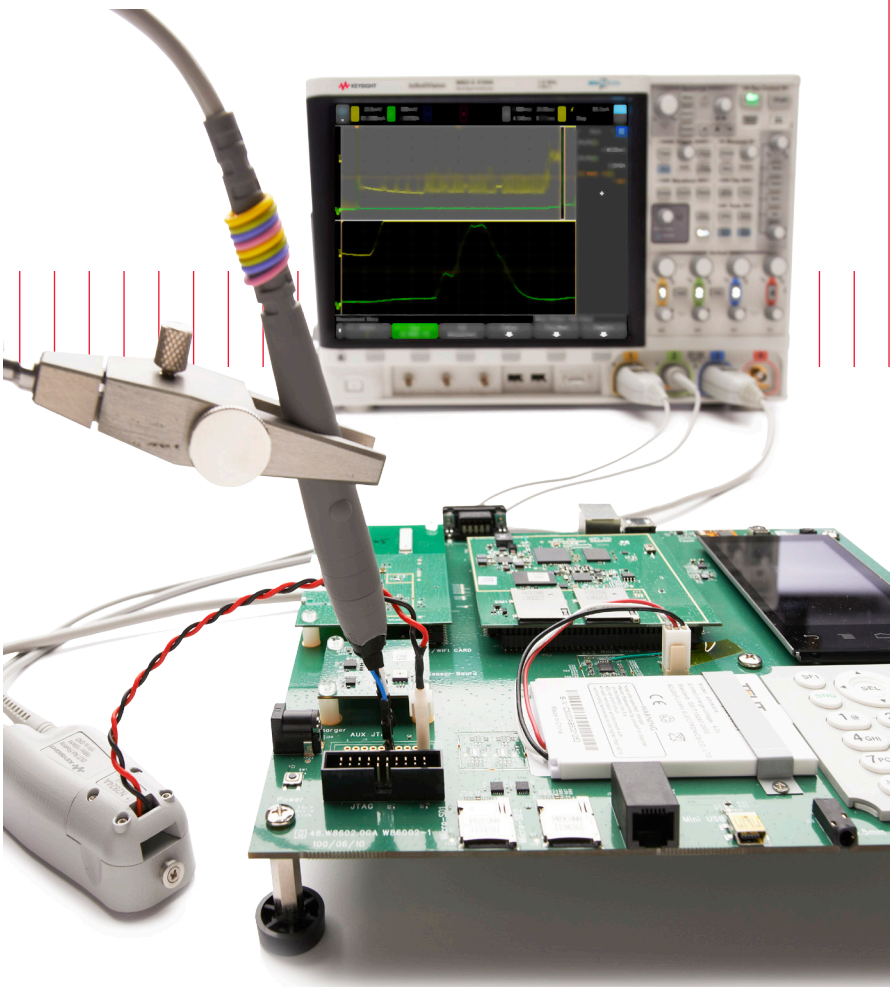
Keysight Technologies
InfiniiVision Oscilloscope Probes and Accessories

For 2000 X-, 3000 X-, 4000 X-, 6000 X-, 5000, 6000, and 7000 Series

Selection Guide
Data Sheet



KEYSIGHT TECHNOLOGIES

To achieve the best results from your scope, you need the right probes and accessories for your particular application. That's why Keysight Technologies, Inc. offers a complete family of innovative probes and accessories for InfiniiVision oscilloscopes. For the most up-to-date and complete information about Keysight's accessories, please visit our Web site at: www.keysight.com/find/probes

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Probe Compatibility Table

For ordering information when replacing your probe or probe accessory: Refer directly to the page number listed in the table of contents for your probe model.

To assist you in selecting the proper probe for your application: Use our probe compatibility table below to find the probes that are recommended for use with your 2000 X-, 3000 X-, 4000 X-, 6000 X-, 5000, 6000, and 7000 Series InfiniiVision oscilloscope.

Probe type	Probe model	MSO/DSO 2000 X[1]	MSO/DSO 3000 X	MSO/DSO 4000 X/6000 X[2]
Passive probes, page 4	N2862B 10:1 150 MHz (included in 70/100 MHz models) N2863B 10:1 300 MHz (included in 200 MHz models) N2890A 10:1 500 MHz (included in 350/500 MHz/1 GHz models)	Recommended	Recommended	Recommended
	N2894A 10:1 700 MHz (included in 4000 X models)	Compatible	Compatible	Compatible
	N2889A 1:1/10:1 350 MHz	Recommended	Recommended	Recommended
High-voltage passive probes, page 7	10076C 4 kV	Recommended	Recommended	Recommended
	N2771B 30 kV	Recommended	Recommended	Recommended
	1130A - 1134A 1.5 GHz - 7 GHz	Incompatible	Recommended	Recommended
Differential active probes, page 8	N2750A - N2752A 1.5 GHz - 6 GHz	Incompatible	Recommended	Recommended
	1141A 200 MHz (use with 1142A)	Incompatible	Recommended	Recommended
	N2791A 25 MHz	Recommended	Recommended	Recommended
	N2891A 70 MHz	Recommended	Recommended	Recommended
	N2790A 100 MHz (with AutoProbe)	Incompatible	Recommended	Recommended
	N2792A 200 MHz	Incompatible	Recommended	Recommended
	N2818A 200 MHz (with AutoProbe)	Incompatible	Recommended	Recommended
	N2793A 800 MHz	Incompatible	Recommended	Recommended
	N2819A 800 MHz (with AutoProbe)	Incompatible	Recommended	Recommended
	N2804A 300 MHz	Incompatible	Recommended	Recommended[3]
	N2805A 200 MHz	Incompatible	Recommended	Recommended[3]
Single-ended active probes, page 15	N2795A 1 GHz (with AutoProbe)	Incompatible	Recommended	Recommended
	N2796A 2 GHz (with AutoProbe)	Incompatible	Recommended	Recommended
	N2797A 1.5 GHz (with AutoProbe)	Incompatible	Recommended	Recommended
	N7020A 2 GHz	Incompatible	Incompatible	Recommended[3]
MSO logic probes, page 17	01650-61607 16-channel	Incompatible	Recommended	Recommended
	N6459-60001 8-channel MSO cable (included in 2000 X-Series MSOs)	Recommended	Incompatible	Incompatible
	N6450-60001 16-channel MSO cable (included in 3000 and 4000 X-Series MSOs)	Incompatible	Recommended	Recommended
	N2756A 16-Channel MSO cable (included in 6000 X-Series MSOs)	Incompatible	Recommended	Recommended
Current probes, page 19	1146B 100 kHz	Recommended	Recommended	Recommended
	N2780B 2 MHz (use with N2779A)	Recommended	Recommended	Recommended
	N2781B 10 MHz (use with N2779A)	Recommended	Recommended	Recommended
	N2782B 50 MHz (use with N2779A)	Recommended	Recommended	Recommended
	N2783B 100 MHz (use with N2779A)	Recommended	Recommended	Recommended
	1147B 50 MHz (with AutoProbe)	Incompatible	Recommended	Recommended
	N2893A 100 MHz (with AutoProbe)	Incompatible	Recommended	Recommended
	N2820A 3 MHz/50 uA High Sensitivity, 2 channel (with AutoProbe)	Incompatible	Recommended	Recommended
	N2821A 3 MHz/50 uA High Sensitivity, 1 channel (with AutoProbe)	Incompatible	Recommended	Recommended

1. The 2000 X-Series does not support AutoProbe interface active probes.
2. The 4000 X- and 6000 X-Series comes with the Infiniium AutoProbe interface for higher probe power support.
3. Recommended with 4000 X-Series only.

Probe Compatibility Table (continued)

Probe type	Probe model	DSO5000A 100 MHz	DSO5000A 300 - 500 MHz	MSO/DSO6000A[4] 100 MHz	MSO/DSO6000A[4] 300 MHz - 1 GHz MSO/DSO7000A/B 100 MHz - 1 GHz
Passive probes, page 5	N2863B 10:1 300 MHz (included in 5000 Series 100/300 MHz)	Recommended	Recommended	Recommended	Compatible
	10070D 1:1 20 MHz	Recommended	Recommended	Recommended	Recommended
	10073D 10:1 500 MHz (included in 6000/7000 Series 300 MHz to 1 GHz and 5000 Series 500 MHz)	Compatible	Recommended	Compatible	Recommended
	10074D 10:1 150 MHz (included in 6000 Series 100 MHz)	Recommended	Compatible	Recommended	Compatible
	N2873A 10: 1 500 MHz (optional to 7000B)	Recommended	Recommended	Compatible	Recommended
High-voltage passive probes page 7	10076C 4 kV	Recommended	Recommended	Recommended	Recommended
	N2771B 30 kV	Recommended	Recommended	Recommended	Recommended
Differential active probes page 8	1130A 1.5 GHz[1]	Compatible	Recommended	Incompatible	Recommended
	N2750A 1.5 GHz	Incompatible	Incompatible	Incompatible	Incompatible
	1141A 200 MHz (use with 1142A)	Compatible	Recommended	Compatible	Recommended
	N2791A 25 MHz	Recommended	Recommended	Recommended	Recommended
	N2891A 70 MHz	Recommended	Recommended	Recommended	Recommended
	N2790A 100 MHz (with AutoProbe)	Recommended	Recommended	Incompatible	Recommended
	N2792A 200 MHz	Recommended	Recommended	Incompatible	Recommended
	N2818A 200 MHz (with AutoProbe)	Incompatible	Incompatible	Incompatible	Incompatible
	N2793A 800 MHz	Recommended	Recommended	Incompatible	Recommended
	N2819A 800 MHz (with AutoProbe)	Incompatible	Incompatible	Incompatible	Incompatible
	N2804A 300 MHz	Incompatible	Incompatible	Incompatible	Incompatible
	N2805A 200 MHz	Incompatible	Incompatible	Incompatible	Incompatible
Single-ended active probes page 15	N2795A 1 GHz (with AutoProbe)	Recommended	Recommended	Incompatible	Recommended
	N2796A 2 GHz (with AutoProbe)	Recommended	Recommended	Incompatible	Recommended
	N2797A 1.5 GHz (with AutoProbe)	Incompatible	Incompatible	Incompatible	Incompatible
	N7020A 2 GHz	Incompatible	Incompatible	Incompatible	Incompatible
Mixed signal oscilloscope logic probes[2] page 17	01650-61607 16-channel N6450-60001 2x8-channel (included in MSO6000A, MSO7000A/B)	Incompatible	Incompatible	Recommended	Recommended
Current probes page 19	1146B 100 kHz	Recommended	Recommended	Recommended	Recommended
	N2780B 2 MHz (use with N2779A)	Recommended	Recommended	Recommended	Recommended
	N2781B 10 MHz (use with N2779A)	Recommended	Recommended	Recommended	Recommended
	N2782B 50 MHz (use with N2779A)	Recommended	Recommended	Recommended	Recommended
	N2783B 100 MHz (use with N2779A)	Recommended	Recommended	Recommended	Recommended
	1147B 50 MHz (with AutoProbe)	Recommended	Recommended	Incompatible	Recommended
	N2893A 100 MHz (with AutoProbe)	Recommended	Recommended	Incompatible	Recommended
	N2820A 3 MHz/50 uA High Sensitivity, 2 channel (with AutoProbe)	Incompatible	Incompatible	Incompatible	Incompatible
	N2821A 3 MHz/50 uA High Sensitivity, 1 channel (with AutoProbe)	Incompatible	Incompatible	Incompatible	Incompatible

1. The 1130A probe amplifier supports both single- and differential-ended measurements. Higher bandwidth InfiniiMax probe model 1131A, 1132A, and 1134A are also supported by 3000 X-, 4000 X-, 6000 X-, 5000, 6000 300 MHz - 1 GHz models and, 7000 Series.
2. Recommended for InfiniiVision MSOs only.
3. These Infiniium active probes are not supported by InfiniiVision Series scopes – 1152A, 1153A, 1154A, 1155A, 1159A, 1168A, 1169A, N2800A, N2801A, N2802A, N2803A, N2830A, N2831A and N2832A..
4. MSO/DSO6000A 100-MHz models do not support any Keysight active probes with AutoProbe interface.

