



**Agilent N2780A/B,
N2781A/B, N2782A/B,
and N2783A/B
Current Probes**

User's and Service Guide



Agilent Technologies

Notices

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Safety Notices

CAUTION

A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

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1 User's Guide



Inspecting the probe

- Inspect the shipping container for damage.

Keep a damaged shipping container or cushioning material until the contents of the shipment have been checked for completeness and the instrument has been checked mechanically and electrically.

- Check the accessories.

Accessories supplied with the probe are listed in “Accessories Supplied” in Table 1.

- If the contents are incomplete or damaged notify your Agilent Technologies Sales Office.
- Inspect the probe.
 - If there is mechanical damage or defect, or if the probe does not operate properly or pass performance tests, notify your Agilent Technologies Sales Office.
 - If the shipping container is damaged, or the cushioning materials show signs of stress, notify the carrier as well as your Agilent Technologies Sales Office. Keep the shipping materials for the carrier’s inspection. The Agilent Technologies Office will arrange for repair or replacement at Agilent Technologies’ option without waiting for claim settlement.

Accessories Supplied

The following is a list of supplied accessories.

Table 1





User's and Service Guide	1
Carrying Case	1

Notes on Safety

This device is designed to comply with IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the device. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from device defects.

Symbols

The following table shows the different symbols that can appear on the probe and in the manual and their meaning.

	Instruction manual symbol: the product is marked with this symbol when it is necessary for you to refer to the instruction manual in order to protect against damage to the product.
	Earth terminal symbol: Used to indicate a circuit common connected to grounded chassis.
	Hazardous voltage symbol.
	Do not apply around or remove from HAZARDOUS LIVE conductors.

Notes on Use

WARNING

To avoid short circuits and potentially life-threatening hazards, follow these precautions.

- Never attach the clamp to a circuit that operates at more than the maximum rated voltage to earth.
 - For safety's sake, avoid clamping around bare conductors, while clamping or measuring.
 - While clamping and measuring, do not touch the clamp in front of the barrier or the conductor being measured.
 - Be careful to avoid damaging the insulation surface while taking measurements.
 - Make sure that the waveform measuring equipment connected to this device's output terminal (BNC) is equipped with a protective earthing with double-insulation construction.
 - Do not allow the device to get wet, and do not take measurements with wet hands. This may cause an electric shock.
-

WARNING

- If the waveform measuring instrument being connected to the output terminal (BNC) on this device is equipped with any other measurement terminals, take the following precautions to ensure that the other instrument does not form a bridge between the probe and any hazardous live part of a part.
 - 1 Isolate the terminal to which the probe is connected from other terminals on the measuring instrument using basic insulation conforming to the measurement category, working voltage, and pollution degree requirements of the circuit being tested.
 - 2 If basic insulation requirements cannot be met between the terminal to which this device is connected and other terminals of the measuring instrument, make sure that the voltage input to the measurement terminal does not exceed the Separated Extra-Low Voltage Earthed (SELV-E).
 - 3 Read and observe all warnings and precautions relating to electrical safety for the measuring instrument being connected to the probe.

Refer to the following standards regarding the meanings of underlined terms.

IEC 61010-1

IEC 61010-031

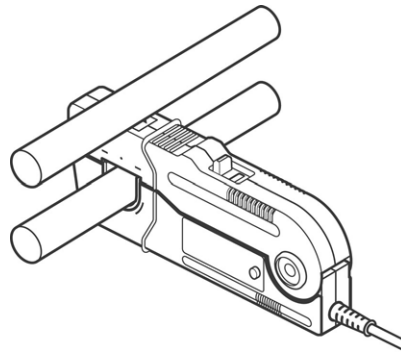
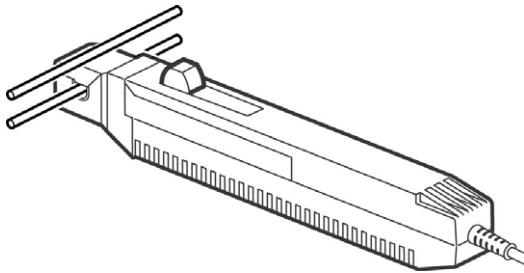
IEC 61010-2-032

