

P6139B & P5050B 500 MHz 10X Passive Probes

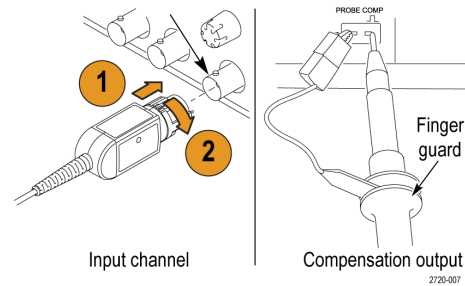
Instructions

500 MHz 10X Probes

The P6139B & P5050B probes are high impedance, passive probes that are designed for use with Tektronix ground-referenced oscilloscopes, including the DPO/MSO/TDS 3000/4000/5000/7000 series oscilloscopes. Both probes have a bandwidth of >500 MHz and 10X attenuation. The P6139B probe has a compensation range of 8 to 18 pF, while the P5050B probe has a compensation range of 15 to 22 pF.

Connecting the Probe to the Oscilloscope

Connect the probe to the oscilloscope as shown below.



Compensating the Probe

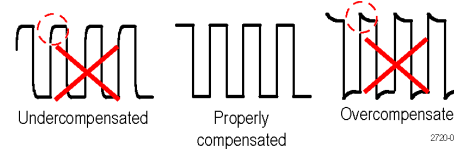
Due to variations in oscilloscope input characteristics, the low-frequency compensation of the probe may need adjustment after moving the probe from one oscilloscope channel to another. If a 1 kHz calibrated square wave displayed at 1 ms/division shows significant differences between the leading and trailing edges, perform the following steps to optimize low-frequency compensation:

1. Connect the probe to the oscilloscope channel that you plan to use for your measurements.
2. Connect the probe to the probe compensation output terminals on the oscilloscope front panel.

WARNING. To avoid electric shock, only connect to the Probe Comp signal on the oscilloscope when making this adjustment.

To avoid electric shock, only use the insulated adjustment tool when making compensation adjustments.

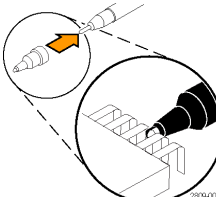
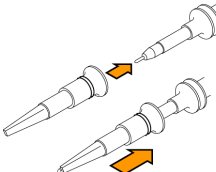
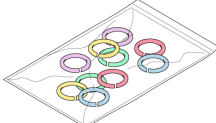
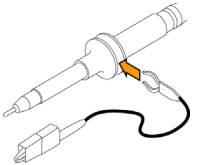
3. Push AUTOSET or otherwise adjust your oscilloscope to display a stable waveform.
4. Adjust the trimmer in the probe until you see a perfectly flat-top square wave on the display. (See illustration.)

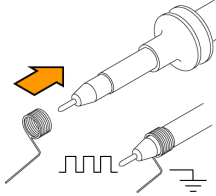



Standard Accessories

The accessories included with the probe are shown below.

WARNING. To avoid electric shock when using the probe or accessories, keep fingers behind the finger guard of probe body and accessories. To reduce risk of shock, verify that the ground lead and ground spring are fully mated before connecting the probe to the circuit under test.

Item	Description
	Universal IC Cap Use this cap to prevent shorting the probe tip between IC pins. Press the cap on the probe tip until it snaps on, and then spin the cap to expose the probe tip toward the IC lead. Reorder part number 013-0366-xx
	Hook tip Press the hook tip on the probe tip and then clamp the hook on the circuit. Rating: 300 V CAT II Reorder part number 013-0362-xx
	Color bands (5 pairs) Use these bands to identify the oscilloscope channel at the probe head. Reorder part number 016-0633-xx
	Ground lead, with alligator clip Attach the lead to the probe head ground and then to your circuit ground. Reorder part number 196-3521-xx

Item	Description
	Ground spring This spring minimizes aberrations on high frequency signals caused by ground path inductance, giving you measurements with good signal fidelity. Attach the spring to the ground band on the probe tip. Bend the spring in or out, up to ~0.75 in. Reorder part number 016-2028-xx
	Adjustment tool Use only this insulated tool for compensation adjustments. Reorder part number 003-1433-xx

Optional Accessories

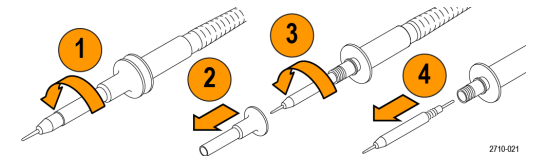
The accessories shown below are available for the probes and are rated ≤30 V unless indicated otherwise.