Passive Probes

- Designed for optimal performance with your Keysight InfiniiVision Series oscilloscopes
- 1:1 and 10:1 attenuation
- 20 to 500 MHz

Rugged, high-quality probes at a reasonable price

Keysight 10070-family passive probes are a great choice if you're looking for high quality at a very reasonable price. These general-purpose probes are designed specifically to give you optimal performance with your InfiniiVision Series oscilloscopes. Ruggedized for general-purpose measurements, they feature adurable cable and a solid stainless steel probe body encased with a hard, fracture-resistant plastic. They're designed and tested to ensure the probes operate in the toughest of conditions

The N2862B, N2863B, N2889A, and N2890A low-cost, general-purpose passive probes provide up to 500 MHz bandwidth and feature a high input resistance of 10 MΩ for low probe loading. These probes provide a 10:1 attenuation ratio except for the N2889A which provides a switch in the probe handle for switching the attenuation ratio between 1:1 and 10:1.

The N2873A/N2894A are 500-MHz/700 MHz 10:1 miniature passive probes that can be used with all InfiniiVision Series. Compact 2.5-mm probe head diameter, low input capacitance, and various fine-pitch probe tip accessories make the N2873A/N2894A passive probes ideal for probing densely populated IC components or surface-mount devices used in today's high-speed digital applications. The N2894A provides 700 MHz system bandwidth when used in conjunction with the 4000 X- and 6000 X-Series ≥ 1 GHz models. For more information about N2870A Series passive probes and accessories, check out Keysight's literature number, 5990-3930EN.

Accessories available for 10070D/73D/74D passive probes

N4848A	Probe-tip-to-BNC (m) adapter, qty 2
5081-7696	Ground lead with alligator clip for 1007x and N2862B/63B/89A/90A
N4847A	Retractable hook tip for 1007xC/D (not compatible with 10076A/B), qty 2
N4849A	Dual-test lead adapter (for 10070/3/4x), qty 2
5081-7690	Replacement parts accessory kit
10072A	Fine-pitch probing kit includes 10 SMT clips and 2 dual-lead adapters
10075A	0.5 mm IC probing kit. Contains four 0.5 mm IC clips and 2 dual-lead adapters

Accessories available for N2862B, N2863B, N2889A, and N2890A passive probe

0960-2900	Retractable hook tip for N2862B/63B/89A/90A
N4827A	PCB socket adapter for N2862B/63B/89A/90A, qty 2
N4826A	Dual-lead adapter for N2862B/63B/89A/90A, qty 2
N4828A	5 mm ground spring for N2862B/63B/89A/90A, qty 2
1250-3978	BNC adapter

Accessories available for N2873A/N2894A (and other N287xA Series passive probes)

N4829A	Probe tip kit (rigid and spring loaded), 10 each
N4831A	Sprung hook adapter 2.5 mm for N2870A/71A/72A/73A/75A, N2894A, qty 2
N4837A	Ground lead 15 cm, qty 2
0960-2908	10 self-adhesive copper pads 2x2
N4836A	Dual lead-adapter, 2.5 mm, 10 cm, qty 2
0960-2977	Ground lead 11 cm to Miniclip
0960-2978	Ground lead 11 cm to 0.8mm socket
0960-2979	Rigid probe tips, qty 5
N4838A	Ground spring 2.5 mm, qty 2
0960-2981	Spring-loaded probe tip, qty 5
0960-2982	Ground blade 2.5mm
0960-2983	IC cap 2.5 - 0.5mm Green
0960-2984	IC cap 2.5 - 0.65mm Blue
0960-2985	Insulating cap 2.5mm
0960-2986	IC cap 2.5 - 1.27mm Black
0960-2987	IC cap 2.5 - 1.27mm Black
0960-2988	IC cap 2.5 - 0.8mm Gray
0960-2989	IC cap 2.5 - 1.0mm Brown
0960-2990	Adapter 2.5 to 0.8mm socket
N4863A	2.5mm probe tip-to-PCB adapter, horizontal
N4864A	2.5mm probe tip-to-PCB adapter, vertical

Standard accessories that come with each probe

10070D/10073C/10074C	N2862B/N2863B/N2880A/N2890A	N2873A /N2894A
Retractable hook tip, Qty 1 Colored identification tag, 2 each of 4 colors Ground bayonet, Qty 1 IC insulation cap, Qty 1 Adjustment tool, Qty 1 Ground lead, Qty 1 BNC adapter, Qty 1	Retractable hook tip, qty Colored identification tag, 2 each of 4 colors Spring ground, qty 1 IC insulation cap, qty 1 Insulation cap, qty 1 Adjustment tool, qty 1 (with N2862B/63B), qty 2 (with N2889A/90A) Ground lead, qty 1 BNC adapter, qty 1 Probe tip, qty 1	Spring loaded probe tips, qty 2 Rigid probe tips, qty 2 Ground blade, qty 1 Ground spring, qty 1 Sprung hook, qty 1 Ground lead, qty 1 Copper pads, qty 2 IC cap – 0.5 mm, 0.65 mm, 0.8 mm, 1 mm, 1.27 mm, qty 1 each BNC adapter, qty 1 Insulating cap, qty 1 Protection cap, qty 1 Trimmer tool, qty 1 Color coded rings, 3x4 colors

Passive Probes (continued)

Ordering information for Keysight passive probes

10070D	1:1 20 MHz passive probe
N2862B	10:1 150 MHz passive probe
10074D	10:1 150 MHz passive probe
N2863B	10:1 300 MHz passive probe
N2889A	10:1/1:1 350 MHz passive probe
10073D	10:1 500 MHz passive probe
N2890A	10:1 500 MHz passive probe
N2873A	10:1 500 MHz miniature passive probe
N2894A	10:1 700 MHz miniature passive probe



10073D/74D passive probe



N2873A/N2894A passive probe with standard accessories



N2862B/63B passive probe



N2889A 10:1/1:1 passive probe



N2890A passive probe

Characteristics for Keysight passive probes

	10070D	10073D	10074D	N2862B/63B	N2889A	N2890A	N2873A/ N2894A
Bandwidth	20 MHz	500 MHz	150 MHz	150 MHz/ 300 MHz	350 MHz (at 10:1), 10 MHz (at 1:1)	500 MHz	500 /700 MHz
Risetime (calculated)	< 17.5 ns	< 700 ps	< 2.33 ns	< 2.33 ns/ < 1.16 ns	<1 ns (at 10:1), < 35 ns (at 1:1)	< 700 ps	< 700 ps/ < 500 ps
Attenuation ratio	1:1	10:1	10:1	10:1	1:1/10:1 switchable	10:1	10:1
Input resistance	1 MΩ	2.2 MΩ	10 MΩ	10 MΩ	10 MΩ (at 10:1) 1 MΩ (at 1:1)	10 MΩ	10 MΩ
Input capacitance	Approx 70 pF	Approx 12 pF	Approx 15 pF	Approx 15 pF	Approx 11 pF (at 10:1), 60 pF (at 1:1)	Approx 11 pF	Approx 9.5 pF
Maximum input (dc + peak ac)	300 Vpk CAT I 150 Vpk CAT II	500 Vpk CAT I 400 Vpk CAT II	500 Vpk CAT I 400 Vpk CAT II	300 V CAT I/II	300 V CAT I/II (at 10:1), 150 V CAT I/II (at 1:1)	300 V CAT I/II	400 V CAT I, 300 V CAT II
Compensation range	None	6 to 15 pF	9 to 17 pF	5 to 30 pF	5 to 30 pF (at 10:1)	5 to 30 pF	10 to 25 pF
Probe readout	Yes	Yes	Yes	Yes	No	YES	Yes
Cable length	1.5 m	1.5 m	1.5 m	1.2 m	1.3 m	1.3 m	1.2 m

Note 1: 700 MHz BW only available on DSOX/MSOX 4000 X-Series oscilloscopes with 1 GHz or 1.5 GHz bandwidth models

High-voltage Passive Probes

- Ideal for measuring up to 30 kV
- Up to 500 MHz bandwidth
- 100:1 or 1000:1 attenuation

10076C high-voltage probe

The Keysight 10076C 4 kV 100:1 passive probe gives you the voltage and bandwidth you need for making high-voltage measurements. Its compact design makes it easier to probe today's small power electronics components and its rugged construction means it can withstand rough handling without breaking.

Characteristics 10076C

Bandwidth	500 MHz (–3 dB)
Risetime (calculated)	< 0.7 ns
Attenuation ratio	100:1
Input resistance	66.7 MΩ (when terminated into 1 MΩ)
Input capacitance	Approx 3 pF
Maximum input	4000 Vpk
Compensation	6 to 20 pF range
Probe readout	Yes
Cable length	1.8 m



10076C passive probe

N2771B high-voltage probe

The N2771B is a 1000:1 divider probe for the measurement of fast high voltage signals up to 30 kV dc + peak ac, 10 kV rms.

The probe's large size and rugged construction provide superior protection. The ground lead is fed through the body of the probe and protrudes behind the safety barrier, keeping the ground connection away from the high voltage. Typical applications include PMTs, motor drives, high voltage switches, magnatrons, and modern projection systems.

