

Service Manual



P5210 **High Voltage Differential Probe** **070-9895-03**

Warning

The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

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Table of Contents

General Safety Summary	v
Service Safety Summary	vii
Contacting Tektronix	viii
Operating Basics	1
Operating the Probe Safely	2
Minimizing Risk of RF Burn (probe leads)	2
Maximum Input Limits	2
Operating Characteristics and Probing Techniques	4
Operating Limits	4
Ovrange Detection	4
Common-Mode Rejection	4
Twisting the Input Leads	5
Extension Leads	5
Probe Loading	6
Specifications	7
Warranted Characteristics	7
Typical Characteristics	11
Nominal Characteristics	14
Maintenance	15
Cleaning	15
Replacing TEKPROBE Interface Pins	15
Removing and Replacing the TEKPROBE Interface Collar ..	16
Removing the Compensation Box Covers	17
Replacing the Compensation Box Covers	17
Performance Verification	19
Construction of Modified BNC Adapter	20
Setup	21
Differential Gain Accuracy	22
Bandwidth	24
DC CMRR	25
Replaceable Parts	27
Parts Ordering Information	27
Using the Replaceable Parts List	27

Table of Contents

Abbreviations 28
Mfr. Code to Manufacturer Cross Index 28

List of Figures

Figure 1: Safety Limits (voltage between either input and earth ground)	3
Figure 2: Twisting the Input Leads	5
Figure 3: HF Transient Response with and without extension leads	6
Figure 4: Safety limits (voltage between either input and earth ground)	9
Figure 5: Typical common-mode rejection ratio (100X attenuation)	12
Figure 6: Input impedance vs. frequency	13
Figure 7: Replacing TEKPROBE interface pins	16
Figure 8: Replacing the TEKPROBE collar	16
Figure 9: Removing the compensation box covers	17
Figure 10: Replacing the compensation box cover	18
Figure 11: BNC-male-to-dual binding post adapter	20
Figure 12: Removing plastic covers from binding posts	22
Figure 13: Slide probe leads onto the binding posts	23
Figure 14: P5210 probe and replaceable accessories	29
Figure 15: Replaceable parts - compensation box	31
Figure 16: P5210 probe optional accessories	32

List of Tables

Table 1: Warranted electrical characteristics	8
Table 2: Certifications and compliances	10
Table 3: Typical electrical characteristics	11
Table 4: Typical mechanical characteristics	13
Table 5: Nominal electrical characteristics	14
Table 6: List of equipment required	19
Table 7: Parts list column descriptions	28

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.

Observe Maximum Working Voltage

Do not use the P5210 High Voltage Differential Probe above 1,000 V_{RMS} CAT III (2,200 V_{RMS} CAT II) from ground on either input or $\pm 5,600$ V (DC + peak AC) between the leads.

To Avoid Fire or Personal Injury

Avoid RF Burns While Handling Probe. To avoid RF burns, do not handle the probe while the input leads are connected to circuits above the voltage and frequency limits specified in Figure 1 on page 3. Use only probe accessories that are rated for the application.

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 ground from the circuit under test before disconnecting the probe from the measurement instrument.

Ground the Product. This product is indirectly grounded through the grounding conductor of the mainframe power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

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.

Use Proper AC Adapter. Use only the AC adapter specified for this product.

Do Not Operate Without Covers. Do not operate this product with covers or panels removed.

Avoid Exposed Circuitry. Do not touch exposed connections and components when power is present.

Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

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.*

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.

Symbols on the Product. These symbols may appear on the product:



CAUTION
Refer to Manual



WARNING
High Voltage



Double
Insulated



Protective Ground
(Earth) Terminal



Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Use Care When Servicing with Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Contacting Tektronix

Phone	1-800-833-9200*
Address	Tektronix, Inc. 14200 SW Karl Braun Drive P.O. Box 500 Beaverton, OR 97077 USA
Web site	www.tektronix.com
Sales support	1-800-833-9200, select option 1*
Service support	1-800-833-9200, select option 2*
Technical support	Email: techsupport@tektronix.com 1-800-833-9200, select option 3* 1-503-627-2400 6:00 a.m. - 5:00 p.m. Pacific time

* **This phone number is toll free in North America. After office hours, please leave a voice mail message. Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices.**

Operating Basics

To help you use the P5210 High Voltage Differential Probe safely and effectively, this section provides important information about safety limits, operating characteristics, and probing techniques.



WARNING. *Due to the inherent hazards associated with taking high-voltage measurements, the product is intended for use by qualified personnel who have had the training to make these types of measurements. Read and follow the precautions specified in this manual.*

Before you make any oscilloscope measurement, observe all safety precautions described in the user and service manuals for the equipment you are working on. Some general rules about using and servicing electrical equipment are worth repeating here.

- Observe the safety instruction symbols for the equipment you are working on.
- Consult the instruction or service manuals for the equipment you are working on.
- Don't operate or service an electrical device in an explosive atmosphere.
- Avoid personal injury by never touching exposed connections or components in the circuit-under-test when the power is on.

Operating the Probe Safely

Before connecting the inputs of the probe to a circuit, read the safety information in this section, and attach the appropriate accessories to the input connectors of the probe.

NOTE. *To avoid shock or fire hazard, use only accessories that are rated for the application.*

Minimizing Risk of RF Burn (Probe Leads)



WARNING. *To avoid personal injury, do not handle the probe leads when the leads are connected to a source that is above the voltage and frequency limits given in Figure 1 on page 3. The area above these limits poses a risk of radio frequency (RF) burns.*

If you need to use the probe within the risk area for RF burn, turn power off to the source before connecting or disconnecting the probe leads. Do not handle the input leads while the circuit is active.

Maximum Input Limits

To prevent damage to the probe, you must observe both the peak and RMS ratings. (The rating for DC voltage is the same as the rating for RMS voltage.) You must also observe the ratings between the differential inputs and between each input and earth ground.



CAUTION. *To avoid damaging the input circuitry of the P5210, do not apply voltage of more than 2,200 V_{RMS} CAT II between either input and earth ground or more than 4,400 V_{RMS} CAT II between the inputs. In addition, the peak voltage must be less than 5,600 V (DC + peak AC) between the inputs.*

Above 1.5 MHz, the voltage limit decreases as frequency increases. See Figure 1. The input limit applies to both the 100X and 1,000X settings.

