

Keysight N2780B Series AC/DC Current Probes

A wide selection of current probes
to meet your application's needs

Data Sheet





Figure 1. N2780B Series current probes with N2779A power supply

- Various bandwidths: DC to 2 MHz, 10 MHz, 50 MHz, 100 MHz
- DC and AC measurements
- Superior 1% accuracy and high signal-to-noise ratio
- Overload-protect function prevents probe damage from excessive input
- Direct connection to high-impedance 1 M Ω BNC input of oscilloscope
- “Demagnetize” button to remove any residual magnetism that builds up in the magnetic core
- External power supply (N2779A) lets you connect up to three N278xB current probes to a single power supply

Compatible with any oscilloscope with a high-impedance BNC input, the new N2780B Series current probes offer accurate and reliable solution for measuring DC and AC currents.

Hybrid technology for AC and DC measurements

Using hybrid technology that includes a Hall-effect sensor and an AC current transformer, the probes provide accurate measurement of DC or AC currents up to 500 Arms (for model N2780B) or DC–100 MHz (for model N2783B), without breaking into the circuit. Using split core construction, the probe easily clips on and off of a conductor.

Wide range of applications

The current probes feature broad measurement ranges (up to 500 A), flat frequency response, low noise and low insertion loss that make the probes ideal for current measurements in areas such as measuring steady state or transient current of motor drives, switching power supplies, inverters, controllers, sensors, disk drives, LCD displays, electronic ballasts and amplifiers. The high signal-to-noise ratio of the N2782B and N2783B makes them ideal for making low-level current measurements in milliampere ranges.

Accurate current measurement

A built-in DEMAG (demagnetize) function allows the removal of any residual magnetism that has built up in the magnetic core due to power on/off switching or excessive input current. In addition, voltage offset or temperature drift on the probe can be easily corrected by using the zero adjustment control.



Figure 2. N2783B, N2780B, N2781B and N2782B current probe (from left to right)