Characteristics for N2771B

Bandwidth	50 MHz (–3 dB)
Risetime	< 7 ns
Attenuation ratio	1000:1
Input resistance	100 MΩ (when terminated into 1 MΩ)
Input capacitance	1 pF
Compensation range	6 to 20 pF
Max. voltage	15 kV dc, 10 kV rms, 30 kV dc + peak ac
Operating temperature	0 to +50 °C, 80% RH
Storage temperature	–20 to +70
Dimensions	2 cm (max width of probe stem after handle) x 33 cm 7.5 cm (max probe width at probe handle) x 33 cm



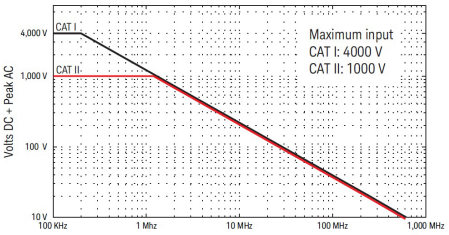
N2771B high-voltage probe

Ordering information for Keysight high-voltage probe

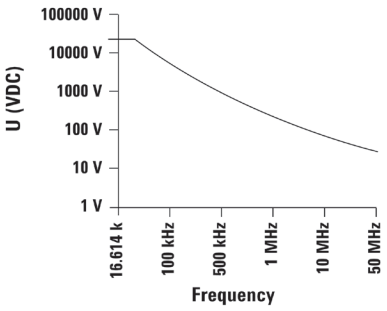
10076C	High-voltage probe: includes one retractable hook tip, one-ground-bayonet, one IC probing tip, one-alligator ground lead, one-spring ground tip and a compensation screwdriver
N2771B	High-voltage probe: includes alligator ground lead, 1-sharp-probe tip
10077A	Accessory kit for 10076A/C: includes one retractable pincher tip, one ground lead, one insulation cap, two measuring pins and two colored tags
N2789A	Spring ground tip for 10076B/C



10077A accessory kit for 10076A/B



10076C derating curve



N2771B derating curve

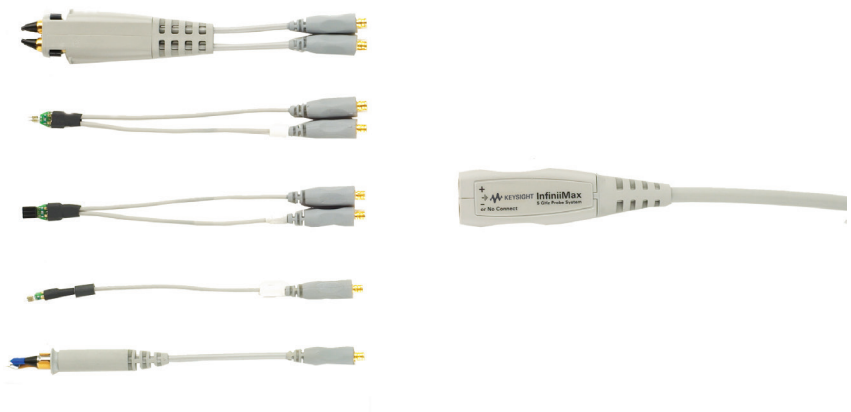
InfiniiMax Active Probes and Accessories

1130A-34A InfiniiMax high-performance active probe system

- 1.5 - 7 GHz InfiniiMax probe system
- InfiniiMax probe amplifier supports both differential- and single-ended measurements for a more cost-effective solution
- Unrivaled InfiniiMax probing accessories support browsing, solder-in, and socketed use models at the maximum performance available
- Compatible with 3000 X-, 4000 X-, 6000 X-, 5000, 6000, and 7000 Series oscilloscopes (except for 6000 Series 100-MHz models)

The InfiniiMax 1130A Series probe amplifier is a perfect complement to the InfiniiVision 1 GHz or higher bandwidth models. Its bandwidth, extremely low input capacitance (0.32 pF), high common mode rejection, and patented resistor probe tip technology provide ultra low loading of the DUT and superior signal fidelity. Keysight's innovative InfiniiMax 1130A Series differential probe is the easiest-to-use, and highest performance probing system available for high-speed digital design, and represents a new industry standard for accuracy, flexibility, and reliability. Designers can achieve full system bandwidth in conjunction with InfiniiVision Series oscilloscopes even when manually browsing with the probe or making hands-off measurements. Optional solder-in probe heads and solder-in sockets, as well as browser configuration provide full bandwidth at the probe tip.

Operating characteristics	
Probe bandwidth (–3 dB)	1134A: > 7 GHz 1132A: > 5 GHz 1131A: > 3.5 GHz 1130A: > 1.5 GHz
Rise and fall time (10 to 90%)	1134A: 60 psec 1132A: 86 psec 1131A: 100 psec 1130A: 233 psec
Input capacitance	Cm = 0.1 pF Cm is between tips Cg = 0.34 pF Cg is ground for each tip Cdiff = 0.27 pF Differential mode capacitance = Cm + Cg/2 Cse = 0.44 pF Single-ended mode capacitance = Cm + Cg
Input resistance	Differential mode resistance = 50 kΩ ± 2% Single-ended mode resistance = 25 kΩ ± 2%
Input dynamic range	±2.5 V
Input common mode range	±6.75 Vdc to 100 Hz; ±1.25 V > 100 Hz
Maximum signal slew rate	18 V/ns when probing a single-ended signal 30 V/ns when probing a differential signal
DC attenuation	10:1 ± 3% before calibration on oscilloscope 10:1 ± 1% after calibration on oscilloscope
Offset range	±12.0 V when probing single-ended signal
Maximum input voltage	30 Vpeak, CAT I
ESD tolerance	> 8 kV from 100 pF, 300 Ω HBM
Maximum number of probes supported by 3000 X-/5000/6000/7000 Series	2
Maximum number of probes supported by 4000 X- and 6000 X-Series	4



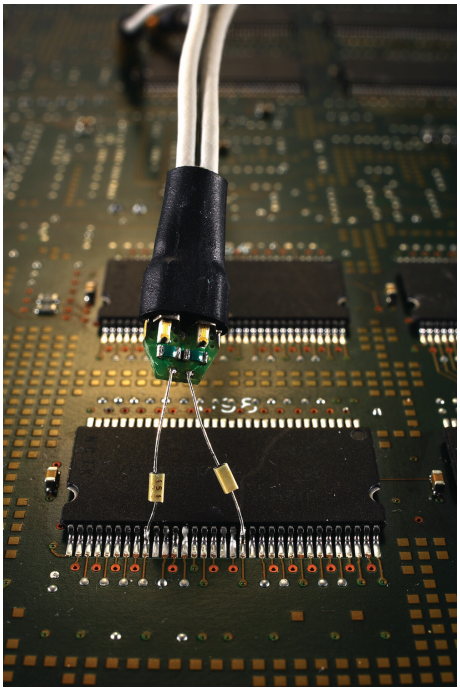
Keysight 1130A InfiniiMax probe offers you the highest performance available for measuring differential and single-ended signals

InfiniiMax Active Probes and Accessories (continued)

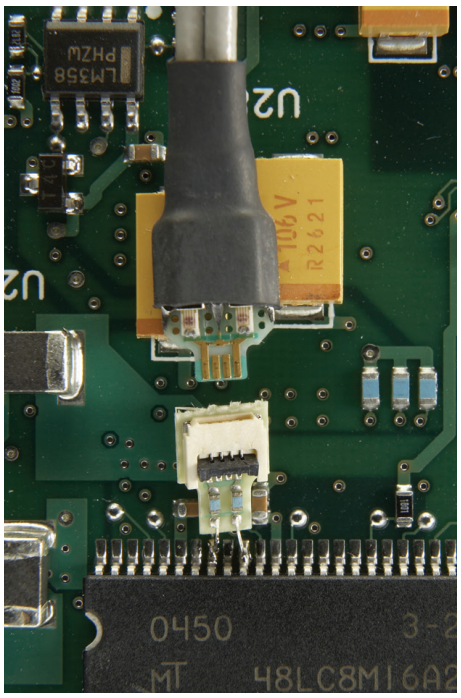
1130A-34A InfiniiMax high-performance active probe system

Ordering information for Keysight InfiniiMax 1130A probe and accessories

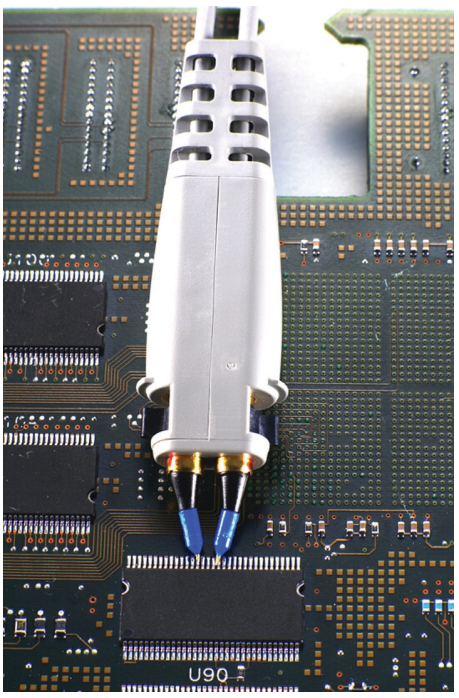
Probe amplifier	
1130A	1.5 GHz InfiniiMax probe amplifier (order one or more probe heads or connectivity kits per amplifier)
Connectivity kits	
E2669A	InfiniiMax connectivity kit for differential/single-ended measurements
E2668A	InfiniiMax connectivity kit for single-ended measurements
Individual probe heads	
E2675A	InfiniiMax differential browser probe head and accessories
E2676A	InfiniiMax single-ended browser probe head and accessories
E2677A	InfiniiMax differential solder-in probe head and accessories
E2678A	InfiniiMax single-ended/differential socketed probe head and accessories
E2679A	InfiniiMax single-ended socketed probe head and accessories
E2695A	Differential SMA probe head
N5425A/N5426A	12-GHz differential ZIF solder-in probe head and ZIF probe tips
N5451A	InfiniiMax long-wire ZIF probe tips (for use with N5425A ZIF probe head)
N5450B	InfiniiMax extreme temperature extension cable (that allows for probing in environments from –55 to +150 °C)
N2880A	InfiniiMax in-line attenuator kit (pairs of 6 dB, 12 dB and 20 dB attenuator in a kit)
N2881A	InfiniiMax DC blocking caps (a pair of 30 Vdc blocking cap)



InfiniiMax browser head on board



InfiniiMax ZIF tip soldered on board



InfiniiMax solder-in probe head with long wires

For more comprehensive information about the 1130A InfiniiMax probe amplifier and its accessories, refer to the Keysight Infiniium Oscilloscope Probes, Accessories, and Options data sheet with Keysight literature number 5968-7141EN.