Accessory	Part number
MicroCKT Test Tip	206-0569-xx
Micro Hook Tip Rating: 300 V CAT II	013-0363-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
Ground Spring, Short	016-2034-xx

Replacing the Probe Tip

Order Tektronix part number 206-0635-xx (P6139B) or 206-0636-xx (P5050B). The insulator sleeve, part number 204-1226-xx, is reorderable and is common to both probes.

WARNING. Only qualified service personnel should replace the probe tip. Disconnect the probe before servicing. After replacing the tip, securely tighten the insulator sleeve before using the probe.



Specifications

Table 1: Electrical and mechanical specifications

Characteristic	Specification
Bandwidth	DC to 500 MHz (–3 dB)
System attenuation accuracy	10:1 ±0.5% @DC
Compensation range	P6139B: 8 pF–18 pF P5050B: 15 pF–22 pF
System input resistance	10 MΩ ±0.5% @DC
System input capacitance	P6139B: <8 pF P5050B: <11 pF
Propagation delay	~6 ns
Maximum tip input voltage	300 V _{RMS} CAT II and DC
Cable length	1.3 m

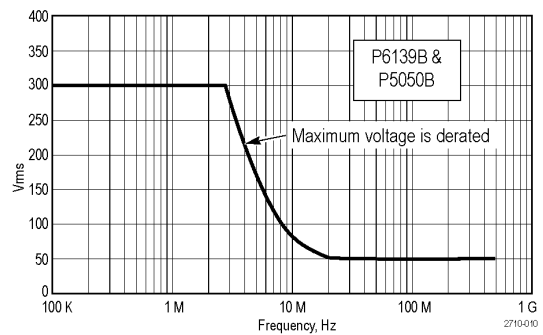
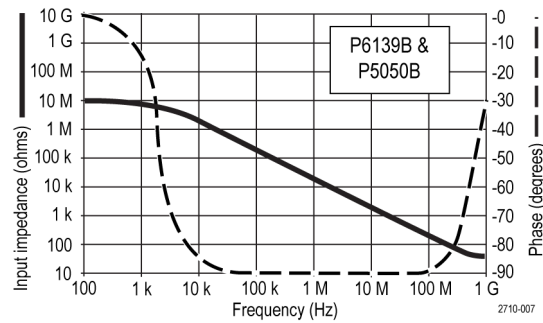


Table 2: Environmental specifications

Characteristic	Description
Temperature	
Operating	Comp box: –15 °C (+5 °F) to +50 °C (+122 °F) Probe body: –55 °C (–67 °F) to +65 °C (+149 °F)
Nonoperating	–62 °C to +85 °C (–80 °F to +185 °F)
Humidity	
Operating	Comp box: Up to 95% relative humidity (%RH) up to +30 °C, up to 75% RH and up to +50 °C. Noncondensing Probe body and cable: Up to 95% relative humidity (%RH) up to +30 °C, up to 85% RH and up to +65 °C. Noncondensing
Nonoperating	Up to 85% relative humidity and up to +85 °C. Noncondensing
Altitude	
Operating	3.0 km (10,000 ft) maximum
Nonoperating	15 km (50,000 ft) maximum

Table 3: Certifications and compliances

Characteristic	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 2014/35/EU: EN61010-031
Measurement Category	CAT III: Distribution-level mains, fixed installation
Product Examples	CAT II: Local-level mains, 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 CAN/CSA C22.2 No. 61010-031:07/A1 IEC61010-031; IEC 61010-031/A1



Equipment Recycling. This symbol indicates that this product complies with the applicable European Union requirements according to Directives 2012/19/EU and 2006/66/EC on waste electrical and electronic equipment (WEEE) and batteries. For information about recycling options, check the Tektronix Web site (www.tek.com/productrecycling).

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, DPO, MSO, and TDS 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:



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Warranty Information

For warranty information, go to www.tek.com/warranty-status-search