CAUTION

- To avoid damage to the device, protect it from vibration or shock during transport and handling, and be especially careful to avoid dropping.
 - Do not store or use the device where it could be exposed to direct sunlight, high temperature, humidity, or condensation. Under such conditions, the device may be damaged and insulation may deteriorate so that it no longer meets specifications.
 - Before using the device the first time, verify that it operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, contact your dealer or Agilent representative.
 - This device is not designed to be entirely water- or dust- proof. To avoid damage, do not use it in a wet or dusty environment.
 - The sensor head is a precision assembly including a molded component, a ferrite core, and a Hall effect element. It may be damaged if subjected to sudden changes in ambient temperature, or mechanical strain or shock, and therefore great care should be exercised in handling it.
 - The matching surfaces of the sensor head are precision ground, and should be treated with care. If these surfaces are scratched, performance may be impaired.
 - Foreign substances such as dust on the contact surfaces of the sensor head can cause acoustic resonance and degrade measurement, so it should be cleaned by gently wiping with a soft cloth.
 - To avoid damaging the sensor cable and power supply cable, do not bend or pull the cables.
 - When the power is on, keep closed, except when clamping them onto the conductor to be measured. The facing surface of the core section can be scratched while it is open.
-

CAUTION

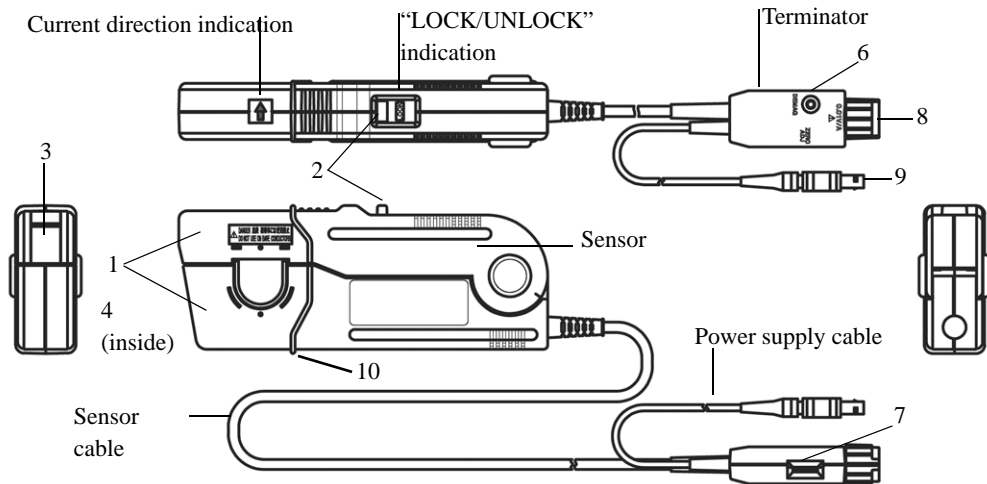
- Do not place any unclamped conductor with an electric current of a frequency of 10 kHz or more near the sensor head. Current flowing in the conductor nearby may heat up the sensor head and cause its temperature to rise, leading to damage to the sensor. For example, when one side of a go-and-return conductor is clamped and the other side is also placed near the sensor head (as shown in the drawings below), even if the electric current is lower than the consecutive maximum current, electric currents in both sides will heat up the wires and raise the temperature, thereby causing damage to the sensor.
-



Cleaning the Probe

If the probe requires cleaning, disconnect it from the oscilloscope and clean it with a soft cloth dampened with a mild soap and water solution. Make sure the probe is completely dry before reconnecting it to the oscilloscope.

Description of Probe Parts for the N2780A/B and N2781A/B



1 Clamp

This clamps around the conductor to be measured.

2 Slider

This slider opens the clamp. Always use it to open and close the clamp

3 Lever

This lock mechanism keeps the clamp closed.

4 Sensor head

This clamps the conductor being measured, and carries out the actual current measurement. It is a precision assembly including a molded component, a ferrite core, and a Hall effect element. It may be damaged if subjected to sudden changes in ambient temperature, or mechanical strain of shock, and therefore great care should be exercised in handling it.

5 Barrier

This structure reduces the likelihood of touching the conductor while testing, and indicates the limit of safe physical contact. Avoid touching the clamp in front of the barrier when clamping or measuring.

6 Demagnetizing switch (DEMAG)

This demagnetizes the core if it has been magnetized by switching the power on and off, or by an excessive input. Always carry out demagnetizing before a measurement.

The demagnetizing process takes about 3 seconds. During demagnetizing, a demagnetizing waveform is output.