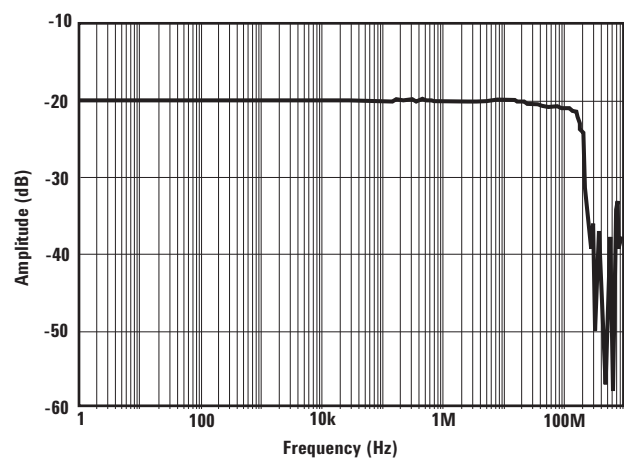


Figure 3. Frequency response of N2783B

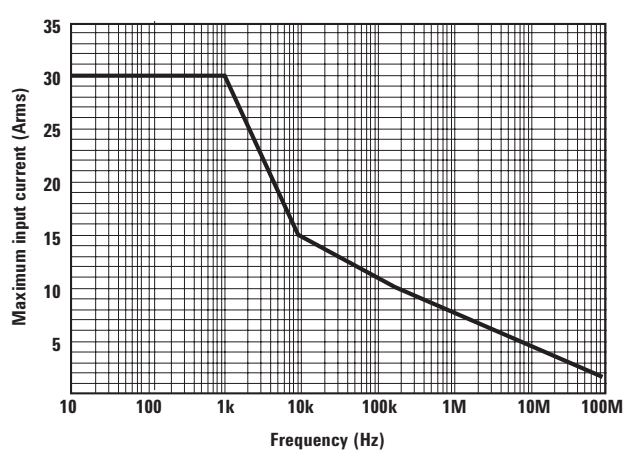


Figure 4. Continuous maximum input rating of N2783B

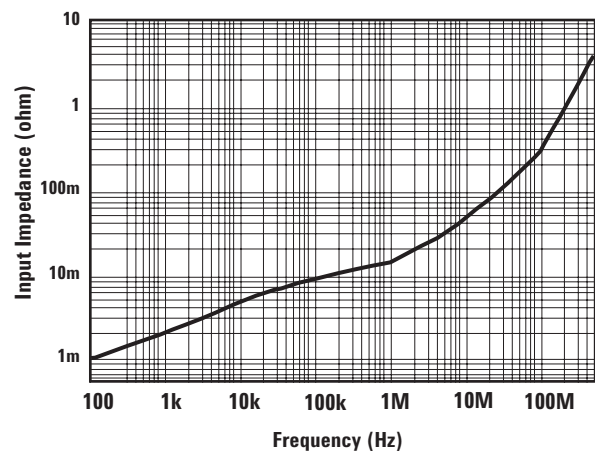


Figure 5. Insertion impedance of N2783B

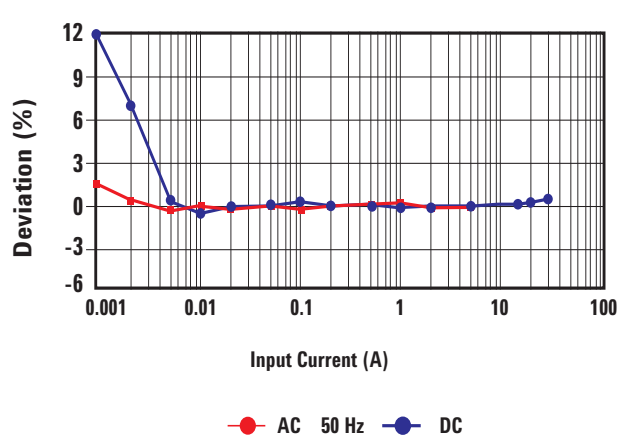


Figure 6. Amplitude accuracy characteristics of N2783B

Note: For the characteristic plots of other current probe models, refer to the N2780B Series current probe user's manual.



N2779A 3-channel power supply specifications

Applicable current probes:	N2780B, N2781B, N2782B, N2783B and N2774A
Number of power supply connectors:	3
Connector type:	LEMO inc./FFA..0S.304.CNAC42Z
Output voltage:	DC (12 V, 2.5 A)
Maximum rated power:	170 VA
Input power requirement:	AC 100-240 VAC, 50/60 Hz, 125-170 VAC



Model number	N2780B	N2781B	N2782B	N2783B
Bandwidth (-3dB)	DC to 2 MHz	DC to 10 MHz	DC to 50 MHz	DC to 100 MHz
Risetime	175 ns or less	35 ns or less	7 ns or less	3.5 ns or less
Maximum current (continuous) RMS	500 A	150 A	30 A	30 A
Maximum peak current (non-continuous)	700 A peak	300 A peak;	50 A peak	50 A peak
Lowest measurable current (at $\pm 3\%$ accuracy at DC, scope set to 1 mV/div and high-resolution mode on)	20 mA	20 mA	5 mA	5 mA
Output voltage rate	0.01 V/A (100:1)	0.01 V/A (100:1)	0.1 V/A (10:1)	0.1 V/A (10:1)
Max input voltage**	600 V CAT II, 300 V CAT III	600 V CAT II, 300 V CAT III	300 V CAT I	300 V CAT I
Amplitude accuracy* (DC and 45 to 66 Hz, rated current)	$\pm 1.0\%$ rdg. ± 500 mA	$\pm 1.0\%$ rdg. ± 100 mA	$\pm 1.0\%$ rdg. ± 10 mA	$\pm 1.0\%$ rdg. ± 10 mA
Noise (measured with 20 MHz bandwidth limit filter on the scope)	Equivalent to 25 mArms or less	Equivalent to 25 mArms or less	Equivalent to 2.5 mArms or less	Equivalent to 2.5 mArms or less
Temperature coefficient for sensitivity (within a range of 0°C to 40 °C or 32 °F to 104 °F)	$\pm 2\%$ or less	$\pm 2\%$ or less	$\pm 2\%$ or less	$\pm 2\%$ or less
Effect of external magnetic fields (in a DC to 60 Hz, 400 A/m magnetic field)	Equivalent to a maximum of 800 mA	Equivalent to a maximum of 150 mA	Equivalent to a maximum of 20 mA	Equivalent to a maximum of 5 mA
Maximum rated power	7.2 VA (with rated current)	5.5 VA (with rated current)	5.6 VA (with rated cur- rent)	5.3 VA (with rated cur- rent)
Rated supply voltage	DC ± 12 V ± 0.5 V	DC ± 12 V ± 1 V	DC ± 12 V ± 0.5 V	DC ± 12 V ± 0.5 V
Diameter of measurable conductors	20 mm dia. (0.79" dia.)	20 mm dia. (0.79" dia.)	5 mm dia. (0.2" dia.)	5 mm dia. (0.2" dia.)
Diameter of measurable conductors	Sensor cable: Approx. 2 m (78.7") Power supply cable: Approx. 1 m (39.4")	Sensor cable: Approx. 2 m (78.7") Power supply cable: Approx. 1 m (39.4")	Sensor cable: Approx. 1.5 m (78.7") Power supply cable: Approx. 1 m (39.4")	Sensor cable: Approx. 1.5 m (78.7") Power supply cable: Approx. 1 m (39.4")

