

# High-voltage Differential Probes

TMDP0200 • THDP0200 • THDP0100 • P5200A • P5202A • P5205A • P5210A



## Features & Benefits

- Bandwidths up to 200 MHz
- Up to 6000 V Differential (DC + pk AC)
- Up to 2300 V Common (RMS)
- Overrange Indicator
- Safety Certified
- Switchable Attenuation
- Switchable Bandwidth Limit

## Applications

- Floating Measurements
- Switching Power Supply Design
- Motor Drive Design
- Electronic Ballast Design
- CRT Display Design
- Power Converter Design and Service
- Power Device Evaluation

## Safe High-voltage Probe Solutions

Tektronix offers a broad portfolio of high-voltage probing solutions that enable users to safely and accurately make floating measurements.

The **THDP0100** and **P5210A** have the largest differential dynamic range capability from Tektronix, allowing users to safely measure up to  $\pm 6000$  V. The THDP0100 supports bandwidths up to 100 MHz and slew rates up to 2500 V/ns at 1/1000 gain. These probes are supplied with two sizes of hook tips and have an overrange visual and audible indicator which warns the user when they are exceeding the linear range of the probe.

The **THDP0200** and **P5205A** are active differential probes that are capable of safely measuring differential voltages up to  $\pm 1500$  V. The probes are effective in making measurements in IGBT circuits such as motor drives and power converters. The THDP0200 supports bandwidths up to 200 MHz and slew rates up to 275 V/ns at 1/250 gain.

The **TMDP0200** and **P5202A** are designed for medium-voltage applications with differential requirements up to  $\pm 750$  V. These probes have lower attenuation ranges and offer better signal-to-noise ratio.

The **P5200A** can be used with any oscilloscope and enables users to **safely** make measurements of floating circuits with their oscilloscope grounded. The P5200A Active Differential Probe converts floating signals to low-voltage ground-referenced signals that can be displayed safely and easily on any ground-referenced oscilloscope.

**WARNING:** For safe operation, do not use the P5200A High-voltage Differential Probe with oscilloscopes that have floating inputs (isolated inputs), such as the Tektronix TPS2000 and THS3000 Series oscilloscopes. The P5200A High-voltage Differential Probe requires an oscilloscope or other measurement instrument with grounded inputs.

## Connectivity Options

The TMDP and THDP Series probes are equipped with the TekVPI® interface which allows smart communication between the oscilloscope and probe. Pushing the probe menu button will launch the probe control menu on the oscilloscope display providing access to all relevant probe settings and controls. These probes are designed to operate on TekVPI® oscilloscopes without requiring the TPA-BNC adapter.

The P52xxA Series probes are equipped with the Tektronix TekProbe® interface which communicates scale information to the oscilloscope. Direct connections can be made to oscilloscopes configured with the TekProbe® interface or to any oscilloscope when used with the 1103 TekProbe® Power Supply.