7 Zero adjustment dial (ZERO ADJ)

Use the zero adjustment dial to correct for the effect of a voltage offset or temperature drift on the device.

When beginning a measurement, after demagnetizing, always carry out a zero adjustment.

8 Output connector

Connect to the BNC input connector of the oscilloscope. The output of the current probe is terminated internally. 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 does not have a 1 M Ω input impedance setting you can purchase the Agilent E2697A 50 Ω to 1 M Ω adapter.

Turn the collar until it clicks, and check that it is locked securely.

NOTE

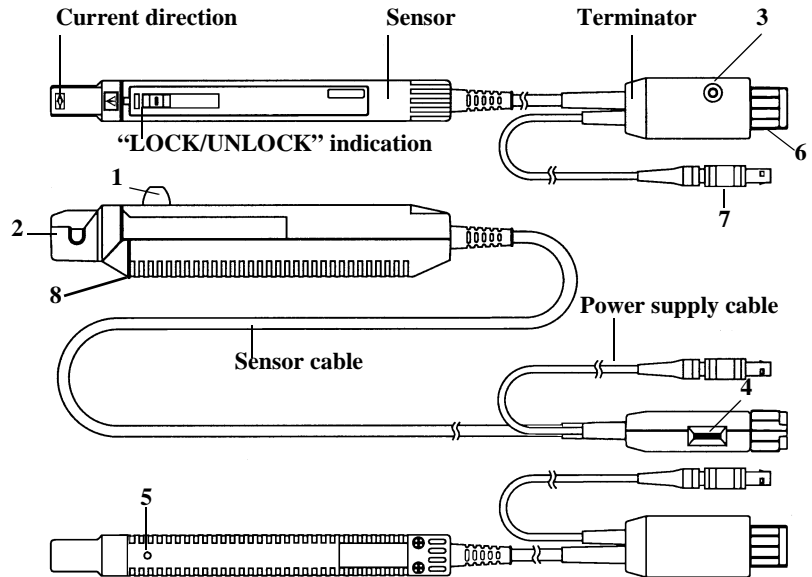
9 Power plug

Connect this to the Agilent N2779A Power Supply receptacle to supply power to the sensor terminator.

10 Barrier

This structure reduces the likelihood of touching the conductor while testing, and indicates the limit of safe physical contact. Avoid touching the clamp in front of the barrier when clamping or measuring.

Description of Probe Parts for the N2782A/B and N2783A/B



1 Opening lever

Operating lever for opening the sensor head. Always use this lever to open the sensor head.

2 Sensor head

This clamps the conductor being measured, and carries out the actual current measurement. It is a precision assembly including a molded component, a ferrite core, and a Hall effect element. It may be damaged if subjected to sudden changes in ambient temperature, or mechanical strain or shock. Care should be exercised when handling the sensor head.

3 Demagnetizing switch (DEMAG)

This demagnetizes the core if it has been magnetized by switching the power on and off, or by an excessive input. Always carry out demagnetizing before measurement. The demagnetizing process takes about one second. During demagnetizing, a demagnetizing waveform is output.

4 Zero adjustment dial (ZERO ADJ)

Use the zero adjustment dial to correct for the effect of a voltage offset or temperature drift on the unit. The probe should be always be zeroed after demagnetization.

5 Coarse adjustment trimmer

This adjustment should only be carried out if the probe offset is outside the range of the zero adjustment dial.

6 BNC output connector

Connect to the BNC input connector of the oscilloscope. The output of the current probe is terminated internally. 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 does not have a 1 M Ω input impedance setting you can purchase the Agilent E2697A 50 Ω to 1 M Ω adapter.

Turn the collar until it clicks, and check that it is locked securely.

NOTE

7 Power plug

Connect this to the N2779A power supply receptacle to supply power to the sensor terminator.

8 Barrier

This structure reduces the likelihood of touching the conductor while testing, and indicates the limit of safe physical contact. Avoid touching the clamp in front of the barrier when clamping or measuring.



Specifications and Characteristics

The following specifications are guaranteed.