Note*: The amplitude accuracy specifications are guaranteed at 23°C $\pm$ 3°C (or 73°F $\pm$ 5°F)

***: Insulated conductor should be used.

Compatible Oscilloscopes

Any oscilloscope offering 1 M Ω BNC input including Keysight Technologies, Inc. 1000, 3000 InfiniiVision 2000X, 3000X, 5000, 6000 and 7000 Series, and Infiniium 8000 and 9000 Series. You must select the input impedance of the oscilloscope to be 1 M Ω in order to make accurate measurements. If the oscilloscope you are using has a 50 Ω input impedance setting only, you can purchase the Keysight E2697A 50 Ω to 1 M Ω adapter for use with the Infiniium 80000 or 90000 Series or the N5449A high impedance probe adapter for use with the Infiniium 90000 X-Series.

Ordering Information

N2780B
2 MHz/500A AC/DC current probe
N2781B
10 MHz/150A AC/DC current probe
N2782B
50 MHz/30A AC/DC current probe
N2783B
100 MHz/30A AC/DC current probe
N2779A
3-channel power supply for
N2780B Series current probes



myKeysight

myKeysight

www.keysight.com/find/mykeysight

A personalized view into the information most relevant to you.



www.axiestandard.org

AdvancedTCA® Extensions for Instrumentation and Test (AXIe) is an open standard that extends the AdvancedTCA for general purpose and semiconductor test. Keysight is a founding member of the AXIe consortium.



www.lxistandard.org

LAN eXtensions for Instruments puts the power of Ethernet and the Web inside your test systems. Keysight is a founding member of the LXI consortium.



www.pxisa.org

PCI eXtensions for Instrumentation (PXI) modular instrumentation delivers a rugged, PC-based high-performance measurement and automation system.



Three-Year Warranty

www.keysight.com/find/ThreeYearWarranty

Keysight's commitment to superior product quality and lower total cost of ownership. The only test and measurement company with three-year warranty standard on all instruments, worldwide.



Keysight Assurance Plans

www.keysight.com/find/AssurancePlans

Up to five years of protection and no budgetary surprises to ensure your instruments are operating to specification so you can rely on accurate measurements.



www.keysight.com/quality

Keysight Electronic Measurement Group
DEKRA Certified ISO 9001:2008
Quality Management System

Keysight Channel Partners

www.keysight.com/find/channelpartners

Get the best of both worlds: Keysight's measurement expertise and product breadth, combined with channel partner convenience.

www.keysight.com/find/probes

For more information on Keysight

Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at:

www.keysight.com/find/contactus

Americas

Canada	(877) 894 4414
Brazil	55 11 3351 7010
Mexico	001 800 254 2440
United States	(800) 829 4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Other AP Countries	(65) 6375 8100

Europe & Middle East

Austria	0800 001122
Belgium	0800 58580
Finland	0800 523252
France	0805 980333
Germany	0800 6270999
Ireland	1800 832700
Israel	1 809 343051
Italy	800 599100
Luxembourg	+32 800 58580
Netherlands	0800 0233200
Russia	8800 5009286
Spain	0800 000154
Sweden	0200 882255
Switzerland	0800 805353
	Opt. 1 (DE)
	Opt. 2 (FR)
	Opt. 3 (IT)
United Kingdom	0800 0260637

For other unlisted countries:

www.keysight.com/find/contactus

(BP-05-19-14)