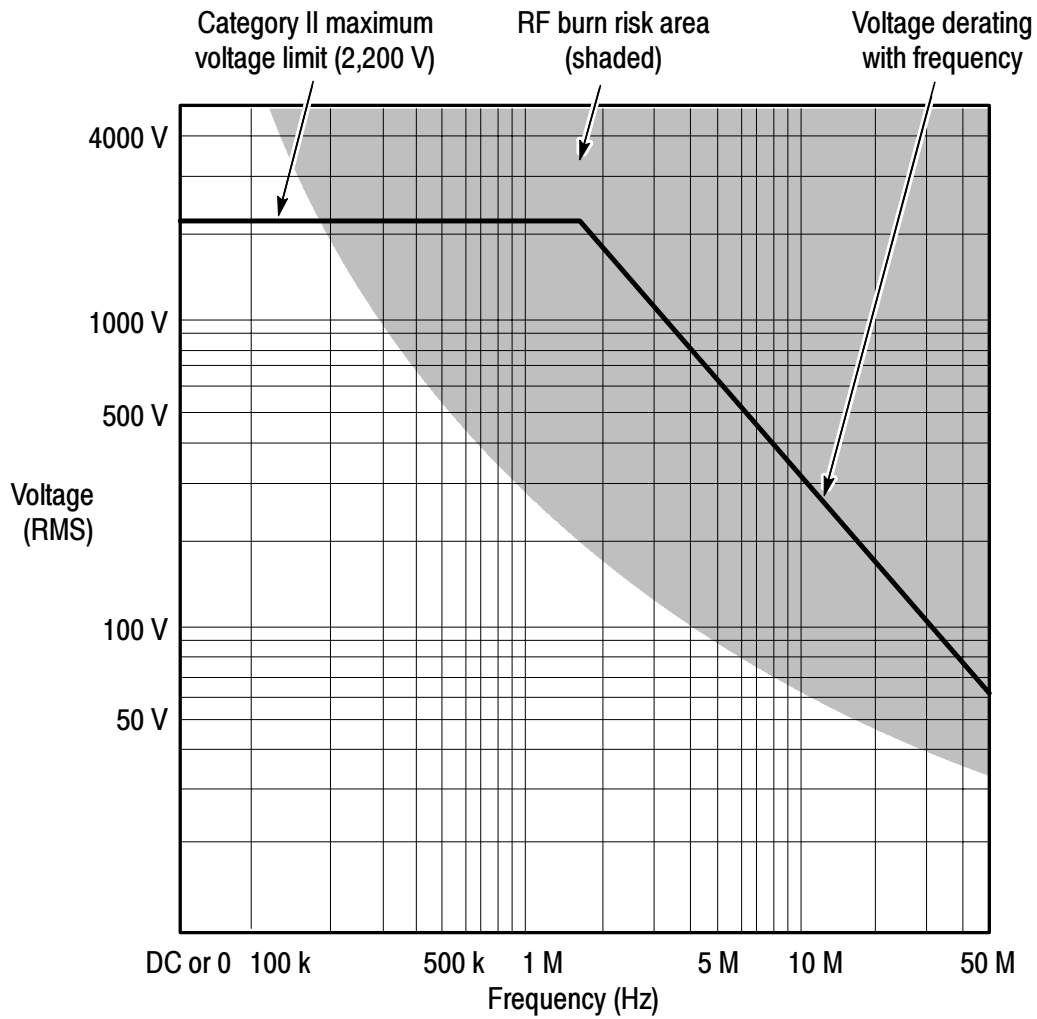


Figure 1: Safety Limits (voltage between either input and earth ground)

Operating Characteristics and Probing Techniques

This section explains the operating characteristics of the P5210 along with techniques you can use to maximize the performance of the probe.

Operating Limits

The P5210 has two operating ranges that you select with the ATTENUATION button on the front panel: 1,000X and 100X. These ranges set the maximum differential voltage that can be measured.

- In the 100X position, the probe can measure differential voltages ≤ 560 V (DC + peak AC).
- In the 1,000X position, the probe can measure differential voltages $\leq 5,600$ V (DC + peak AC).

Always insure that the input voltages never exceed $2,200 V_{RMS}$ CAT II from either input to ground or $4,400 V_{RMS}$ CAT II between the inputs.

Overrange Detection

Differential voltage outside the operating range will overdrive the circuitry of the probe and distort the output signal. When this differential overrange occurs, the probe detects the condition and lights the overrange indicator. With the Audible Overrange ON, the probe will also emit an audible alarm.

NOTE. *Common-mode voltage greater than $2,200 V_{RMS}$ CAT II can distort the output signal, but the probe will not indicate an overrange condition.*

Common-Mode Rejection

The common-mode rejection ratio (CMRR) is the specified ability of P5210 to reject signals that are common to both inputs. More precisely, CMRR is the ratio of the differential gain to the common-mode gain. The higher the ratio, the greater the ability of probe to reject common-mode signals. For detailed specifications, see pages 8 and 11 in the *Specification* section.

Common mode rejection decreases as the input frequency increases. Figure 5 on page 12 is a plot of typical CMRR of the probe versus input frequency. For example, if you apply a 60 Hz line voltage of 500 V_{P-P} to both input leads of the probe, the probe rejects the signal by 80 dB (typical) and the signal appears as only a 50 mV_{P-P} signal on the oscilloscope screen.

Twisting the Input Leads

Twisting the input leads as shown in Figure 2 helps to cancel noise that is induced into the input leads and to improve the high-frequency response of the inputs.

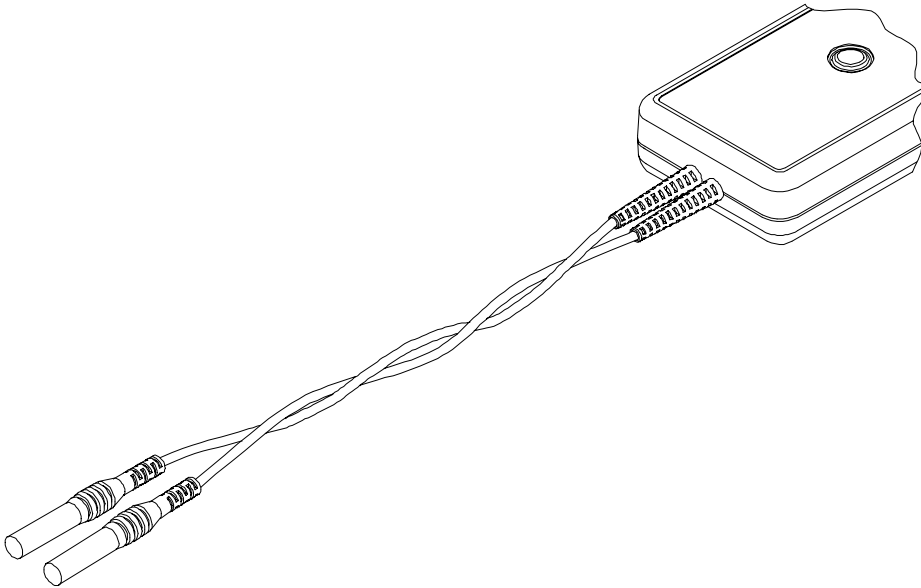


Figure 2: Twisting the Input Leads

Extension Leads

The extension leads allow you to reach widely spaced connection points. Connect the extension leads to the input leads using the adapters provided. Be sure to use both extension leads so that the input leads are the same length.

The extension leads, however, do affect the high-frequency performance of the probe. With longer lead length, differential noise induced into the input leads is greater. Also, because of the added inductance of the leads, voltage measurements at frequencies above approximately 10 MHz may not be as precise. Figure 3 shows the affect on HF transient response.

The extension leads do not affect the performance of the probe when bandwidth is set to 5 MHz.