InfiniiMode Active Probes and Accessories

N2750A-52A InfiniiMode probe

- 1.5 - 6 GHz bandwidth
- Dual attenuation ratio (2:1/10:1)
- InfiniiMode probing for making differential, single-ended and common mode measurements with a single probe
- Built-in quick action scope control for quick access to a variety of scope functions
- Built-in headlight
- Includes solder-in, browser, and socketed tips standard
- AutoProbe interface for auto configuration and probe power



The N2750A Series InfiniiMode differential probe is a new generation of low-cost, differential active probe compatible with InfiniiVision 3000 X-, 4000 X-, 6000 X-Series and Infiniium oscilloscope's AutoProbe interface.

Measurement versatility

The N2750A Series InfiniiMode probe offer 2:1 and 10:1 dual attenuation settings, allowing them to be used for a broad range of applications. Dual attenuation range is automatically configured depending on the size of the input signal. The new differential probe has an input resistance of 200 kΩ (differential) or 100 kΩ (each input to ground) and an extremely low input capacitance of 700 fF to minimize circuit loading.

This, accompanied with superior signal fidelity, makes these probes useful for most digital design and debug applications. And with their wide dynamic range (10 Vpp) and offset range (±15 V), these probes can be used in a wide variety of analog signal measurements as well.

InfiniiMode usability

The N2750A comes with new InfiniiMode operation modes. The InfiniiMode allows convenient measurements of differential, single-ended, and common mode signals with a single probe tip without reconnecting the probe to change the connection. The N2750A probe's InfiniiMode provides the following modes of operation.

- A – B (differential),
- A – ground (single-ended A)
- B – ground (single-ended B)
- (A+B)/2 – ground (common mode)

Quick action scope control

The N2750A Series InfiniiMode probe provides convenient and quick access to various functions on the scope. You often have a need to control the scope while you hold a probe in your hand. With the quick action scope control feature built into the probe, you can turn the built-in headlight of the probe on and off, or control some frequently used scope functions such as RUN/STOP, auto scale, quick print, quick save, etc. with only a button press on the probe. Get control of your most needed function with a push of the quick action control button on the probe.

Flexibility in probe use models is also a vital necessity. The probes come standard with three different types of exchangeable probe tips that allow for easy connections to the circuit under test. These probe tips enable you to access multiple signals on anything from header connectors to hard-to-reach, high-density circuitry. The probes are equipped with a white LED headlight to illuminate the circuit under test which will help you see where you are probing.

This probe is compatible with InfiniiVision 3000 X-Series with software ver 2.2 or above, 4000 X-Series with software ver 3.01 or above, and 6000 X-Series with software ver. 6.00.

Ordering information for InfiniiMode probes and accessories

N2750A	1.5 GHz InfiniiMode differential probe
N2751A	3.5 GHz InfiniiMode differential probe
N2752A	6 GHz InfiniiMode differential probe
N2776A	Differential browser tips (qty 3)
N2777A	InfiniiMode solder-in tips (qty 3)
N2778A	InfiniiMode socketed tips (qty 3)
N4822A	Socketed tip for USB/ Ethernet application fixtures (qty 1)

Each probe includes two solder-in tips, one socketed tip and one browser tip.

InfiniiMode Active Probes and Accessories (continued)

Characteristics and specifications for N2750A Series InfiniiMode probes

Model number	N2750A	N2751A	N2752A
Probe bandwidth* (–3 dB)	1.5 GHz	3.5 GHz	6 GHz
Rise time, probe only (10-90%)	233 psec	100 psec	58.3 psec
Input resistance (@DC)*	200kΩ ± 2% (differential mode) 100kΩ ± 2% (single-ended mode) 50kΩ ± 2% (common mode)		
Input capacitance	700 fF (with browser)		
Attenuation ratio (@DC)	2:1 / 10:1		
Input dynamic range	±1 V, 2 Vpp (@2:1) / ±5 V, 10 Vpp (@10:1)		
Input common mode range	±15 V (from DC to 100 Hz), ±2.5 V (for >100 Hz) ***		
Offset range	±15 V		
Offset accuracy**	< 3%		
Maximum non-destructive Input Voltage	±30 V (DC + peak AC)		
Maximum number of probes supported by 3000 X-Series	1		
Maximum number of probes supported by 4000 X-Series	4		

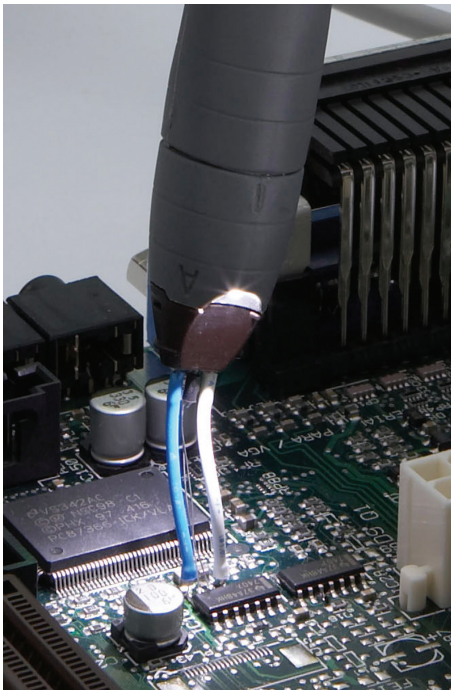
* Denotes warranted electrical specifications at 2:1 attenuation mode after 20 minute warm-up, All others are typical.
** When calibrated on the oscilloscope, these characteristics are determined by the oscilloscope characteristics.
*** Assumes symmetric differential signals.



N2750A with browser tip



N2750A with socketed tip



N2750A with solder-in tip

For more information about the N2750A Series InfiniiMode probes, refer to the data sheet with the Keysight literature number, 5991-0560EN.

High-voltage Differential Active Probes

- 25 to 800 MHz bandwidth
- Switchable attenuation
- Measure up to 1,400 V CAT II and 7 kV CAT I

N2790A/91A and N2891A high voltage differential probes

Oscilloscope users often need to make floating measurements where neither point of the measurement is at earth ground. Use N2790A, N2791A, or N2891A high voltage differential probes to make safe and accurate floating measurements with an oscilloscope. The N2790A, N2791A, and N2891A high voltage differential probes allow conventional earth-grounded Keysight oscilloscope to be used for floating signal measurements.

Each probe offers user-selectable attenuation settings that make it highly versatile, allowing it to be used for a broad range of applications. The probe comes with probe tip accessories for use with small and large components in tight spaces.

The N2791A and N2891A are compatible with any oscilloscope with 1 MΩ BNC input. The N2791A and N2891A probe power is supplied by included 4x AA batteries or USB host port of the scope or PC via a supplied USB power cable. The N2790A is compatible with the Keysight's AutoProbe interface where the probe power is supplied by the Keysight oscilloscope's probe interface.

Characteristics for N2790A, N2791A and N2891A differential probe

	N2790A	N2791A	N2891A
Bandwidth	100 MHz	25 MHz	70 MHz
Risetime	3.5 ns	14 ns	5 ns
Attenuation ratio	50:1 / 500:1	10:1 / 100:1	100:1 / 1000:1
CMRR	–80 dB at 50/60 Hz –50 dB at 1 kHz -–50 dB at 1 MHz	–80 dB at 50/60 Hz –40 dB at 1 MHz	–80 dB at 50/60 Hz –60 dB at 20 kHz
Input impedance (between inputs)	8 MΩ//3.5 pF	8 MΩ//8 pF	100 MΩ//5 pF
Max input voltage to ground	±1000 V (CAT II) ±600 V (CAT III)	±700 V at 100:1 ±70 V at 10:1	±7000 V at 1000:1 ±700 V at 100:1
Max input voltage between two inputs	±1400 V at 500:1 ±140 V at 50:1	±700 V at 100:1 ±70 V at 10:1	±7000 V at 1000:1 ±700 V at 100:1
Max number of probes supported by 3000 X-/4000 X-/ 5000/6000 /7000 Series	4	4	4

1141A 200 MHz differential probe

The 1141A is a 1x FET differential probe with 200-MHz bandwidth and a 3000:1 CMRR. The probe has a high-input resistance and low-input capacitance of 7 pF to minimize circuit loading. The 1141A must be used with 1142A probe control and power module, which controls input coupling modes dc, dc with variable offset, and dc reject. Two attenuators, 10x and 100x are provided to expand the linear differential input range to ±30 V. This probe works with any 50-Ω input oscilloscope including 3000 X-, 4000 X-, 5000, 6000X, 6000 300 MHz - 1 GHz, and 7000 Series.



1141A 200-MHz differential probe with 1142A probe control and power module

Characteristics for 1141A differential probe

	1141A
Bandwidth	200 MHz
Risetime	1.75 ns
Attenuation ratio	1:1 without attenuator, 10:1 and 100:1 with attenuater
CMRR	3000:1 at 1 MHz 10:1 at 100 MHz
Input impedance	Between inputs: 1 MΩ//7 pF
Max input voltage	200 Vdc + peak ac (probe alone) 500 Vdc + peak ac (with attenuator)
Max number of probes supported by 3000 X-/4000 X-/6000 X-/5000/6000/7000 Series	4

High-voltage Differential Active Probes (continued)

N2804A/N2805A high-voltage high-speed differential probes

The N2804A and N2805A differential probes provide the superior general-purpose differential signal measurements that are required for high-speed power measurements such as measuring characteristics of switching power devices, DC-DC converters or class D amplifiers, vehicle bus measurements, and high-speed digital system designs.

The N2804A 300-MHz differential probe offers 100:1 attenuation ratio, allowing it to be used adequately for high voltage signal measurements. The differential probe has a differential input resistance of 4 MΩ and low input capacitance of 4 pF to minimize circuit loading. The probe comes with a pair of extension leads (30 cm long) with a damping resistor built-in to damp out the in-band resonance and provide flat frequency response even while using the extension leads and probe tip accessories.

The N2805A is a 200-MHz differential probe designed to provide superior differential signal measurements with long cable length (5 m), making it ideal in an environment where extended cable length is required. This probe comes with an extensive set of probe tip accessories for use with small and large components in tight spaces.



N2804A 300 MHz differential probe

Characteristics for N2804A and N2805A

	N2804A	N2805A
Bandwidth	300 MHz (without extension leads) 120 MHz (with extension leads)	200 MHz
Attenuation ratio	100:1	50:1
CMRR	-80 dB at 50/60 Hz -75 dB at 1 MHz	-75 dB at 50/60 Hz -80 dB at 1 MHz
Input impedance (between inputs)	4 MΩ // 4 pF	4 MΩ // 4 pF
Max input voltage (between two inputs)	±300 V (DC+ peak AC) and ±200 Vrms	±200 V (DC+ peak AC) and ±200 Vrms CAT II
Max input voltage	±300 V (DC+ peak AC) and ±200 Vrms CATII ±1000 V (DC+ peak AC) and ±1000 Vrms CATI	±500 V (DC+ peak AC) and ±500 Vrms CAT I ±300 V (DC+ peak AC) and ±200 Vrms CATII
Cable length	1.2 m	5 m
Max number of probes supported by InfiniiVision Series	4	4
Compatible InfiniiVision oscilloscopes	4000X Series with software 4.0 or higher, 3000X Series with software 2.38 or higher	



N2805A 200 MHz differential probe

For more information about the N7020A power rail probe, check out the Keysight data sheet with the publication number 5992-0141EN.