Specifications (Warranted)

	N2780A/B	N2781A/B	N2782A/B	N2783A/B
Amplitude accuracy (DC or 45 to 66 Hz, up to maximum continuous current)	$\pm 1.0\%$ of reading ± 500 mA at $23\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$	$\pm 1.0\%$ of reading ± 100 mA at $23\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}$	$\pm 1.0\%$ of reading ± 10 mA at $23\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$	$\pm 1.0\%$ of reading ± 10 mA at $23\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$

Characteristics (Non-warranted)

	N2780A/B	N2781A/B	N2782A/B	N2783A/B
Bandwidth	DC to 2 MHz (-3 dB) (Typical characteristic shown in Figure 1)	DC to 10 MHz (-3 dB) (Typical characteristic shown in Figure 6)	DC to 50 MHz (-3 dB) (Typical characteristic shown in Figure 11)	DC to 100 MHz (-3 dB) (Typical characteristic shown in Figure 16)
Rise time	175 ns or less	35 ns or less	7 ns or less	3.5 ns or less
 Maximum current (continuous) rms	500 A rms (Derating according to frequency shown in Figure 2)	150 A rms (Derating according to frequency shown in Figure 7)	30 A rms (Derating according to frequency shown in Figure 12)	30 A rms (Derating according to frequency shown in Figure 17)
 Maximum peak current value (non-continuous)	700 A peak	300 A peak 500 A peak; at pulse width \leq 30 ms	50 A peak	50 A peak
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)
Noise (for 20 MHz band measuring instrument)	Equivalent to 25 mA rms or less	Equivalent to 25 mA rms or less	Equivalent to 2.5 mA rms or less	Equivalent to 2.5 mA rms or less
Input impedance	(Typical characteristics shown in Figure 3)	(Typical characteristics shown in Figure 8)	(Typical characteristics shown in Figure 13)	(Typical characteristics shown in Figure 18)
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 or 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 (with rated current)	7.2 VA	5.5 VA	5.6 VA	5.3 VA
Lowest Measurable Current* (at 3% accuracy of DC current with the oscilloscope set to 1 mV/div and high resolution mode on.)	20 mA	20 mA	5 mA	5 mA
<i>Rated supply voltage</i>	<i>DC $\pm 12\text{ V} \pm 0.5\text{ V}$</i>	<i>DC $\pm 12\text{ V} \pm 1\text{ V}$</i>	<i>DC $\pm 12\text{ V} \pm 0.5\text{ V}$</i>	<i>DC $\pm 12\text{ V} \pm 0.5\text{ V}$</i>

* Oscilloscope set to 1 mV/div and 20 MHz or 25 MHz bandwidth limited.

General Characteristics

	N2780A/B	N2781A/B	N2782A/B	N2783A/B
Diameter of measurable conductors	20 mm (0.79")	20 mm (0.79")	5 mm (0.2")	5 mm (0.2")
Cable lengths (Approximately)				
Sensor	2 m (78.7")	2 m (78.7")	1.5 m (59")	1.5 m (59")
Power supply	1 m (39.4")	1 m (39.4")	1 m (39.4")	1 m (39.4")
External dimensions	W H D	W H D	W H D	W H D
Sensor (Approximately)	176 69 27 mm	176 69 27 mm	175 18 40 mm	175 18 40 mm
Terminator	6.93" 2.72" 1.06" 27 55 18 mm 1.06" 2.17" 0.71"	6.93" 2.72" 1.06" 27 55 18 mm 1.06" 2.17" 0.71"	6.89" 0.71" 1.57" 27 55 18 mm 1.06" 2.17" 0.71"	6.89" 0.71" 1.57" 27 55 18 mm 1.06" 2.17" 0.71"
Weight (Approximately)	520 g (18.3 oz.)	500 g (17.6 oz.)	230 g (8.1 oz.)	240 g (8.5 oz.)

Environmental Specifications


Operating temperature and humidity range	0 °C to 40 °C (32 °F to 104 °F) 80 %rh or less (no condensation)
Storage temperature and humidity range	-10 °C to 50 °C (14 °F to 122 °F) 80 %rh or less (no condensation)
Bearable storage vibration	1. Vibration 10 to 55 Hz, 30 min per axis, 1 octave/min sweep rate, Amplitude 0.3 mm 2. Vibration 55 Hz, 30 min per axis, Amplitude 0.3 mm, Vibration acceleration 17.91 m/s ²
Altitude	Operating up to 2,000 m (6,562 ft)
Pollution degree	Pollution degree 2 For indoor use only
 Maximum rated voltage to earth	N2780A/B: 600 V, CAT II, 300 V CAT III (insulated conductor) N2781A/B: 600 V CAT II, 300 V CAT III (insulated conductor) N2782A/B: 300 V CAT I (insulated conductor) N2783A/B: 300 V CAT I (insulated conductor)
Typical Transient overvoltages	N2780A/B,N2781A/B: Anticipated transient overvoltage 4000 V N2782A/B,N2783A/B: Anticipated transient overvoltage 1500 V