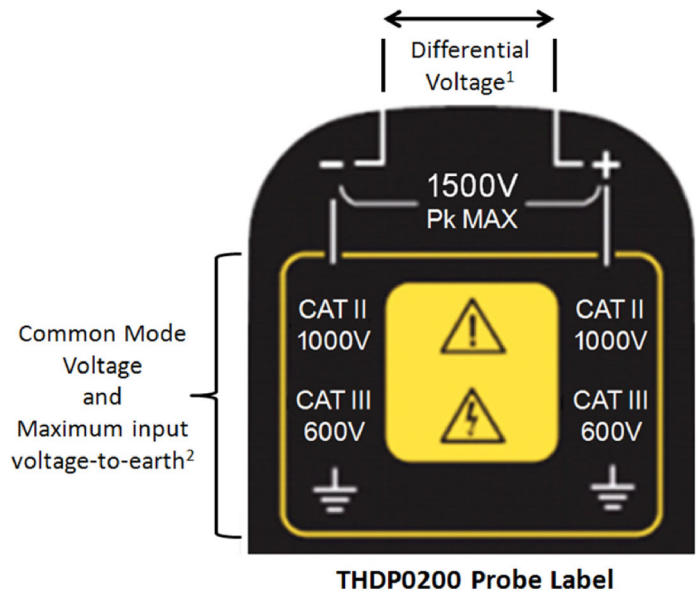
## Characteristics

### Probes with the TekVPI® Interface

Characteristic	TMDP0200	THDP0200	THDP0100
Attenuation	25X / 250X	50X / 500X	100X / 1000X
Differential Voltage	250X: ±750 V 25X: ±75 V	500X: ±1500 V 50X: ±150 V	1000X: ±6000 V 100X: ±600 V
Common Mode Voltage	±750 V	±1500 V	±6000 V
Maximum Input Voltage-to-Earth	550 V CAT I 300 V CAT III	1000 V CAT II 600 V CAT III	2300 V CAT I 1000 V CAT III
Bandwidth	200 MHz	200 MHz	100 MHz
Rise Time	<1.8 ns	<1.8 ns	<3.5 ns
Slew Rate	<275 V/ns at 1/250 gain	<650 V/ns at 1/500 gain	<2500 V/ns at 1/1000 gain
Input Impedance at the Probe Tip	5 MΩ    <2 pF	10 MΩ    <2 pF	40 MΩ    <2.5 pF
Typical CMRR	DC: > -80 dB 1 MHz: > -60 dB 3.2 MHz: > -30 dB 50 MHz: > -26 dB	DC: > -80 dB 1 MHz: > -60 dB 3.2 MHz: > -30 dB 50 MHz: > -26 dB	DC: > -80 dB 1 MHz: > -60 dB 3.2 MHz: > -30 dB 100 MHz: > -26 dB
Cable Length	1.5 m	1.5 m	1.5 m

### Probes with the TekProbe® Interface

Characteristic	P5200A	P5202A	P5205A	P5210A
Attenuation	50X / 500X	20X / 200X	50X / 500X	100X / 1000X
Differential Voltage	500X: ±1300 V 50X: ±130 V	200X: ±640 V 20X: ±64 V	500X: ±1300 V 50X: ±130 V	1000X: ±5600 V 100X: ±560 V
Common Mode Voltage	±1300 V	±640 V	±1300 V	±5600 V
Maximum Input Voltage-to-Earth	1000 V CAT II	450 V CAT I 300 V CAT II	1000 V CAT II	2300 V CAT I 1000 V CAT III
Bandwidth	50 MHz	100 MHz	100 MHz	50 MHz
Differential Input Impedance	10 MΩ, 2 pF	5 MΩ, 2 pF	10 MΩ, 2 pF	40 MΩ, 2.5 pF
Input Impedance between each Input and Ground	5 MΩ, 4 pF	2.5 MΩ, 4 pF	5 MΩ, 4 pF	20 MΩ, 5 pF
Typical CMRR	DC: >80 dB 100 kHz: >60 dB 3.2 MHz: >30 dB 50 MHz: >26 dB		DC: >80 dB 100 kHz: >60 dB 3.2 MHz: >40 dB 50 MHz: >30 dB	
Cable Length		1.8 m		



1. This is the maximum measurable range between the (+) and (-) input leads of the probe. Beyond these limits, the output could be clipped.
2. The maximum common mode voltage and maximum input voltage-to-earth (RMS) are the maximum voltages that each input lead (+/-) can be from ground.

## Ordering Information

### P5200A, P5202A, and P5205A

High-voltage Differential Probe.

**Includes:** 2 hook clips (AC280-FL), 2 pincer clips (AC283-FL), 2 alligator clips (AC285-FL), and 2 extension cables (196-3523-00).

**Note:** Please specify power cord option when ordering.

### Power Plug Options (P5200A only)

Option	Description
Opt. A0	US power
Opt. A1	Euro power
Opt. A2	UK power
Opt. A3	Australian power
Opt. A5	Switzerland power
Opt. A6	Japanese power
Opt. A10	China power
Opt. A11	India power
Opt. A12	Brazil power

### TMDP0200 and THDP0200

High-voltage Differential Probes.

**Includes:** 2 hook clips (AC280-FL), 2 pincer clips (AC283-FL), 2 alligator clips (AC285-FL), 2 extension cables (196-3523-00), 2 test leads (TP175-FL), 1 high-voltage differential browser (THV-BROWSER), and 1 probe holder (TPH1000).

### THDP0100 and P5210A

High-voltage Differential Probes.

**Includes:** 2 probe tips, 2 large hook clips; 2 small hook clips; 2 probe heads (re-order kit number 020-3070-00).



196-3523-00: Extender Leads (1.5 m).