High-voltage Differential Active Probes (continued)

N2792A/N2818A 200-MHz and N2793A/N2819A 800-MHz general-purpose differential probe

The N2792A/N2818A 200-MHz and N2793A/N2819A 800-MHz differential probes provide the superior general-purpose differential signal measurements required for today's high-speed power measurements, vehicle bus measurements, and digital system designs.

The N2792A/N2818A and N2793A/N2819A probes offer a 10:1 attenuation setting and high input resistance and low input capacitance to minimize circuit loading.

The N2792A/93A are compatible with any oscilloscope with 50 Ω BNC input. The probe can be powered by any USB port on a scope or computer, or by a 9 V battery. The N2818A/19A are the AutoProbe interface versions of the N2792A/93A. They are compatible with the InfiniiVision 3000 X-, 4000 X- and 6000 X-Series only.

Characteristics for N2792A/N2818A and N2793A/N2819A differential probes

	N2792A/N2818A	N2793A/N2819A
Bandwidth	200 MHz	800 MHz
Risetime	1.75 ns	437 ps
Attenuation ratio	10:1	10:1
CMRR	80 dB at 50/60 Hz –50 dB at 10 MHz	–60 dB at 50/60 Hz –15 dB at 500 MHz
Input impedance (between inputs)	1 MΩ//3.5 pF	200 kΩ//1 pF
Max input voltage to ground	±60 V	±40 V
Max input voltage between two inputs	±20 V	±15 V
Max number of probes supported by InfiniiVision Series	4	4

Ordering information for Keysight high voltage differential probes, power supply and accessories

1141A	200-MHz differential probe
1142A	Probe control and power module for 1141A
N2790A	100-MHz, 1.4 kV differential probe with AutoProbe interface
N2791A	25-MHz, 700-V differential probe
N2792A	200-MHz, 20-V differential probe
N2818A	200-MHz, 20-V differential probe with AutoProbe interface
N2793A	800-MHz, 15-V differential probe
N2819A	800-MHz, 15-V differential probe with AutoProbe interface
N2891A	70-MHz, 7,000-V differential probe
N4853A	Variable pitch browser for N2793A/N2819A, qty 2
N4854A	DC blocking capacitor for N2793A/N2819A, qty 2
N2804A	300 MHz high voltage differential probe
N2805A	200 MHz high voltage differential probe with extended cable length
N2816A	Probe tip accessory kit for N2804A including 2 each alligator clips, 2 each pincer clips, and 2 each extension leads (30 cm)
N2817A	Probe tip accessory kit for N2805A including 2 each alligator clips, 2 each hook clips, 2 each pincer clips, and 2 each browser tips



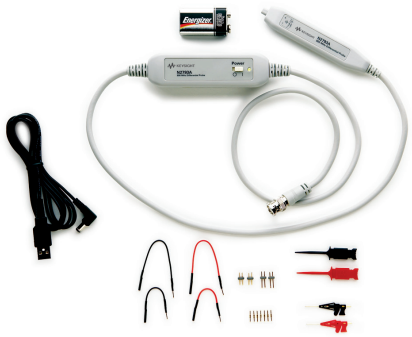
N2790A 100-MHz, 1.4-kV differential probe with AutoProbe interface



N2791A 25-MHz, 700-V differential probe



N2792A 200-MHz, 20-V differential probe



N2793A 800-MHz, 15-V differential probe

Single-ended Active Probes

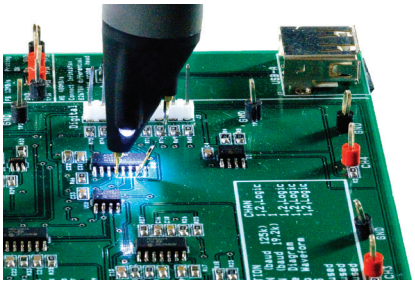
N2795A/96A/97A low-cost single-ended active voltage



- High resistance (1MΩ) and low capacitance (1 pF) input for low loading
- Wide input dynamic range (±8 V) and offset range (±12 V for N2796A/97A, ±8 V for N2795A)
- Built-in headlight
- Direct connection to AutoProbe interface (no power supply required)
- N2797A for extreme temperature environmental chamber testing at –40 to +85 °C

The N2795A/96A are a new generation of low-cost, 1 to 2 GHz single-ended active probes with the AutoProbe interface (compatible with Keysight's InfiniVision and Infiniium family of oscilloscopes). These probes integrate many of the characteristics needed for today's general-purpose, high-speed probing–especially in digital system design, component design/ characterization, and educational research applications. Its 1 MΩ input resistance and extremely low input capacitance (1 pF) provide ultra low loading of the DUT. This, accompanied with superior signal fidelity, makes these probes useful for most of today's digital logic voltages. Testing devices over extreme temperature ranges is quite common these days. The N2797A 1.5 GHz single-ended active probe is the industry's first low-cost high input impedance active probe with rugged probe tips for environmental chamber testing of ICs and devices. It gives the ability to probe signals at drastic temperature swings ranging from –40 to +85 °C. The probe provides a 2 m long cable. Order N2798A for re-ordering accessories.

The N2795A/96A/97A are equipped with a white LED headlight to illuminate the circuit under test. The probes are powered directly by the InfiniiVision and Infiniium Autoprobe interface, eliminating the need for an additional power supply. The probes also come with a number of accessories that allow for easy connections to the circuit under test.

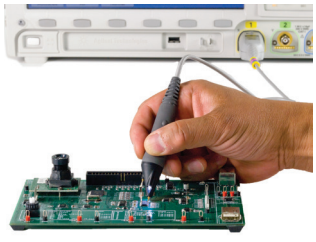


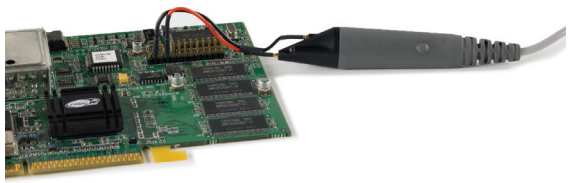
Model number	N2795A	N2796A	N2797A
Probe bandwidth* (–3 dB)	1 GHz	2 GHz	1.5 GHz
Risetime	350 ps	175 ps	233 psec
System bandwidth	500/600 MHz with Keysight's 500/600 MHz InfiniiVision/Infiniium, 1 GHz with 1 GHz InfiniiVision 3000 X, 4000 X	1 GHz with Keysight's 1 GHz InfiniiVision/Infiniium, 1.5 GHz with Keysight's 1.5 GHz InfiniiVision 4000 X, 6000 X	
Attenuation ratio (at dc)	10:1 ± 0.5%		
Input dynamic range	–8 to +8 V (DC or peak AC)		
Non-destructive input voltage	–20 to +20 V		
Offset range	±8 V	±12 V	
DC offset error (output zero)	±1 mV		
Low frequency accuracy	0.5% at 70 Hz, 1 Vpp		
Input resistance*	1 MΩ		
Input capacitance	1 pF		
Output impedance	50 Ω		
Max number of probes supported by InfiniiVision 3000 X-/5000/6000/7000 Series**	2		
Max number of probes supported by InfiniiVision 4000X, 6000X	4		

* Denotes warranted electrical specifications after 20 minute warm-up, all others are typical
** The N2797A is compatible with 3000 X-, 4000 X- and 6000 X-Series only.

Replacement accessories

N4839A	Dual lead socketed adapter, 6 cm, qty 2
N4840A	Dual lead solder-in adapter, 5 cm, qty 2
N4841A	Dual lead socketed adapter, 9 cm, qty 2
N4842A	Dual pin PCB header, qty 2
N4843A	Solderable tips, qty 10
N4844A	Right angle ground lead, 5 cm, qty 2
N4845A	Ground blade, qty 2
N4846A	Offset ground, qty 2





For more information about N2795A/96A/97A active probe, refer to the Keysight N2795A/96A/97A active probe data sheet, literature number 5990-6480EN.

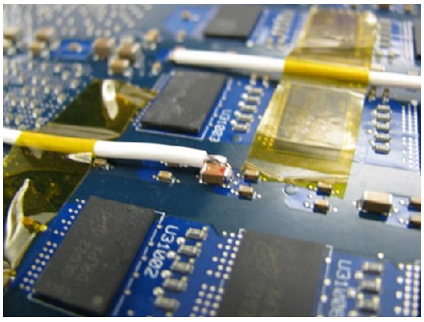
Single-ended Active Probes (continued) N7020A power rail probe

- 2-GHz single-ended active probe for power rail noise measurement
- 1:1 attenuation ratio ensures low noise signal measurement
- ±24V of probe offset range enables effective elimination of DC component of a power supply.



The N7020A power rail probe is a low noise, large offset range oscilloscope probe that enables users to measure small signals riding on top of DC power rails.

- Low noise: The N7020A power rail probe is a 1:1 attenuation ratio active probe. As a general rule, the higher a probes attenuation ratio, the nosier the signal will be on the oscilloscope.
- Large offset range: The N7020A power rail probe provides ±24V of probe offset. This enables users to center the signal on screen while placing the oscilloscope at its maximum vertical sensitivity and zoom in on the signal.
- Low DC loading: The N7020A power rail probe has 50 kΩ input impedance at DC, minimizing the probe's DC loading of the power rail.
- Large input dynamic range: The N7020A power rail probe's ±850 mV input dynamic range means that users can measure up to ±850 mV deviations of their DC supplies. This is very useful for measuring programmable supplies like those used in micro-controller power saving modes.



Characteristics and specifications	
Probe bandwidth (-3dB)	2 GHz
Attenuation ratio	1:1
Offset range	±24 V
Input impedance at DC	50 kΩ
At >1 MHz	50 Ω
Input dynamic range	± 850 mV
Probe noise	10% of oscilloscope noise
Included accessories	N7021A coaxial probe head (qty. 3), N7022A SMA main cable
Max number of probes supported by InfiniiVision	4
Compatible InfiniiVision oscilloscopes	4000 X-Series with software rev 4.0 or higher

For more information about the N7020A power rail probe, check out the Keysight data sheet with the publication number 5992-0141EN.

Mixed Signal Oscilloscope Logic Probes

- Compatible with all 40-pin logic probe
- Flying leads offer flexibility and convenience

MSO probes offer great value and performance

These logic probes for the InfiniiVision mixed signal oscilloscopes (MSOs) are the same ones used with Keysight industry-leading high-performance logic analyzers. This means we can offer the best performance, great value and access to the industry's broadest range of logic probing accessories.