Figure 1 Frequency Response Characteristic N2780A/B

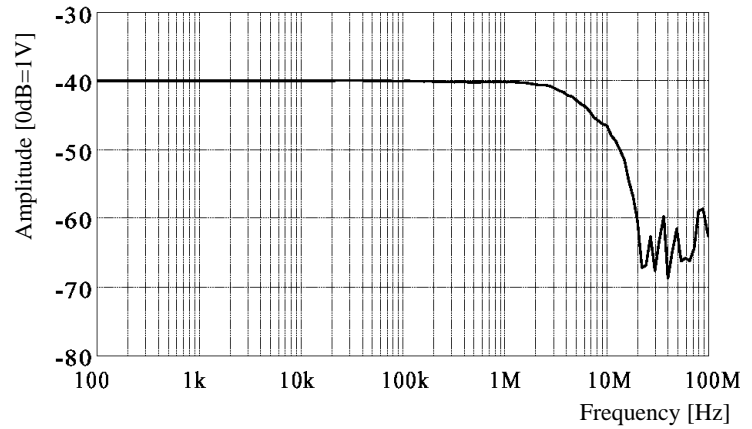


Figure 2 Derating according to frequency N2780A/B
Continuous Maximum Input

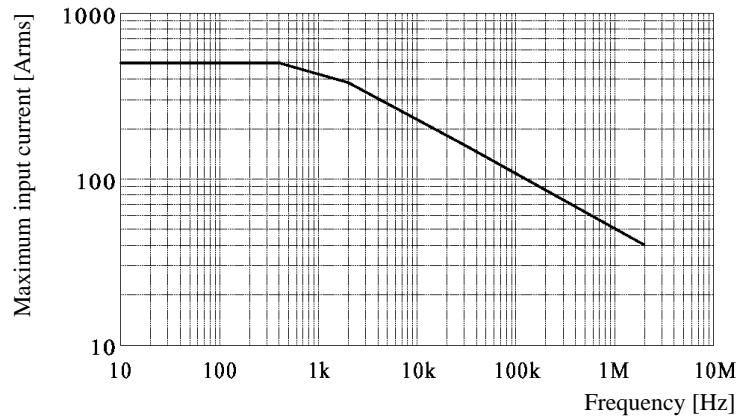


Figure 3 Insertion Impedance N2780A/B

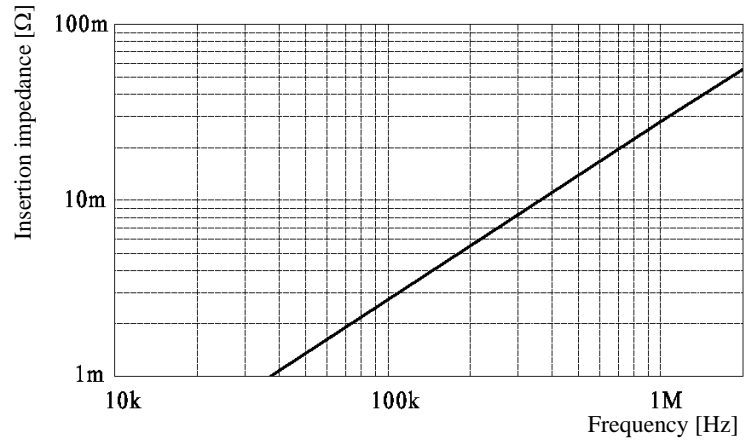


Figure 4 DC Accuracy Characteristic N2780A/B

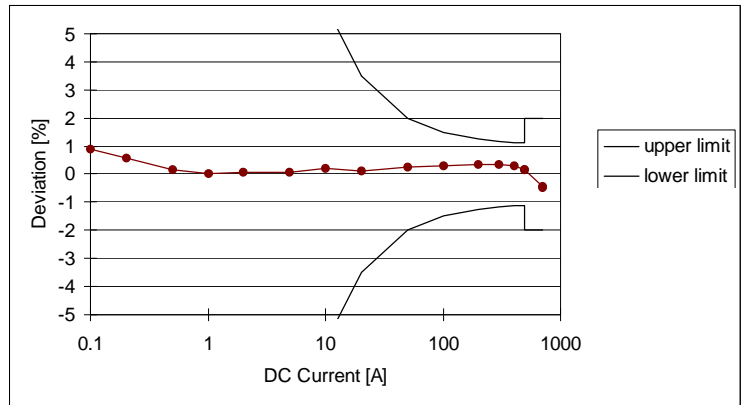