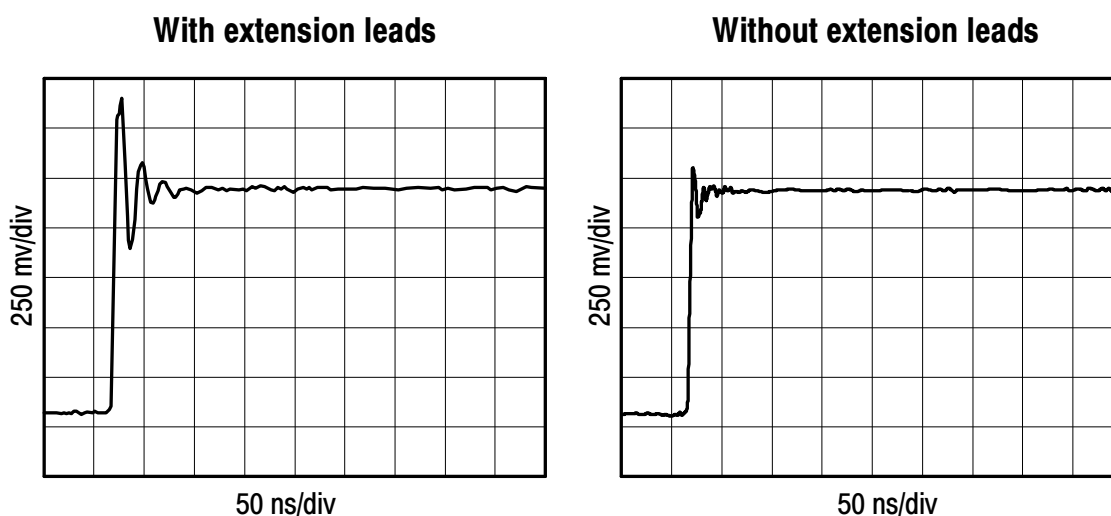


Figure 3: HF Transient Response with and without extension leads

Probe Loading

When you touch your probe tip to a circuit element, you introduce a new resistance, capacitance, and inductance into the circuit.

Frequency and impedance of the source determine how much the probe loads the circuit you are measuring. As the frequency of the source starts to increase beyond 1 kHz, the input impedance of the probe begins to decrease. The lower the impedance of the probe relative to that of the source, the more the probe loads the circuit under test. For a graph of frequency versus input impedance, refer to Figure 6 on page 13 of the *Specifications* section.

The probe has virtually no loading effect on sources with relatively low impedance and low frequency.

Specifications

The specifications in Tables 1 through 5 apply to a P5210 probe installed on a Tektronix TDS 460A oscilloscope. When the probe is used with another oscilloscope, the oscilloscope must have:

- An input impedance of 1 M Ω
- An input capacitance range of between 15 and 20 pF
- A bandwidth greater than 200 MHz

The probe must have a warm-up period of at least 20 minutes and be in an environment that does not exceed the limits described in Table 1 on page 8.

Specifications for the P5210 probe fall into three categories: warranted, typical, and nominal characteristics.



WARNING. *Special fixtures are required to examine specifications at the maximum frequency and voltage levels and should be conducted only by qualified Service Personnel. See the Service section for more details.*

Warranted Characteristics

Warranted characteristics in Tables 1 and 2 describe guaranteed performance within tolerance limits or certain type-tested requirements. Warranted characteristics that have checks in the *Performance Verification* procedure appear in **boldface** type. The *Performance Verification* procedure begins on page 19.

Table 1: Warranted electrical characteristics

DC common-mode rejection ratio	>3000:1 at 500 VDC, 20-30° C, <70% RH
Bandwidth	DC to 50 MHz (-3dB)
Gain accuracy	± 3% at 20-30° C, <70% RH
Maximum rated input voltage (Refer to Figure 4 on page 9)	
probe tip to probe tip	4.4 kV _{RMS} ¹ , Category I & II 1 kV _{RMS} ¹ , Category III 5.6 kV _(DC + peak AC) ²
probe tip to earth	2.2 kV _{RMS} ¹ , Category I & II ³ 1 kV _{RMS} ¹ , Category III 5.6 kV _(DC + peak AC) ²
Temperature ⁴	Operating: 0 to 40° C Nonoperating: -30 to +70° C
Humidity ⁴	Operating: <85% RH at or below +35° C Nonoperating: <85% RH at or below +60° C

- 1 The rating for DC voltage is the same as the rating for RMS voltage.**
- 2 The input voltage must not exceed this peak rating or the RMS rating.**
- 3 The 2.2 kV_{RMS} CAT II rating applies to high-voltage secondary circuits that have a CAT III primary as described in IEC 664. This rating only applies when using the probe head that is in the 020-2195-00 accessory kit. If you use any other probe head, do not exceed the voltage-to-ground rating of that probe head or this 2.2 kV_{RMS} CAT II rating.**
- 4 Tektronix Design Standard 062-2847-00**



WARNING. To avoid personal injury, do not handle the probe leads when the leads are connected to a source that is in the voltage and frequency range indicated by the shaded area in Figure 4. This area of operation poses a risk of radio frequency (RF) burns.

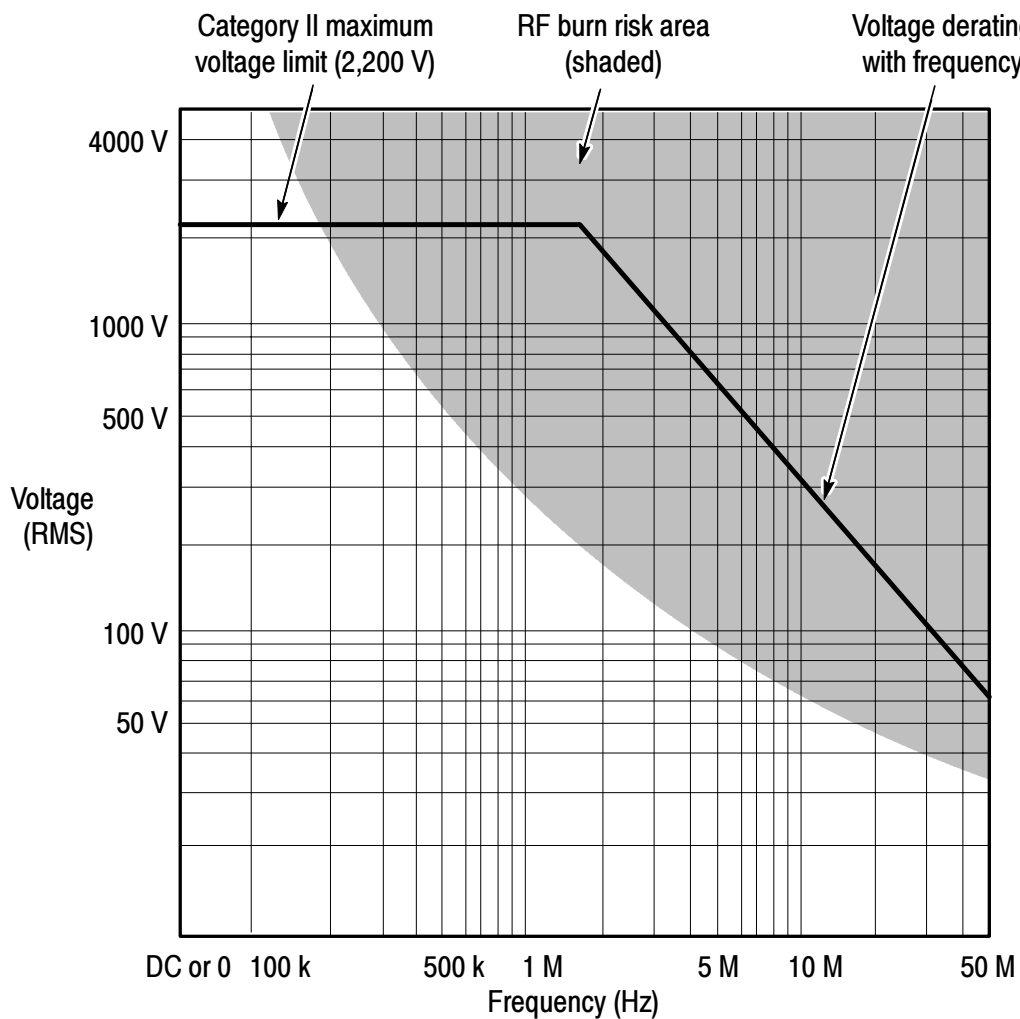


Figure 4: Safety limits (voltage between either input and earth ground)

