonoperating	5% to 45% RH above +65 °C up to +85 °C. Noncondensing
Altitude	
Operating	3.0 km (9,842 ft) maximum
Nonoperating	12.2 km (40,000 ft) maximum

Table 3: Certifications and compliances

Characteristics	Description
EC Declaration of Conformity	Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities: Low Voltage Directive 2006/95/EC: EN61010-031/A1: 2008
Measurement Category Product Examples	CAT III: Distribution-level mains, fixed installation CAT II: Local-level mains, appliances, portable equipment CAT I: Circuits not directly connected to mains.
Pollution Degree 2	Do not operate in environments where conductive pollutants may be present (as defined in IEC 61010-1). Rated for indoor use only.
Additional Safety Standards	UL61010-031;2010 CAN/CSA C22.2 No. 61010-031:07/A1:2010 IEC61010-031; IEC 61010-031/A1:2008
	***Equipment Recycling.*** This product complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). For more information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

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. Using the probe or accessories in a manner not specified could result in a shock or fire hazard.

To Avoid Fire or Personal Injury

Ground-Referenced Oscilloscope Use. Do not float the reference lead of this probe when using with ground referenced oscilloscopes (for example, MDO, MSO, and DPO series oscilloscopes). The reference lead must be connected to earth potential (0 V).

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

Avoid Electric Shock. To avoid injury or loss of life, do not connect or disconnect probes or test leads while they are connected to a voltage source.

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.

Avoid Electric Shock. When using probe accessories, never exceed the lowest rating of the probe or its accessory, whichever is less, including the measurement category and voltage rating.

Avoid Electric Overload. To avoid injury or fire hazard, do not apply potential to any input, including the reference inputs, that varies from ground by more than the maximum rating for that input.

Avoid Exposed Circuitry and Do not Operate Without Covers. Do not touch exposed connections and components when power is present.

Inspect The Probe And Accessories. Before each use, inspect probe and accessories for damage (cuts, tears, defects in the probe body, accessories, cable jacket, etc.). Do not use if damaged.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Safety Terms and Symbols 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 on the Product. These symbols may appear on the product:



Contacting Tektronix

Web site:	www.tektronix.com
Phone:	1-800-833-9200
Address:	Tektronix, Inc. Department or name (if known) 14200 SW Karl Braun Drive P.O. Box 500 Beaverton, OR 97077 USA
Email:	techsupport@tektronix.com

Warranty Information

For warranty information, go to www.tektronix.com/warranty.

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