Figure 5 AC Amplitude Accuracy Characteristic N2780A/B

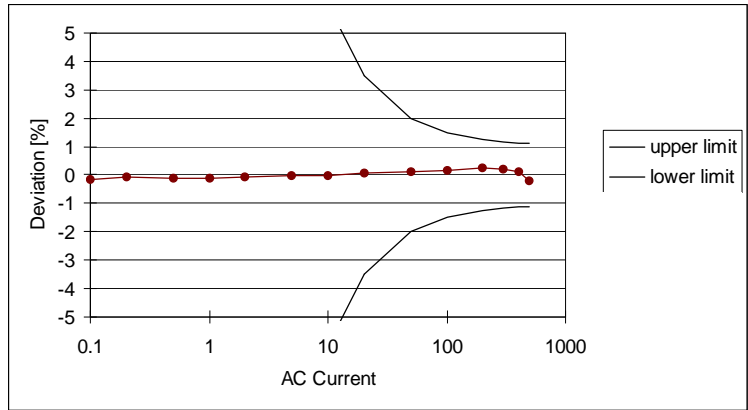


Figure 6 Frequency Response Characteristic N2781A/B

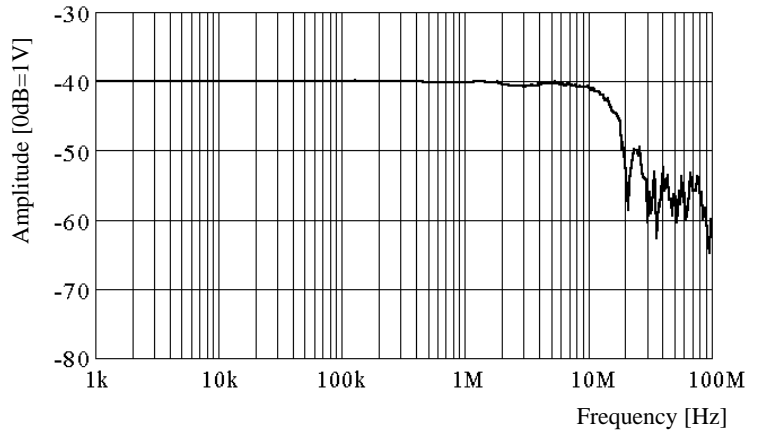


Figure 7 Derating according to frequency N2781A/B

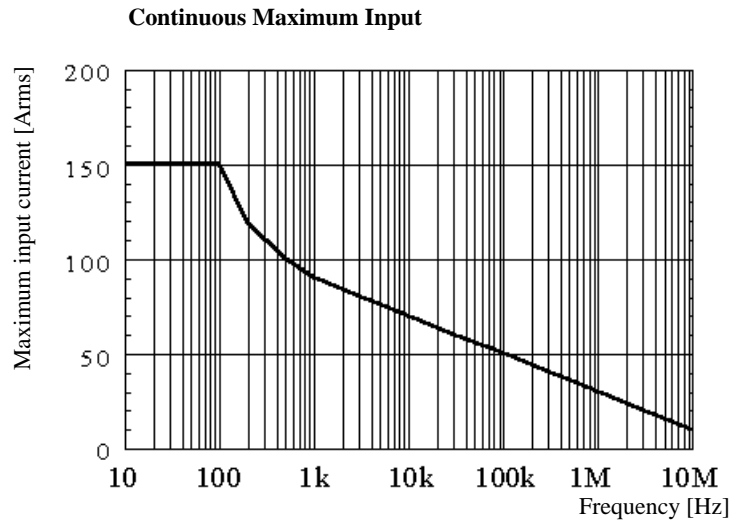


Figure 8 Insertion Impedance N2781A/B

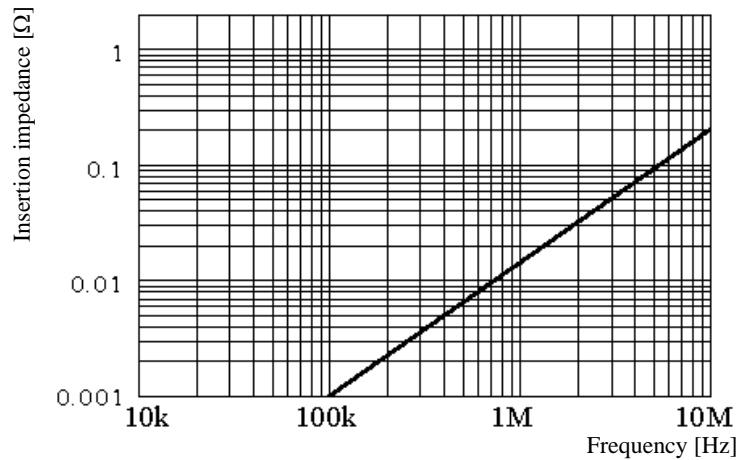