Table 2: Certifications and compliances

<p>EC Declaration of Conformity - Low Voltage</p>	<p>Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities:</p> <p>Low Voltage Directive 73/23/EEC, as amended by 93/68/EEC: EN 61010-1/A2:1995 Safety requirements for electrical equipment for measurement, control, and laboratory use EN 61010-2-031:1994 Particular requirements for hand-held probe assemblies for electrical measurement and test equipment</p>
<p>Approvals</p>	<p>UL3111-1 - Standard for electrical measuring and test equipment</p> <p>IEC 61010-2-031 - Particular requirements for hand-held probe assemblies for electrical measurement and test</p> <p>CAN/CSA-C22.2 No. 1010.1-92 and CAN/CSA-C22.2 No. 1010.2.031-94 - Safety requirements for electrical equipment for measurement, control, and laboratory use</p>
<p>Installation Category Descriptions</p>	<p>Terminals on this product may have different installation category designations. The installation categories are:</p> <p>CAT III Distribution-level mains (usually permanently connected). Equipment at this level is typically in a fixed industrial location</p> <p>CAT II Local-level mains (wall sockets). Equipment at this level includes appliances, portable tools, and similar products. Equipment is usually cord-connected</p> <p>CAT I Secondary (signal level) or battery operated circuits of electronic equipment</p>
<p>Pollution Degree 2</p>	<p>Do not operate in environments where conductive pollutants may be present.</p>

Typical Characteristics

Typical characteristics in Tables 3 and 4 describe typical but not guaranteed performance.

Table 3: Typical electrical characteristics

Rise time	7 ns
Bandwidth limit	5 MHz
AC common-mode rejection ratio (20-30°C, <70% RH) See Figure 5	60 Hz: > 10,000:1 100 kHz: > 300:1 1 MHz: > 300:1
AC noise (referenced to input)	100X: < 150 mV _{RMS} 1,000X: < 800 mV _{RMS}
Input impedance	16 MΩ, 3.5 pF between inputs 8 MΩ, 7 pF between each input and ground See Figure 6 on page 13
Propagation delay	20 nS
Overdrive recovery	< 50 ns to 10% of final value after 10X overdrive (100X range only)
DC offset adjust (referenced to input)	100X: ± 1.0 V 1,000X: ± 10 V

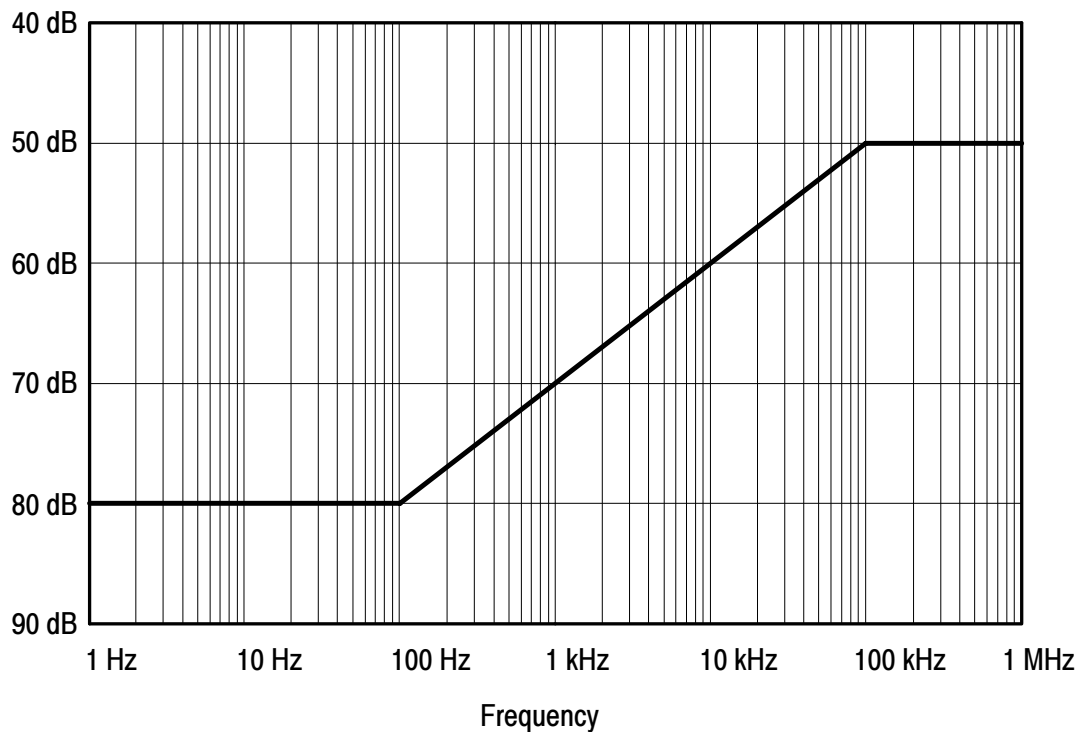


Figure 5: Typical common-mode rejection ratio (100X attenuation)

Table 4: Typical mechanical characteristics

Dimensions, case	185 mm × 66 mm × 32 mm (7.2 in × 2.6 in × 1.3 in)
Dimensions, input leads	45.7 cm (18 in)
Dimensions, output cable	1.8 m (6 ft)
Unit weight (probe only)	315 g (11 oz)
Shipping weight (with accessories)	1.42 kg (3 lb, 2 oz)

