

P80318 Handheld Differential Impedance Probe Instructions

www.tektronix.com



Tektronix

Safety Summary

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

To avoid fire or personal injury

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.

Connect and disconnect properly. 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 host instrument documentation for further ratings information before making connections to the host instrument.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

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 symbols on the product



Product End-of-Life Handling. Observe the following guidelines when recycling an instrument or component:

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 information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

Restriction of Hazardous Substances. This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive. This product is known to contain lead and hexavalent chromium.

Warranty Information

For warranty information, go to www.tektronix.com, click Support, and then select Look Up Tektronix Warranty.

Probe tips and the ground wires are consumable items and are not covered by the warranty.

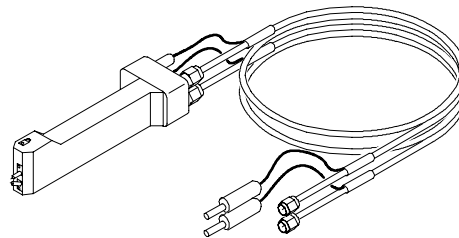
Standard Accessories

The P80318 probe includes the following items:

- 2 one-meter SMA cables, each with a parallel control line
- 3 ground wires (1 installed, 2 spares)
- Adjustment tool
- Vinyl probe tip protection cap
- 2 strap sets for fastening together the cables.

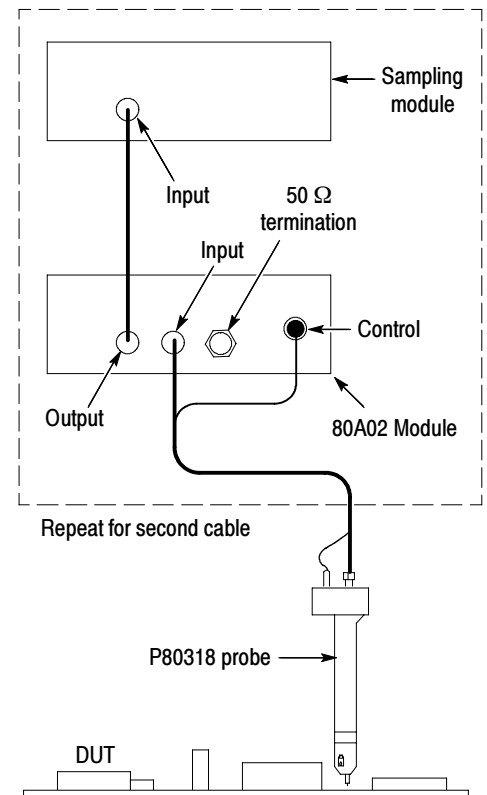
Product Description

The P80318 High Performance 100 Ohm Differential Impedance Hand Probe provides users a differential hand probe with adjustable spacing tips, EOS/ESD protection (with the Tektronix 80A02 EOS/ESD Protection Module), and a unique double spring mechanism that provides physical feedback to optimize probing contact pressure. The probe is suitable for probing differential runs on circuit boards, IC package pins, and other devices that have a 0.5 mm to 4 mm pitch.



The P80318 probe is designed to be used with the Tektronix 80A02 EOS/ESD Protection Module. Together, they protect sensitive instrument-input stages, such as the sampling bridge of Tektronix electrical sampling modules, from electro-overstress (EOS) and electrostatic discharge (ESD) damage due to static charges stored in the device under test (DUT).

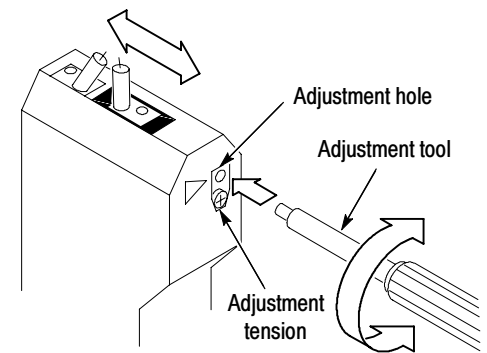
Connecting the Probe



Connector Care

Use extra care when attaching or removing the cable SMA connectors from the probe. Turn only the nut, not the cable. When attaching the cable, align the connectors carefully before turning the nut. Use light finger pressure to make this initial connection. Then tighten the nut lightly with a wrench. Ideally, tighten the SMA connectors to 56 N-cm (5 in-lb) with a torque wrench.

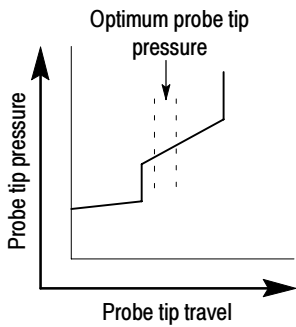
Adjusting Probe Tip Gap



Probing Guidelines

- The P80318 uses a unique double spring mechanism that provides physical feedback to optimize probing contact pressure. When applying pressure after the initial contact to the DUT, the first spring engages and the probe tips retract with the first spring pressure. As you apply more pressure, the second spring engages, increasing the probe compression resistance. This sudden increase in stiffness is the correct operation zone. In-

creasing pressure beyond this point accelerates probe tip wear and is not recommended.