The N6450-60001 2 x 8-signal logic probes are divided into two sets of eight channels so you can probe pins that are far apart and work conveniently with only one set if that's all you require. For optimal signal fidelity, connect ground at each logic probe, in addition to taking a common ground to all eight signals via a separate ground connector on the probe pod. The N6450-60001 probe is included with 6000, 7000, 3000 X- and 4000 X-Series MSOs.

The N6459-60001 is an 8-channel MSO logic probe designed to work with the 2000 X-Series MSOs.

The N2756A is the 16-ch MSO cable kit that comes with the 6000 X-Series MSOs.

Characteristics for Keysight 54620-68701, N6450-60001, N6459-60001 logic probes

Input impedance	100 kΩ
Input capacitance	8 pF

The 01650-61607 is the 40-pin (F) to 40-pin (F) logic probe cable for Keysight's InfiniiVision and 54600 Series MSOs. This cable gives the MSO the standard 40-pin female input connector that many Keysight logic analyzers have. With this cable, a user can connect a wide variety of logic analyzer probes such as Mictor, Samtec, and Soft Touch probes.

Characteristics for Keysight 01650-61607 logic probe

Input impedance	100 kΩ
Input capacitance	12 pF



01650-61607 logic probe

Ordering information for Keysight logic probes

N2756A	16-ch MSO cable kit for 6000 X-Series MSO
N6450-60001	Logic probe with 2 x 8 flying leads. Includes 20 IC clips and 5 ground extension leads
N6459-60001	Logic probe with 1 x 8 flying leads. Includes 10 IC clips and 3 ground extension leads
01650-61607	40-pin (F) to 40-pin (F) logic probe cable



N2756A 16-ch MSO cable kitn



N6450-60001

Mixed Signal Oscilloscope Logic Probes (continued)

The InfiniiVision MSO digital channels were architected to be compatible with a wide variety of probing accessories developed over 20 years for logic analyzers. There's a good chance that the logic analyzer accessories you already own work with your MSO. With the addition of an optional 40-pin cable, 01650-61607, the MSO accepts numerous logic analyzer accessories:

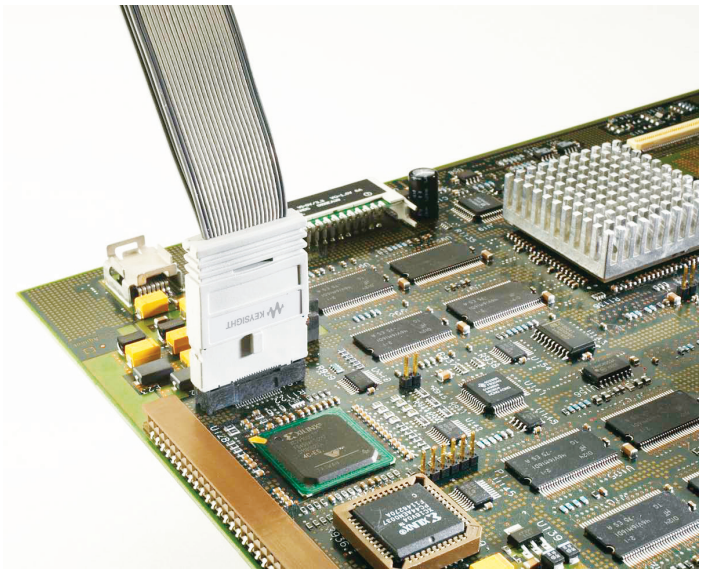
- E5346A 34-channel Mictor connector probe
- E5385A 34-channel Samtec connector
- E5383A 16-channel flying lead set
- 01650-63203 16-channel termination adaptor (also available as a bundle of both the termination adapter and the 40-pin cable with PN 10085-68701)
- E5404A 34-channel soft touch pro connectorless probe
- E5394A 34-channel soft touch connectorless probe
- E5396A 16-channel soft touch connectorless probe
- Any other accessory that connects to a logic analyzer via a 40-pin cable

For logic accessories of greater channel width than MSO digital channels (> 16 channels), there are two use models.

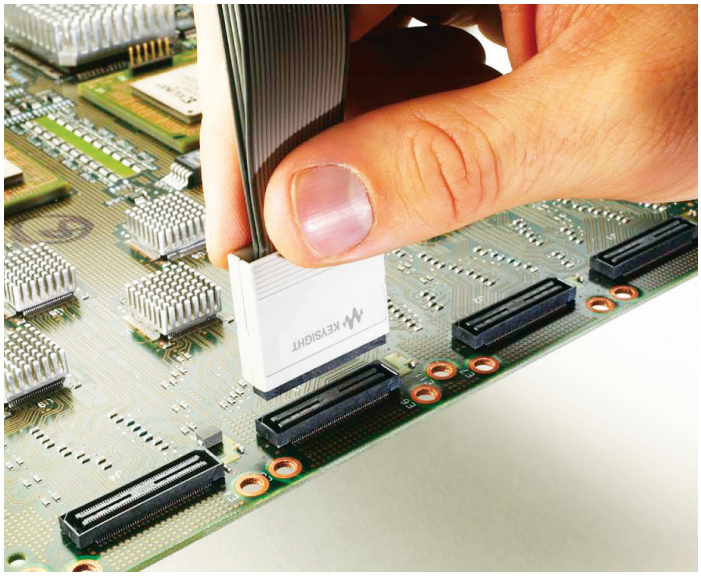
- Route up to 16 signals to the probe and don't use the additional probe channels.
- Route up to 32 signals to the probe and measure 1/2 of them at a time. Simply plug the 40-pin cable to the other side of the probe to see the other 1/2 of the signals.



E5396A 16-channel soft touch connectorless probe



E5346A 34-channel Mictor connector probe



E5385A 34-channel Samtec connector probe

Clamp-on Current Probes

- Up to 100 MHz bandwidth and 500 Arms current
- Hybrid technology to measure ac and dc
- Compatible with 1 MΩ scope input

Accurate current measurements without breaking the circuit

Compatible with any scope or voltage measuring instruments with BNC input, the 1146B and N2780B Series current probes offer accurate and reliable solutions for measuring dc and ac currents. The probes use a hybrid technology that includes a Hall effect sensor, which senses the dc current and a current transformer, which senses the ac current, making it unnecessary to make an electrical connection to the circuit.

1146B 100 kHz current probe

The 1146B ac/dc current probe provides accurate display and measurement of currents from 100 mA to 100 Arms, dc to 100 kHz, without breaking into the circuit. A battery level indicator and overload indicator help ensure proper readings. It connects directly to the scope through a 2-m coaxial cable with an insulated BNC.



1147B 50-MHz current probe with AutoProbe interface



1146B 100-kHz current probe

1147B/N2893A 50-MHz/ 100-MHz current probe with AutoProbe interface

The 1147B/N2893A is a wide bandwidth, dc to 50-MHz/100-MHz current probe. The probe offers flat frequency response across the entire dc to 50-MHz/100-MHz bandwidth, low noise (< –2.5 mArms) and low circuit insertion loss.

The 1147B/N2893A probe is compatible with the AutoProbe interface, which completely configures the oscilloscope for the probe when used with the 3000 X-, 4000 X-, 5000, 6000 300 MHz - 1 GHz, 7000 Series scopes. Probe power is provided by the scope, so there is no need for an external power supply. The N2893A uniquely provides auto demagnetization and offset elimination feature when used in conjuction with InfiniiVision or Infiniium scopes.



N2893A 100-MHz current probe with AutoProbe interface

N2780B/81B/82B/83B/83L 2-MHz/10-MHz/50-MHz/ 100-MHz current probe

The N2780B Series current probes are high bandwidth, active current probes, featuring flat bandwidth, low noise (2.5 mArms) and low circuit insertion loss. In conjunction with the power supply (model N2779A), this probe can be used with any oscilloscope having a high-impedance BNC input. The companion power supply N2779A (3 x 12 Vdc output) lets you connect up to any three N2780B-83B current probes to a single power supply.

The N2783L 80 MHz current probe offers 5 m long cable, which allows you to reach DUTs in long distances very easily. Other than the bandwidth performance, the N2783A and N2783L have the same electrical performance. The N2783L also requires the N2779A power supply to power the probe.



N2780B Series current probes with N2779A power supply

Clamp-on Current Probes (continued)

Characteristics of the 1146B current probe

Bandwidth*	dc to 100 kHz (–3 dB)
Current range*	100 mV/A:100 mA to 10 A peak 10 mV/A:1 to 100 A peak
Output signal	1000 mV peak max
AC current accuracy*	
Range	100 mV/A (50 mA to 10 A peak)
Accuracy	3% of reading ±50 mA
Range	10 mV/A (500 mA to 40 A peak)
Accuracy	4% of reading ±50 mA
Range	10 mV/A (40 A to 100 A peak)
Accuracy	(40 A to 100 A peak) 15% max at 100 A
Noise	Range 10 mV/A: 480 µV Range 100 mV/A: 3 mV
Insertion impedance	0.01 Ω (50/60 Hz)
Maximum working voltage	600 Vrms CAT II or 300 Vrms CAT III
Maximum common mode voltage	600 Vrms CAT II or 300 Vrms CAT III
Influence of adjacent conductor	< 0.2 mA/A AC
Influence of conductor position	< 0.2 mA/A AC
Battery	9 V alkaline (NEDA 1604A, IEC 6LR61)
Low battery	Green LED on when ≤ 6.5 V
Battery life	55 hours typical

Note: Reference conditions 23 ±5 °C, (73.4 ±41 °C) 20 to 75% relative humidity, dc to 1 kHz, probe zeroed, 1-minute warmup, batteries at 9 V + 0.1 V, external magnetic field <40 A/m, no dc component, no external current carrying conductor, 1 MΩ/100 pF load, conductor centered in jaw.

* Characteristics marked with asterisks are specified performance. Others are typical characteristics.