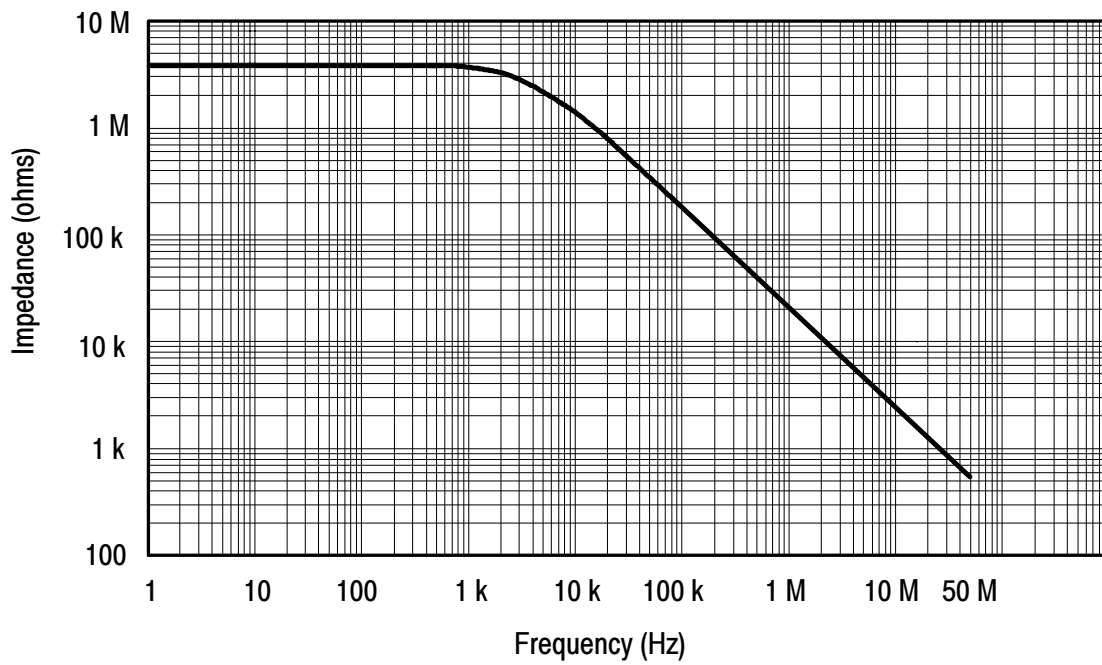


Figure 6: Input impedance vs. frequency

Nominal Characteristics

Nominal characteristics in Table 5 describe guaranteed traits, but the traits do not have tolerance limits.

Table 5: Nominal electrical characteristics

Input type	Balanced differential
Output type	Single-ended. Source impedance of 50 Ω drives 1 M Ω oscilloscope input. Load impedance must be greater than 50 k Ω for stated accuracy
Gain	Switchable: 1/100 (100X) and 1/1,000 (1000X)
Overrange beeper	Overrange sounds whenever ON, and over range LED is lit.

Maintenance

Refer to this section for information about maintaining and servicing the P5210 High Voltage Differential Probe.

For a list of replaceable parts, refer to the *Replaceable Parts* section on page 27. The replaceable parts of the TEKPROBE interface include the interface pins, the probe collar, and the compensation box covers.

Cleaning

Remove dirt with a soft cloth dampened in a mild detergent and water solution, or isopropyl alcohol.



CAUTION. *To avoid damaging the probe, use only a mild detergent and water solution or isopropyl alcohol and water; do not use any other solvents or abrasive cleaners. Do not immerse the probe.*

Replacing TEKPROBE Interface Pins

1. Remove the interface pin with pliers (see Figure 7 on page 16).
2. Insert a new pin and press it into the socket against a hard surface.

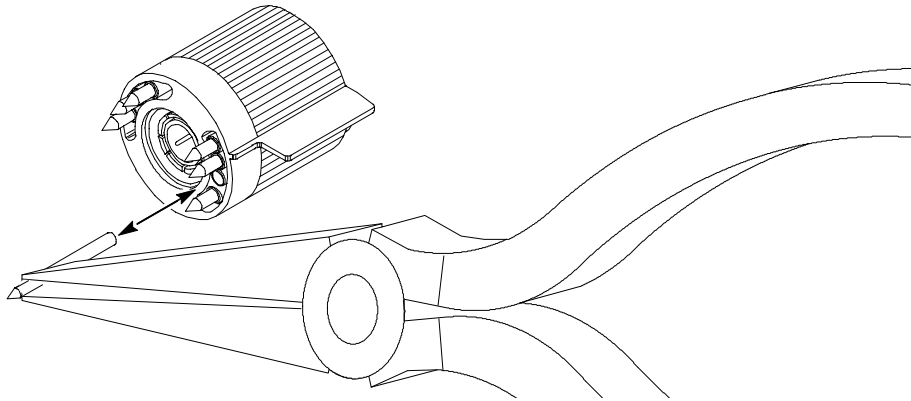


Figure 7: Replacing TEKPROBE interface pins

Removing and Replacing the TEKPROBE Interface Collar

1. Firmly pull the collar off by hand.
2. Align the smaller group of pins with the smaller of the two holes in the interface collar and align the tabs with the slots.
3. Gently press the two pieces together (see Figure 8 below).

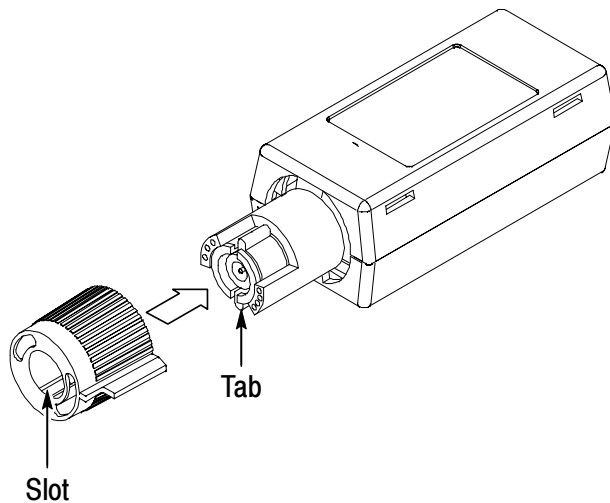


Figure 8: Replacing the TEKPROBE collar

Removing the Compensation Box Covers

1. Press the optional release tool pins into the cover catches.
2. Gently separate the each side of the compensation box. Refer to Figure 9 below.

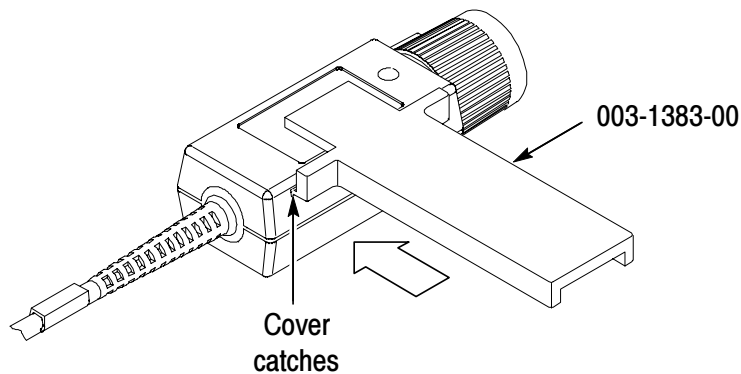


Figure 9: Removing the compensation box covers

Replacing the Compensation Box Covers

1. Carefully align the tab and cover catches. Refer to Figure 10 on page 18.
2. Firmly press the pieces together until the cover catches snap into place.