Figure 9 DC Accuracy Characteristic N2781A/B

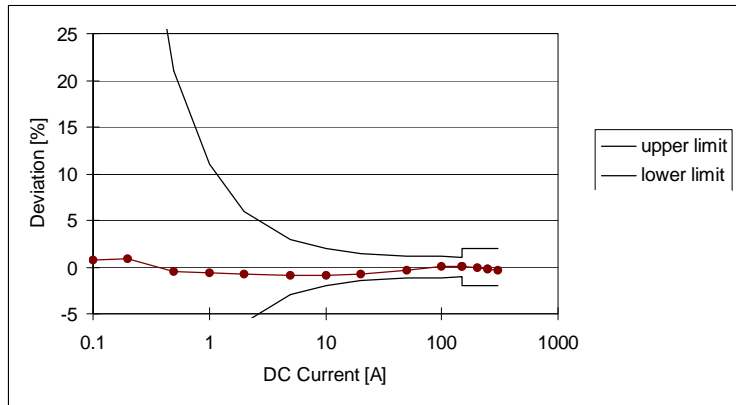


Figure 10 AC Amplitude Accuracy Characteristic N2781A/B

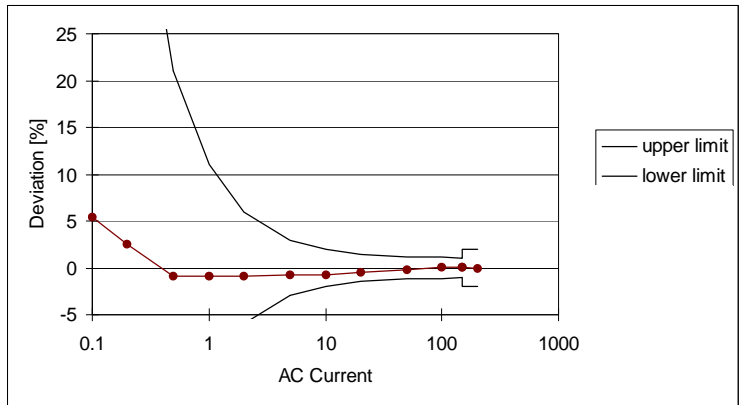


Figure 11 Frequency Response Characteristic N2782A/B

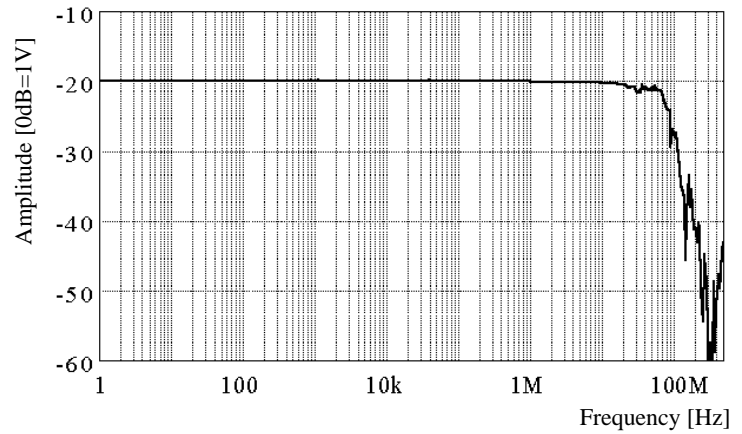


Figure 12 Derating according to frequency N2782A/B

Continuous Maximum Input