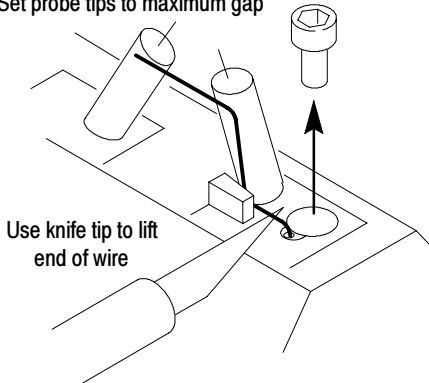


- When the probe engages the second spring, the probe sends a control signal to the 80A02 EOS/ESD protection module to enable the signal path.
- Do not scrape or otherwise drag the probe tips on the board traces or DUT leads in an attempt to improve signal contact. Make sure that the contact area is clean before using the probe.
- Do not bend or shape the ground wire. Improper bending of the wire can reduce signal acquisition bandwidth or accuracy.
- Cover the probe tip when not in use with the vinyl probe cover.
- When using the P80318 probe with automated probing stations, do not exceed 0.040 inches travel from initial DUT contact.

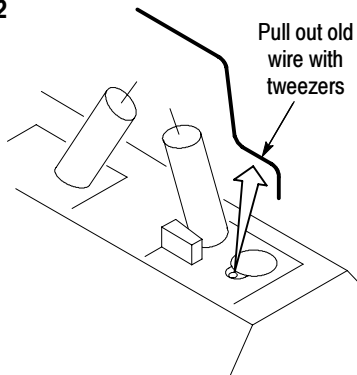
Removing/Installing the Ground Wire

Step 1

Set probe tips to maximum gap

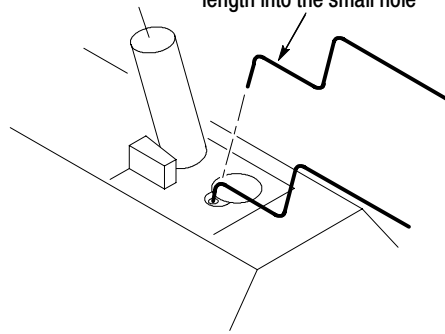


Step 2



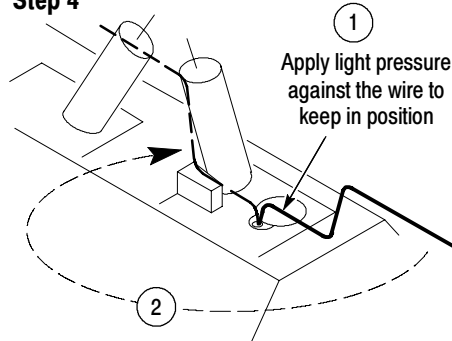
Step 3

Use tweezers to hold the new wire. Insert the wire end ~1/3 length into the small hole



Step 4

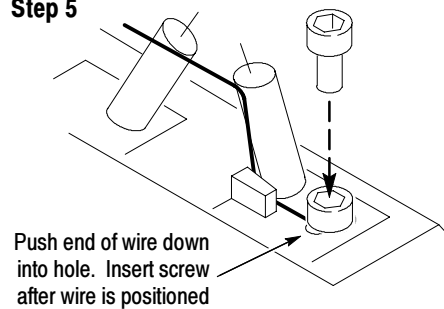
1 Apply light pressure against the wire to keep in position



Pivot wire to position it on top of the support block. Then use flat blade end of adjustment tool to push wire down between block and probe tip.

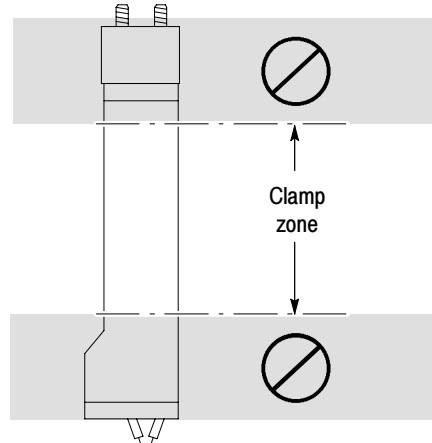
Step 5

Push end of wire down into hole. Insert screw after wire is positioned



Ground wire is under tension during installation and can easily spring away

Clamping the Probe for Fixtured Probing



Specifications

Table 1: Electrical

Characteristic	Specification
Probe impedance	50 Ω ± 1.5 Ω, single ended, each polarity.
Probe delay	1 ns typical from the female SMA connector end to the probe tip.
Attenuation	1X
Risetime, probe head and cable	19.4 ps or better, one-way transit, differential drive, with minimum probe tip spacing (for a 100 ps window with 50% threshold crossing at center of screen).
Bandwidth, probe head and cable, calculated	18 GHz or better, using above risetime calculation and assuming 0.35 product of risetime and bandwidth.
Maximum voltage input	± 5.0 V (DC + AC _{p-p})
RF input connector	Precision 26 GHz SMA female connector
Control signal connector type	Audio mono phone mini-jack type

Table 2: Environmental mechanics

Characteristic	Specification
Probe dimensions	
Length	127.0 mm (5.0 in)
Height	33.0 mm (1.30 in)
Width	28.0 mm (1.10 in)
Weight (probe only)	0.075 kg (0.165 lbs)
Altitude	
Operating	3,000 m (9,843 ft)
Non-operating	12,190 m (40,000 ft)
Ambient temperature	
Operating	-15 °C to +55 °C (+5 °F to +131 °F)
Non-operating	-62 °C to +85 °C (-80 °F to +185 °F)
Humidity	
Operating	20% to 80% relative humidity with a maximum wet bulb temperature of +29 °C at or below +40 °C, non-condensing. (Upper limit derates to 45% relative humidity at +40 °C.)