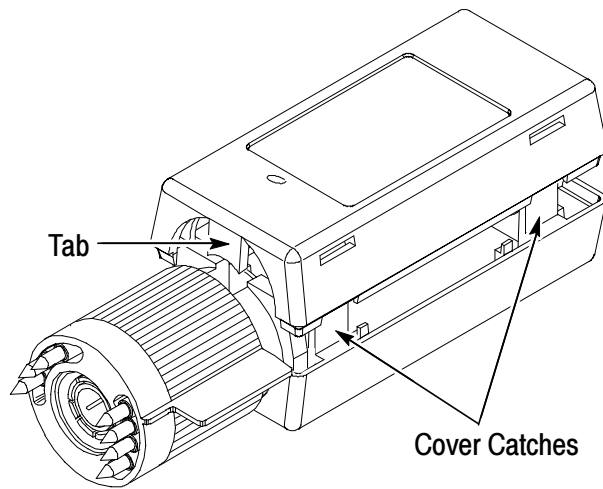


Figure 10: Replacing the compensation box cover

Performance Verification

The following procedure verifies the warranted electrical characteristics of the P5210 High Voltage Differential Probe. Table 6 itemizes the equipment required, provides an example or part number of the equipment, and explains the purpose of the equipment.

Table 6: List of equipment required

Description	Minimum requirements	Example or part number	Purpose
Digitizing oscilloscope	Bandwidth: ≥ 400 MHz TekProbe interface offset accuracy: $\leq 0.7\%$	TDS460A or TDS784A	Display probe output
Standard amplitude generator	Amplitude accuracy: $\leq 0.25\%$	Fluke/Wavetek 9100 with oscilloscope option 250	Check probe attenuation, bandwidth, common-mode rejection ratio
Leveled sine wave generator	Rise time (standard amplitude): ≤ 3 ns		
DC voltage source			
Plunger clamps (2 required)	Use clamps included in accessory kit	Accessory kit 020-2106-00	Connection to binding post
BNC adapter	BNC female to dual banana	103-0090-00	Interconnection between probe and generator
Coaxial cables (2 required)	36 in (0.9144 m), precision 50Ω	012-0482-00	Interconnection between probe and generator
Terminator	50Ω precision feed through	011-0049-01	Termination between probe and generator during bandwidth measurements
Modified BNC adapter	BNC-male-to-dual binding post	103-0035-00	Interconnection between probe and Generator. (See Figure 11 on page 20)

Construction of Modified BNC Adapter

Construct the modified BNC Adapter from a BNC-male-to-dual binding post adapter, Tektronix part number 103-0035-00 (see Figure 11).

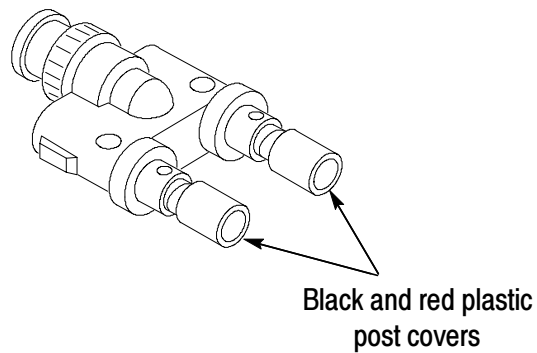


Figure 11: BNC-male-to-dual binding post adapter

To expose the posts that you will connect the P5210 High Voltage Differential probe leads to, remove the black and red plastic post covers of the BNC-male-to-dual adapter. Use a pair of pliers and a vise to remove the plastic covers, as shown in Figure 12 on page 22.

Setup



WARNING. *These procedures require the application of high voltage to the inputs of the P5210 probe. Because this adapter has exposed metal surfaces, only qualified personnel should perform any testing with voltage levels exceeding 30 V rms. All pertinent safety rules and guidelines for elevated voltage measurements should be followed and adhered to.*

Connect the output of the probe to the channel 3 of the test oscilloscope. Let the probe warm up for 20 minutes.

NOTE. *These procedures assume that you are using an oscilloscope that automatically displays the correct volts/division scale factor for the attenuation setting of the probe. If not, you must take the attenuation setting of the probe into account when setting the volts/division on the oscilloscope.*

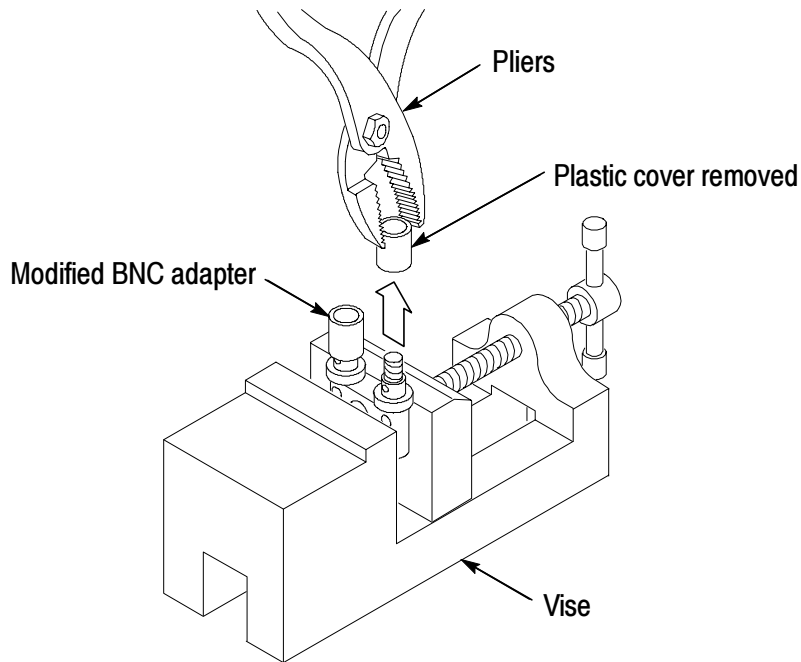


Figure 12: Removing plastic covers from binding posts

Differential Gain Accuracy

1. Set the volts/division on channel 2 of the oscilloscope to 2 V.
 - Trigger on channel 2.
 - Select 1 M Ω impedance (if option exists on oscilloscope).
 - Connect coaxial cable between TRIG OUT of the generator (rear of Wavetek 9100) and channel 2 of the oscilloscope.
2. Set the volts/division on channel 1 of the oscilloscope to 20 mV.
3. Set the seconds/div to 200 μ s and the acquisition mode to average 32.
4. Connect the coaxial cable from SIG OUT of the generator (rear of Wavetek 9100) to channel 1 of the oscilloscope.
5. Set the generator to 0.1 V and 1 kHz (AUX, square wave, 1 M Ω load). Enable the output.

6. Select the amplitude measurement on the oscilloscope and record the DC amplitude (~ 100 mV) of the square wave. This measurement is only the oscilloscope.
7. Disable the generator output. Disconnect the coaxial cable from channel 1 of the oscilloscope and SIG OUT of the generator.
8. Connect the output of the probe to channel 1 of the oscilloscope.
9. Attach the Modified BNC adapter to the SIG OUT of the generator.
10. Attach the differential probe input leads (without attachment accessories) by sliding the banana plug of the leads onto the binding posts of the Modified BNC adapter, as shown in Figure 13 on page 23.

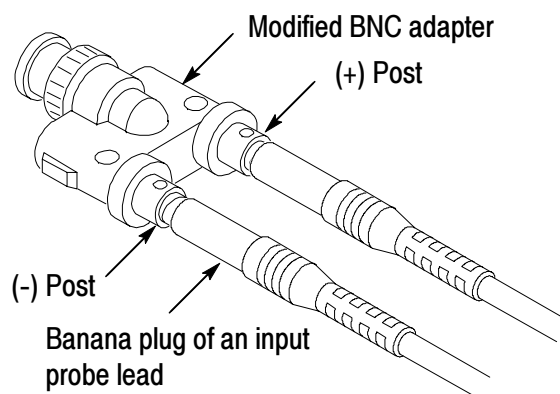


Figure 13: Slide probe leads onto the binding posts



WARNING. To reduce the risk of electric shock, ensure the generator output is disabled before setting the voltage above 30V_{rms}.