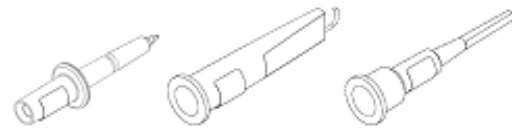
AC283-FL: Pincer Clips.



AC280-FL: Hook Clips.



AC285-FL: Alligator Clips.



020-3070-00: Hook Clip Kit.

**Service Options**

Option	Description
Opt. C3	Calibration Service 3 Years
Opt. C5	Calibration Service 5 Years
Opt. D1	Calibration Data Report
Opt. D3	Calibration Data Report 3 Years (with Opt. C3)
Opt. D5	Calibration Data Report 5 Years (with Opt. C5)
Opt. R3	Repair Service 3 Years
Opt. R5	Repair Service 5 Years

**Probe and Accessory Derating Table (Common Mode, relative to ground, when used with P52xxA Series probes)**

Accessory	Description	TMDP0200 / P5202A	THDP0200 / P5200A	THDP0100 / P5210A
		450 V CAT I 300 V CAT II	/ P5200A / P5205A 1000 V CAT II 600 V CAT III	2300 V CAT I 1000 V CAT III
196-3523-00	2x Extender Leads (1.5 m)	Standard	Standard	Standard
	2300 V CAT I 1000 V CAT III	450 V CAT I 300 V CAT II	1000 V CAT II 600 V CAT III	2300 V CAT I 1000 V CAT III
AC280-FL	2x Hook Clips	Standard	Standard	Optional
	1000 V CAT III 600 V CAT IV	450 V CAT I 300 V CAT II	1000 V CAT II 600 V CAT III	1000 V CAT I 1000 V CAT III
AC283-FL	2x Pincer Clips	Standard	Standard	Optional
	1000 V CAT III 600 V CAT IV	450 V CAT I 300 V CAT II	1000 V CAT II 600 V CAT III	1000 V CAT I 1000 V CAT III
AC285-FL	2x Alligator Clips	Standard	Standard	Optional
	1000 V CAT III 600 V CAT IV	450 V CAT I 300 V CAT II	1000 V CAT II 600 V CAT III	1000 V CAT I 1000 V CAT III
020-3070-00	Hook Clip Kit	Optional	Optional	Standard
	2300 V CAT I 1000 V CAT II	450 V CAT I 300 V CAT II	1000 V CAT II 600 V CAT II	2300 V CAT I 1000 V CAT II
TP175-FL	2x Test Leads	Standard (TMDP0200)	Standard (THDP0200)	Optional
	1000 V CAT III 600 V CAT IV	550 V CAT I 300 V CAT III	1000 V CAT II 600 V CAT III	2300 V CAT I 1000 V CAT III



The P52xxA Series probes provide high-voltage differential measurement solutions for any oscilloscope.



Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.

**Contact Tektronix:**

- ASEAN / Australasia (65) 6356 3900
- Austria 00800 2255 4835\*
- Balkans, Israel, South Africa and other ISE Countries +41 52 675 3777
- Belgium 00800 2255 4835\*
- Brazil +55 (11) 3759 7627
- Canada 1 800 833 9200
- Central East Europe and the Baltics +41 52 675 3777
- Central Europe & Greece +41 52 675 3777
- Denmark +45 80 88 1401
- Finland +41 52 675 3777
- France 00800 2255 4835\*
- Germany 00800 2255 4835\*
- Hong Kong 400 820 5835
- India 000 800 650 1835
- Italy 00800 2255 4835\*
- Japan 81 (3) 6714 3010
- Luxembourg +41 52 675 3777
- Mexico, Central/South America & Caribbean 52 (55) 56 04 50 90
- Middle East, Asia, and North Africa +41 52 675 3777
- The Netherlands 00800 2255 4835\*
- Norway 800 16098
- People's Republic of China 400 820 5835
- Poland +41 52 675 3777
- Portugal 80 08 12370
- Republic of Korea 001 800 8255 2835
- Russia & CIS +7 (495) 7484900
- South Africa +41 52 675 3777
- Spain 00800 2255 4835\*
- Sweden 00800 2255 4835\*
- Switzerland 00800 2255 4835\*
- Taiwan 886 (2) 2722 9622
- United Kingdom & Ireland 00800 2255 4835\*
- USA 1 800 833 9200

\* European toll-free number. If not accessible, call: +41 52 675 3777

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**For Further Information.** Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit [www.tektronix.com](http://www.tektronix.com)



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