Characteristics of the 1147B/ N2893A current probe

Bandwidth (–3 dB)	dc to 50 MHz (1147B) dc to 100 MHz (N2893A)
Risetime	7 ns or less (1147B), 3.5 ns or less (N2893A)
Maximum current (continuous)	15 A peak, 15 A DC, 10 Arms (when two probes are used with InfiniiVision scope) 30A peak, 30 A DC, 24 Arms (when one probe is used with InfiniiVision 3000X, 5000/6000/7000 scope)
Maximum peak current (non-continuous)	30 A peak (when two probes are used with InfiniiVision scope) 32 A peak (when one probe is used with InfiniiVision scope)
Output voltage rate	0.1 V/A
Amplitude accuracy	±1% rdg, ±10 mA (dc and 45 to 66 Hz, rated current)
Noise	Equivalent to 2.5 mArms or less (for 20 MHz bandwidth measuring instrument)
Temperature coefficient for sensitivity	±2% or less (within a range of 0 to 40 °C or 32 to 104 °F)
Effect of external magnetic fields	Equivalent to a maximum of 20 mA (in a dc to 60 Hz, 400 A/m magnetic field)
Maximum rated power	3 VA (with rated current)
Maximum input voltage	300 V CAT I
Diameter of measurable :conductors	5 mm dia. (0.2 in dia.)
Probe interface	AutoProbe interface
Cable lengths	Sensor cable: Appox. 1.5 m (59.0n in) Power supply cable: Appox. 1 m (39.4 in)
Maximum number of probes supported	2

Note: The above specifications are guaranteed at 23 ±3 °C (or 73 ±5 °F)

Characteristics of N2780B Series current probes

Bandwidth (–3 dB)	dc to 2 MHz (N2780B) dc to 10 MHz (N2781B) dc to 50 MHz (N2782B) dc to 80 MHz (N2783L) dc to 100 MHz (N2783A)
Maximum current (continuous)	500 A (N2780B) 150 A (N2781B) 30 A (N2782B/83B/83L)
Maximum peak current (non-continuous)	700 A peak (N2780B) 300 A peak (N2781B) 50 A peak (N2782B/83B/83L)
Maximum input voltage	300 V CAT I (N2782B/83B/83L) 300 V CAT III, 600 V CAT II (N2780B/81B)
Output voltage rate	0.01 V/A (N2780B/81B) 0.1 V/A (N2782B/83B/83L)
Amplitude accuracy	±1.0 % rdg ±500 mA (N2780B) ±1.0 % rdg ±100 mA (N2781B) ±1.0 % rdg ±10 mA (N2782B) ±1.0 % rdg ±10 mA (N2783B/83L)

Ordering information for Keysight current probes

1146B	100-kHz current probe
1147B	50-MHz current probe with AutoProbe interface
N2893A	100-MHz current probe with AutoProbe interface
N2780B	2-MHz current probe
N2781B	10-MHz current probe
N2782B	50-MHz current probe
N2783L	80-MHz current probe with 5 m long cable
N2783B	100-MHz current probe
N2779A	3-channel power supply for N2780B/81B/82B/83B/83L

For more information about the N2780B Series current probes, refer to the Keysight N2780B Series current probe data sheet, literature number 5989-6432EN.

High-Sensitivity Current Probes

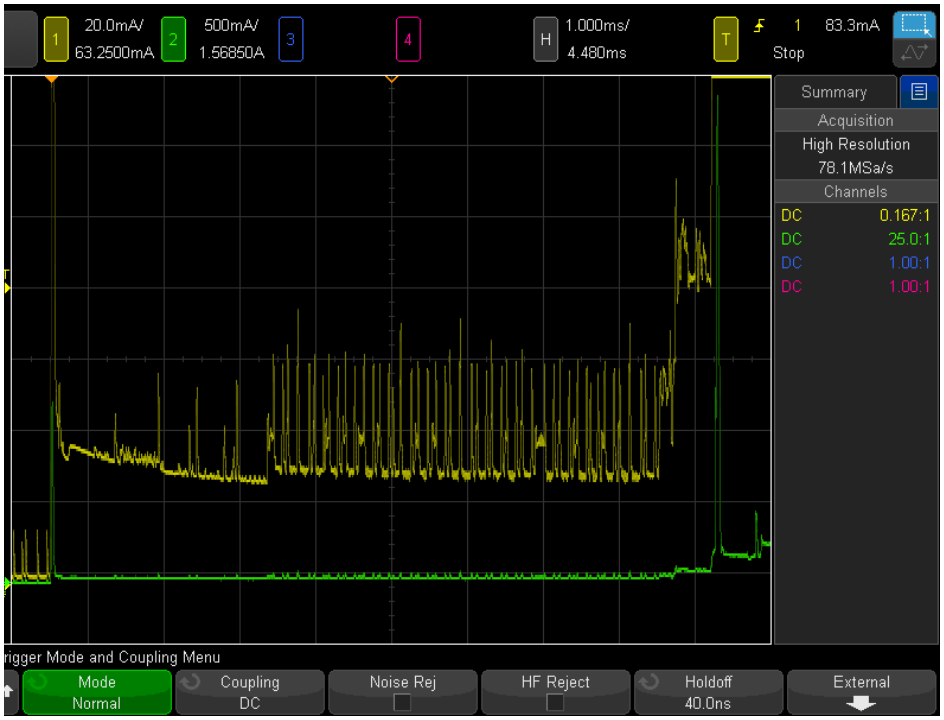
- Measure AC/DC currents as low as 50 uA
- Ideal for capturing and analyzing low level current flow in the DUT to characterize sub-circuits or measure current consumption of battery-powered devices or integrated circuits
- Simultaneous high- and low-gain views of the current waveform for more precise wide dynamic range measurement (with N2820A)

As modern battery-powered devices and integrated circuits become more green and energy efficient, there is a growing need to make high-sensitivity, low-level current measurements to ensure the current consumption of these devices is in acceptable limits. The N2820A high-sensitivity probe is engineered to make high-dynamic-range, high-sensitivity measurements to meet today's challenging current measurement needs. The ultra-sensitive N2820A AC/DC current probe can support measurements from 50 uA to 5 A on Keysight oscilloscopes. The N2820A interface uses a make-before-break (MBB) connector, allowing you to quickly probe multiple locations on your DUT without having to solder or unsolder the leads. The N2820A 2-channel current probe connects to two oscilloscope channels to provide simultaneous low-and high-gain views for wider dynamic range measurement, while the N2821A 1-channel current probe provides one user-selectable view at a time.



Use an area-under-the-curve measurement (Charge) on InfiniiVision oscilloscopes to easily calculate the integrated current consumptions over time in Ah.

The N2820A/21A high-sensitivity current probes are compatible with InfiniiVision 3000 X-, 4000 X- and 6000 X-Series oscilloscopes.



The N2820A 2-channel current probe connects to two oscilloscope channels to provide simultaneous low- and high-gain views for wider dynamic range measurement

High-Sensitivity Current Probes (continued)

Probe characteristics and specification	
Bandwidth (–3 dB)	Zoom-out channel: DC to 3 MHz
	Zoom-in channel: DC to 500 kHz
Risetime (Tr = 0.35/bandwidth, 10% - 90%)	Zoom-out channel: < 0.116 µsec
	Zoom-in channel: < 0.7 µsec
Minimum measurable current*	250 µA (with N2822A 20 mΩ, 500 mW)
	50 µA (with N2824A 100 mΩ, 500 mW)
	5 mA (with N2825A user-defined 1 mΩ, 500 mW)
	50 µA (with N2825A user-defined 1 kΩ, 500 mW)
Maximum measurable current	5 A (with N2822A 20 mΩ, 500 mW)
	2.2 A (with N2824A 100 mΩ, 500 mW)
	5 A** (with N2825A user-defined 1 mΩ, 500 mW)
	1.2 mA** (with N2825A user-defined 1 kΩ, 500 mW)
DC amplitude accuracy	± 3% or 10 µA (whichever is greater)
Gain***	Zoom-in channel: 300 ± 3%
	Zoom-out channel: 1.97 ± 3%
Max input voltage	± 12 V
Output impedance	1 MΩ
Standard accessories	– 1 each 20 mΩ resistor sensor head
	– 1 each 100 mΩ resistor sensor head
	– 1 each user defined resistor sensor head
	– 5 each twisted leads (22 AWG) with sockets
	– 5 each twisted leads (22 AWG) without sockets
	– 5 each MBB headers
	– 5 each MBB receptacles
	– 1 each ground lead
	– 1 each screw driver
	– 1 each passive cable (with N2820A only)
	– 1 each user guide manual (English)
Compatible InfiniiVision oscilloscopes	InfiniiVision 3000 X-Series (with software version 2.30 or higher)
	InfiniiVision 4000 X-Series (with software version 3.10 or higher)
	InfiniiVision 6000 X-Series (with software version 6.00 or higher)
Max number of probes supported by 3000 X-Series	Two N2820A probes using both pods or two N2821A probes
Max number of probes supported by 4000 X-Series	Two N2820A probes using both pods, four N2820A probes using only the primary pod, or four N2821A probes

* Vsupply is equal to 5 V, solder attached.
** Max current varies with max resistor power rating. The examples in the table assume 500 mW power rating.
*** Denotes warrantied specification after 20-minute warm up. All others entries in the table are characteristics

Ordering information for Keysight current probes

Model numbers	Descriptions
N2820A	High-sensitivity 2-ch current probe
N2821A	High-sensitivity 1-ch current probe
Replacement part numbers	
N2822A	20 mΩ resistor tips
N2824A	100 mΩ resistor tips
N2825A	User-defined resistor tips
N2826A	Replacement wires (15.5 cm, 22 AWG bare wires) (qty 5)
N2827A	Passive cable (for N2820A secondary channel)
N2828A	Replacement MBB (Make Before Break) headers (qty 5)
N2829A	Replacement MBB (Make Before Break) receptacles and 15.5 cm, AWG 22 socketed wires (qty 5 each)

Wedge Probe Adapters

Easy connection to surface mount ICs
Safe, with no chance of shorting
Mechanically non-invasive contact
3-, 8-, and 16-signal versions
Supports 0.5 and 0.65-mm TQFP and PQFP packages

Problem-free probing

The Keysight wedge probe adapter eliminates many of the frustrations associated with probing surface mount components. If you've ever accidentally shorted IC pins together, experienced electrical and/or mechanical problems with soldering small wires onto leads, or gotten frustrated juggling multiple probes while you're trying to operate your scope, the Wedge was designed with you in mind.

Make the inaccessible accessible

When you use the Wedge, you don't have to worry about shorting IC pins together on a delicate component–or worse yet on an irreplaceable prototype. The Wedge is easy to insert and it stays put. There's no need to solder small wires onto leads. The Wedge is mechanically non-invasive, so you won't damage the legs of the IC. Instead, you'll have easy access to hard-to-reach components.

Electrical reliability

The Wedge makes two contact points with each leg of the IC. This redundant physical connection increases the electrical reliability of the connection. And the Wedge's low capacitance and inductance provides superior performance to many other alternatives.

The wedge probe adapter connects directly to 1145A/1155A active probes and the dual lead adapter provided with the 1160A-65A passive probe family and N2877A/N2879A accessory kits for use with N287xA Series passive probes.

IC clip kits

An inexpensive solution for probing fine-pitch ICs, the 10072A SMT Kit includes 10 IC clips and 2 dual-lead adapters that connect the clips directly to 10070-family probes.

The 10075A 0.5-mm IC clip kit is ideal for connecting to IC's as fine as 0.5 mm. The clip body allows many clips to be mounted side-by-side. The kit includes four 0.5-mm IC clips and two dual-lead adapters that connect the IC clips directly to 10070-family probes.