11. Set the probe to 1000X (out). Set the generator for a 100 V and 1 kHz standard amplitude output (AUX, square wave, 1 M Ω load).



WARNING. *Generator produces hazardous voltages. To avoid risk of shock, do not touch exposed metal parts after the generator output is enabled.*

12. Enable the output of the generator.
13. Adjust the zero offset on the compensation box of the probe for zero offset.
14. Record the DC amplitude of the square wave (~100 V) and divide $1/1000^{\text{th}}$ of this into just the amplitude of the oscilloscope (refer to step 6). Verify that only the probe gain accuracy is $\pm 3\%$.
15. Set the calibration generator for 10 V output. Set the attenuation button on the probe to 100X (in).
16. Record the DC amplitude of the square wave (~10V) and divide $1/100^{\text{th}}$ of this into only the amplitude of the oscilloscope (refer to step 6). Verify that only the probe gain accuracy is $\pm 3\%$.
17. Disable the generator output and leave the setup connected for the next procedure.

Bandwidth

1. Connect the Modified BNC adapter through a 50 Ω terminator to the leveled sine wave output of the generator (AUX, Sine, 50 Ω load).



WARNING. *To reduce the risk of electric shock, ensure the generator output is disabled before modifying/disconnecting test setup or connections since exposed metal may be at a hazardous potential. It is recommended that the generator output amplitude be reduced to minimum prior to disabling the output.*

2. Attach the differential probe input leads without attachment accessories by sliding the banana plug of the leads onto the binding posts metal sleeves on the Modified BNC adapter.

3. Set the bandwidth on the probe to FULL and the attenuation button to 100X.
4. Set the Volts/Division on channel 1 of the oscilloscope to 500 mV, and seconds/div to 10 μ s. Set the trace to the center of the oscilloscope.
5. Reduce the amplitude on the generator to minimum then enable the output.
6. Set the sine wave generator to 50 kHz, and adjust the amplitude to 3.00 V as measured on the oscilloscope.
7. Set the generator to 50 MHz, and set the oscilloscope to 5 ns/division. Check for ≥ 2.1 V amplitude.
8. Disable the generator output and disconnect the probe input.

DC CMRR

1. Set the attenuation of the probe to 100X.
2. Set the oscilloscope input coupling to DC, the vertical to 100 mV/div, and the seconds/div to 200 μ s. Center the trace on the display. Set the acquisition mode to average 32.
3. Attach the BNC-female-to-dual-banana adapter to the DC output of the generator (front of Wavetek 9100). Attach the modified BNC adapter to the BNC-female-to-dual-banana adapter.
4. Attach the plunger clamps on the differential probe input leads.
5. Twist the input leads together as shown in Figure 2 on page 5, and connect both probe inputs to the positive terminal of the modified BNC adapter.
6. Adjust the offset on the probe output to zero.



WARNING. *Generator produces hazardous voltages. To avoid risk of shock, do not touch exposed metal parts after the generator output is enabled.*

7. Set the output of the generator to 500 VDC.
8. Enable the output.
9. Check that the trace on the oscilloscope shifts less than 1.67 divisions (167 mV) from center.
10. Disable the generator output.



WARNING. *To reduce the risk of electric shock, ensure the generator output is disabled before modifying/disconnecting test setup or connections since exposed metal may be at a hazardous potential. It is recommended that the generator output amplitude be reduced to minimum prior to disabling the output.*

11. Disconnect all test equipment.

This completes the performance verification procedure.

Replaceable Parts

This section contains a list of the replaceable modules for the P5210 probe. Use this list to identify and order replacement parts.

Parts Ordering Information

Replacement parts are available through your local Tektronix field office or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest circuit improvements. Therefore, when ordering parts, it is important to include the following information in your order:

- Part number
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If you order a part that has been replaced with a different or improved part, your local Tektronix field office or representative will contact you concerning any change in part number.

You may exchange your module for a remanufactured module. These modules cost significantly less than new modules and meet the same factory specifications. For more information about the module exchange program, For more information about the module exchange program, refer to *Contacting Tektronix*, on page viii.

Using the Replaceable Parts List

This section contains a list of the mechanical and/or electrical components that are replaceable for the P5210 probe. Use this list to identify and order replacement parts. Table 7 describes each column in the parts list.

Table 7: Parts list column descriptions

Column	Column name	Description
1	Figure & index number	Items in this section are referenced by figure and index numbers to the exploded view illustrations that follow.
2	Tektronix part number	Use this part number when ordering replacement parts from Tektronix.
3 and 4	Serial number	Column three indicates the serial number at which the part was first effective. Column four indicates the serial number at which the part was discontinued. No entries indicates the part is good for all serial numbers.
5	Qty	This indicates the quantity of parts used.
6	Name & description	An item name is separated from the description by a colon (:). Because of space limitations, an item name may sometimes appear as incomplete. Use the U.S. Federal Catalog handbook H6-1 for further item name identification.
7	Mfr. code	This indicates the code of the actual manufacturer of the part.
8	Mfr. part number	This indicates the actual manufacturer or vendor part number.

Abbreviations

Abbreviations conform to American National Standard ANSI Y1.1-1972.

Mfr. Code to Manufacturer Cross Index

The table titled Manufacturers Cross Index shows codes, names, and addresses of manufacturers or vendors of components listed in the parts list.