Keysight Wedge electrical characteristics

Operating voltage	< 40 Vdc + peak ac
Operating current	0.5 A maximum
Capacitance between contacts	2 pF typical (all except Keysight-E2643A/44A) 4.33 pF typical at 1 MHz (Keysight-E2643A/44A)
Self-inductance	15 nH typical (all except Keysight E2643A/44A) 37 nH typical at 1 MHz (Keysight E2642A/44A)
Cross coupling	–31 dB typical at 100 MHz (Keysight E2643A/44A)
Contact resistance	< 0.1 Ω

Ordering information

E2613A	0.5 mm Wedge probe adapter, 3 signal, qty 1
E2614A	0.5 mm Wedge probe adapter, 8 signal, qty 1
E2643A	0.5 mm Wedge probe adapter, 16 signal, qty 1
E2615A	0.65 mm Wedge probe adapter, 3 signal, qty 1
E2616A	0.65 mm Wedge probe adapter, 8 signal, qty 1
E2644A	0.65 mm Wedge probe adapter, 16 signal, qty 1
10072A	SMT kit for 10070 probe family
10075A	0.5 mm IC clip kit



Miscellaneous Accessories

Testmobile

The sturdy Keysight 1180CZ Testmobile for use with 6000 Series oscilloscopes makes sharing your scope easy. Its large wheels make it easy to roll from place to place. For use with the Keysight 6000 Series scope, the 1180CZ Testmobile scope cart with the N2919A bracket provides convenient mobility and secure mounting of your scope.

Specifications for the Keysight Testmobiles

1180CZ	
Total load capacity	59 kg (130 lbs)
Tilt tray	45.7 cm wide x 45.7 cm deep (18 in Wide x 18 in Deep)

Carrying cases

The Keysight N6457A soft carrying case makes transporting and shipping your 2000 X- and 3000 X-Series oscilloscope safe and simple. An oscilloscope and other accessories fit neatly inside the padded shell for shipment. For use with the 7000, 4000 X-, and 6000 X-Series, order N2733B soft carrying case.



N2760A soft carrying case for the 5000 Series



N2733B soft carrying case for 7000, 4000 X-, and 6000 X-Series

Rackmount kit

The Keysight N2916B rackmount kit positions your 5000 and 6000 Series scope in the center of the rack. Each kit includes a custom shelf with rails, 6 BNC pass-throughs and all necessary screws. For mounting the 7000 Series in the rack, order N2732A. For mounting all 2000 X- and 3000 X-Series in a rack, order N6456A.For mounting any 4000 X-Series in a rack, order N2763A. For mounting a 6000 X-Series in a rack, order the N2111A.

Ordering information

1180CZ	Testmobile for 6000 Series
N2919A	Bracket for 1180CZ Testmobile and 6000 Series scope
N2917B	Hard carrying case for 5000 and 6000 Series
N6457A	Soft carrying case for 2000 X- and 3000 X-Series
N2733B	Soft carrying case for 7000, 4000 X- and 6000 X-Series
N2760A	Soft carrying case for 5000 Series
N2916B	Rackmount kit for 5000 and 6000 Series
N2732A	Rackmount kit for 7000 Series
N6456A	Rackmount kit for 2000 and 3000 X-Series
N2763A	Rackmount kit for 4000 X- Series
N2111A	Rack mount kit for 6000 X-Series



N2916B rackmount kit for 5000/6000 Series

Miscellaneous Accessories (continued)

Probe positioners

- Easy-to-manipulate probe arms for hands-free browsing
- One- or two-articulated arms with stable high-mass base (N2784A and N2785A)
- Quick and stable XY positioning (N2786A)
- Stable 3D probe positioning for hard-to-reach XYZ access (N2787A)
- Compatible with most scope probes
- Applications: Hands-free browsing for electronic components on PC board

The N2784A and N2785A probe positioners provide quick and stable X-Y positioning for PC boards and devices that require hands-free probing.

Unlike other probe positioners that require multiple adjustments to lock the probe holder into position, the N2784A and N2785A need only the “lift and drop” motion to put the probe in place. The weight stabilization technique used in these probe holders keeps constant pressure at the probing point so the probe tip stays in position even when the target board is bumped.

The N2786A is a low cost, easy-to-use XY axis probe holder for general purpose probing appliactions. The two-leffed positioner is designed to be easy to use–the positioner itself has no controls to positioner it in place.

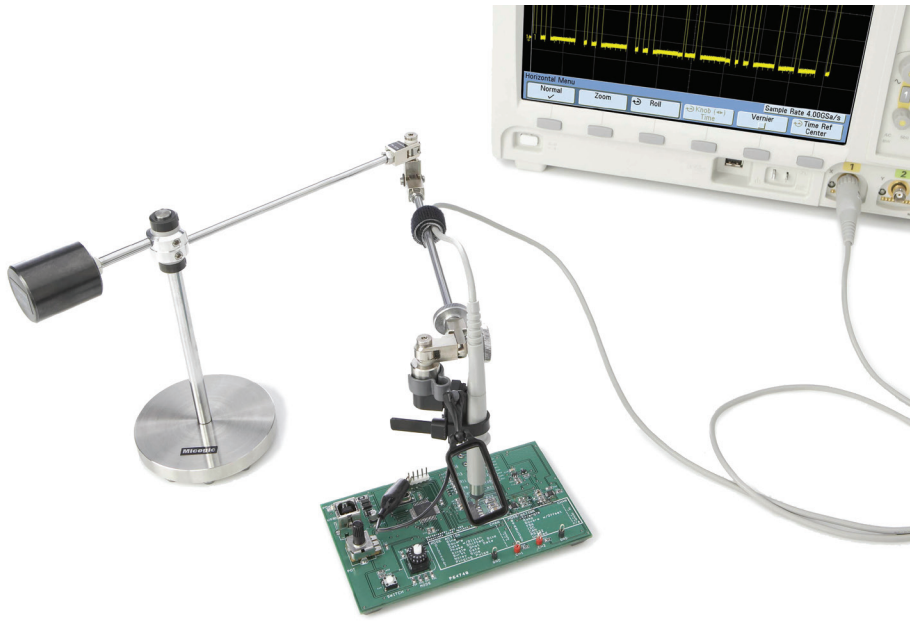
The N2787A is a 3D probe positioner with a flexible, articulating arm that can be quickly positioned in a variety of configurations.

For more information about Keysight’s probe positioners, refer to literature number 5989-9131EN.

Ordering information

Product number	Description
N2784A[1]	1-arm probe positioner
N2785A[1]	2-arm probe positioner
N2786A	2-leg probe positioner
N2787A	3D probe positioner

1. Includes 3x magnifying glass, arm strap, cable tie, probe rest, and manual.



N2784A one-arm probe positioner



N2786A 2-leg probe positioner



N2787A 3D probe positioner

N2744A T2A Probe Interface Adapter

- Enables Tektronix® TekProbe-BNC® level 2 probes to connect to Keysight's AutoProbe interface on InfiniiVision 3000 X-, 4000 X-, 6000 X-, 5000, 6000, and 7000 oscilloscopes
- An easy-to-use plug-on adapter to the Keysight oscilloscope's AutoProbe interface
- Provides necessary probe power, calibration, and offset control as needed to the attached TekProbe probe





The N2744A T2A interface adapter enables selected TekProbe® interface level 2 probes to be used with Keysight oscilloscopes with AutoProbe interface. Existing TekProbe-BNC probe types can simply be plugged into the T2A adapter which is then plugged directly into any AutoProbe input channel on an InfiniiVision or Infiniium oscilloscope. Select the probe model in the scope menu and the Keysight oscilloscope sets up the attenuation factor and the probe type automatically. The T2A interface adapter supplies the necessary probe power, calibration (for selected models only) and offset control as used by the connected TekProbe probe. The adapter is targeted for customers using both Tek active probes with TekProbe-BNC level 2 interfaces and Keysight oscilloscopes with the AutoProbe interface.

Tek probe compatibility

The N2744A T2A adapter supports only the probes listed below with TekProbe interfaces.

AC/DC current probe

TCP202	50-MHz AC/DC current probe

Single-ended active probes

P6243	Single-ended active probe, 1 GHz, 10:1 without offset control
P6245	Single-ended active probe, 1.5 GHz, 10:1 with offset control
P6205	Single-ended active probe, 750 MHz, 10:1 without offset control
P6241	Single-ended active probe, 4 GHz, 10:1 with offset control
P6249	Single-ended active probe, 4 GHz, 5:1 with offset control

Differential active probes

P5205 or P5205A	Differential probe, 100 MHz, 50:1/500:1 with offset control
P5210 or P5210A	Differential probe, 50 MHz, 100:1/1000:1 with offset control
P6246	400 MHz, 10:1/1:1 with offset control
P6247	1 GHz, 10:1/1:1 with offset control
P6248	1.5 GHz, 10:1/1:1 with offset control
P6250	500 MHz, 50:1/5:1 with offset control
P6251	1 GHz, 50:1/5:1 with offset control

Keysight scope compatibility

- Keysight InfiniiVision 6000 X-Series with sofware version 6.00 or higher
- Keysight InfiniiVision 3000 X-/4000 X-Series with software version 1.10 or higher
- Keysight InfiniiVision 5000, 6000, and 7000 Series and future revisions (except 6000 100-MHz) with software version 06.16 or higher

Optical-to-Electrical Converters (works with InfiniiVision 5000, 6000 and 7000 with version 6.16 software only)

P6701B	1 GHz Optical-to-electrical converter with FC/PC connector
P6703B	1.2 GHz Optical-to-electrical converter with FC/PC connector
P6711	250 MHz Optical-to-electrical converter
P6713	300 MHz Optical-to-electrical converter

Ordering information

N2744A	T2A probe interface adapter

Recommended Probes for Low-/Mid-Speed Bus Measurements

Applications	Speed and signal type	Recommended probe	Required probe bandwidth
LIN	10 kHz, single-ended	SE passive	> 100 MHz
ARINC 425	1000 kbps, differential	N2792A/N2818A	200 MHz
CAN	1 Mbps, differential	N2792A/N2818A	200 MHz
MIL-STD 1553	1 Mbps, differential ±25 Vpp	N2792A/N2818A	200 MHz
I²S (audio)	~2.8 MHz, single-ended	SE passive	> 100 MHz
I²C/SMbus	< 4 MHz, single-ended	SE passive	> 100 MHz
RS232/UART	< 10 Mbps, single-ended	SE passive	> 100 MHz
RS422/485	10 Mbps, differential	N2792A/N2818A	200 MHz
FlexRay	10 Mbps, differential	N2792A/N2818A	200 MHz
SPI	1 – 100 MHz, single-ended	SE passive or N2795A	> 100 MHz passive or 1 GHz active
MOST	150 Mbps, differential	N2750A	1.5 GHz
USB 2.0	480 Mbps, differential	N2750A	1.5 GHz



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