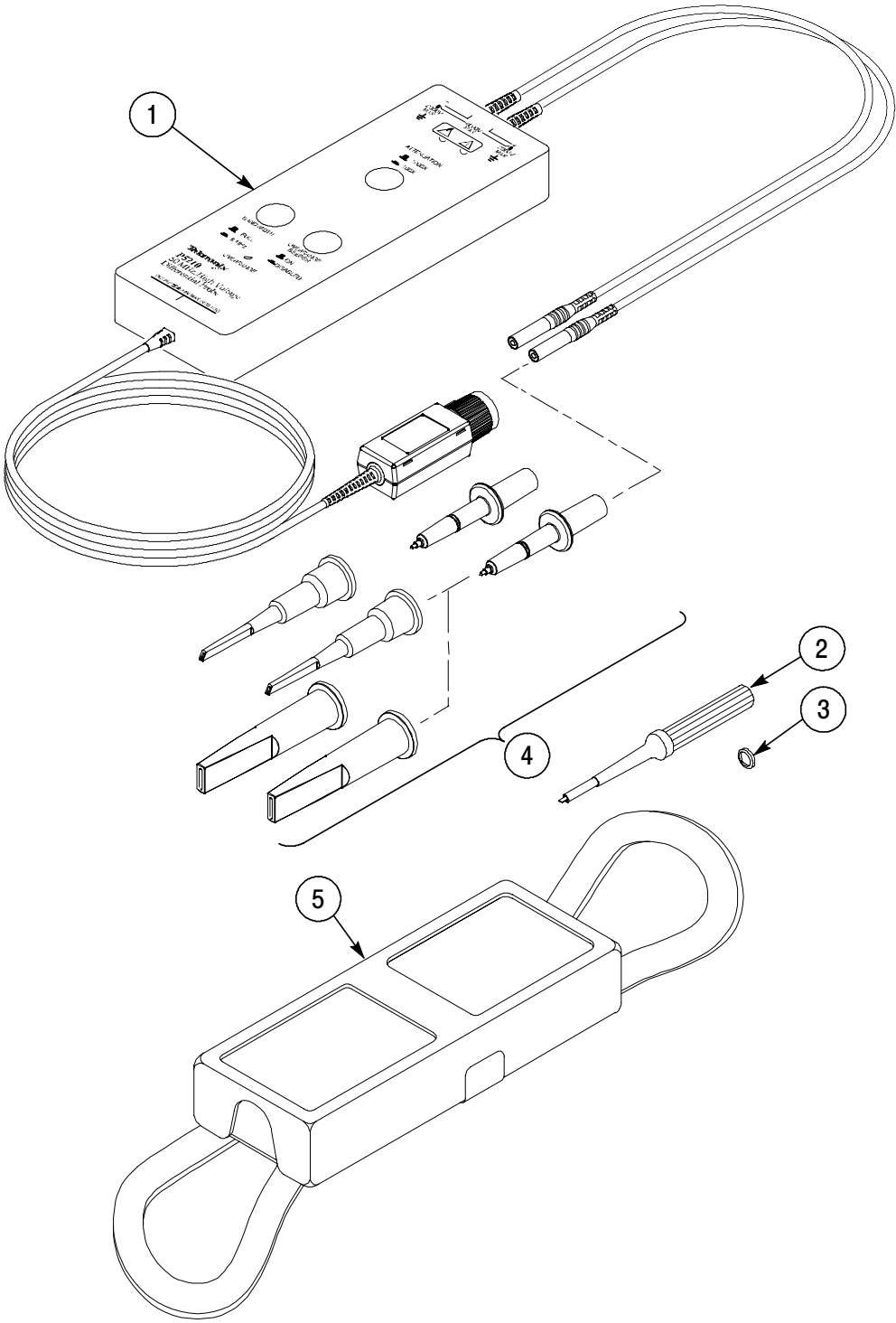
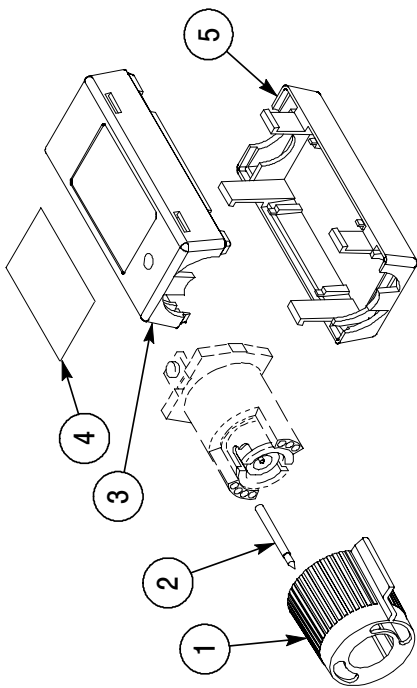


Figure 14: P5210 probe and replaceable accessories

30 P5210 probe and replaceable accessories

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
14-1				1	PROBE, DIF ACT:TEK PROBE, P5210	80009	
-2	003-1433-00			1	SCREWDRIVER:ADJUSTMENT TOOL,METAL TIP PLASTIC,BLACK	TK2565	003-1433-00
-3	016-0633-00			1	MARKER SET,CA:2 EA VARIOUS COLORS	80009	016-0633-00
-4	020-2195-00			1	ACCESSORIES KIT:ACCESSORIES FOR P5210	80009	020-2195-00
-5	016-1461-00			1	STRAP:SOFT CASE FOR P5205, P5200, SECURES PROBE TO INSTRUMENT UNDER TEST, SECURES ALL	TK6076	016-1461-00
	070-9841-XX			1	MANUAL,TECH:INSTRUCTION, 4 LANGUAGES,P5210,DP	TK2548	070-9841-XX
	070-9895-XX			1	MANUAL,TECH:SERVICE,P5210,DP	TK2548	070-9895-XX



NOTE: Parts illustrated with dashed lines are not replaceable

Figure 15: Replaceable parts - compensation box

Replaceable parts - compensation box

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
15-1	205-0191-00			1	SHELL,ELEC CONN:BNC,ABS,DOVE GRAY	80009	205-0191-00
-2	131-3627-01			1	CONTACT,ELEC:GOLD PLATED TIP	18359	P-6158-1
-3	206-0429-08			1	COMP BOX HALF:P5205,COMP BOX HALF	TK2565	206-0429-08
-4	334-9265-00			1	MARKER,IDENT:COMP BOX ID LABEL,GE LEXAN,P5210	80009	334-9265-00
-5	206-0430-00			1	COMP BOX:COVER,BOTTOM HALF	80009	206-0430-00

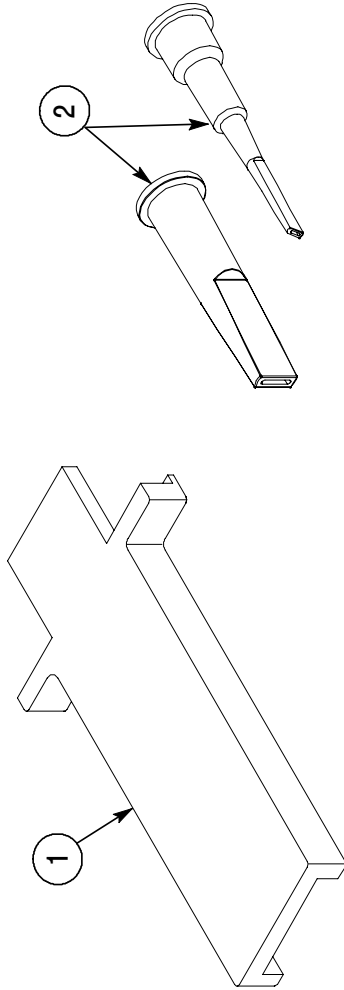


Figure 16: P5210 probe optional accessories

Optional accessories

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
16-1	003-1383-00			1	RLSE TOOL,COVER:COMP BOX,POLYCARBONATE	TK2565	003-1383-00
-2	013-0290-01			1	HOOKTIP,SET:BLACK,LARGE AND SMALL	TK2469	012-0290-01
	1103			1	TEKPROBE IF PS:W/OFFSET 2 CONN	80009	1103

Manufacturers cross index

Mfr. code	Manufacturer	Address	City, state, zip code
18359	PYLON CO. INC.	51 NEWCOMB ST	ATTLEBORO, MA 02703-1403
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON, OR 97077-0001
TK2469	UNITREK CORPORATION	3000 LEWIS & CLARK HWY SUITE 2	VANCOUVER, WA 98661
TK2548	XEROX CORPORATION	14181 SW MILLIKAN WAY	BEAVERTON, OR 97005
TK2565	VISION PLASTICS INC	26000 SW PARKWAY CENTER DRIVE	WILSONVILLE, OR 97070
TK6076	FOARM INC	501 E GUTIERREZ ST	SANTA BARBARA, CA 93103