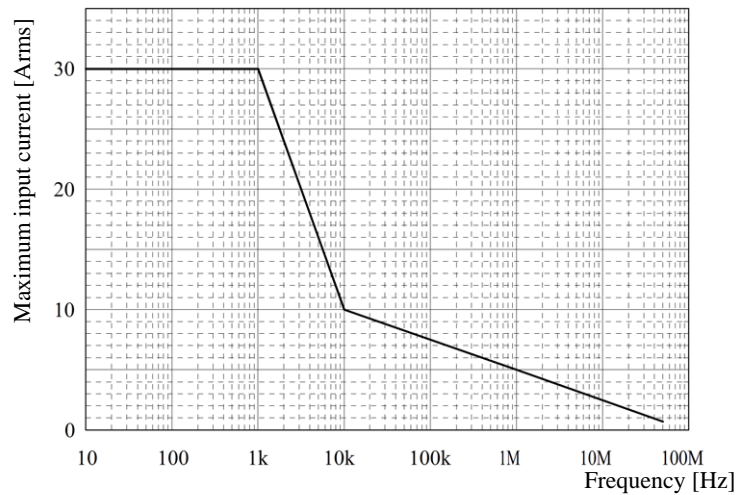


Figure 13 Insertion Impedance N2782A/B

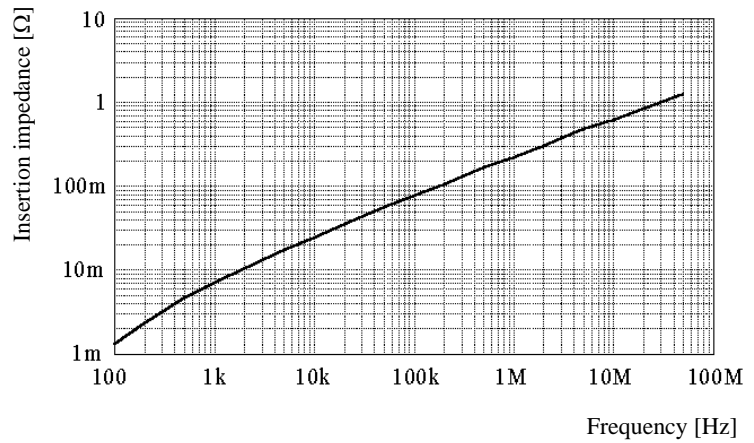


Figure 14 DC Accuracy Characteristic N2782A/B

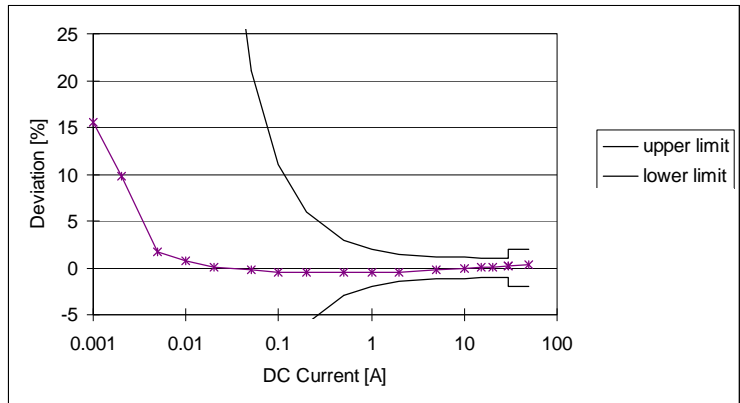


Figure 15 AC Amplitude Accuracy Characteristic N2782A/B

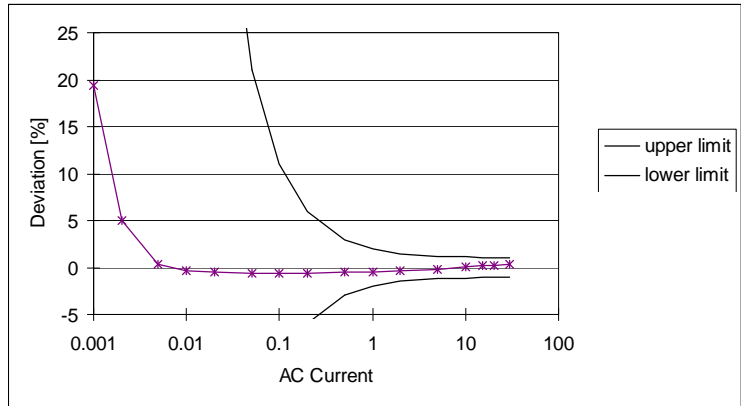


Figure 16 Frequency Response Characteristic N2783A/B

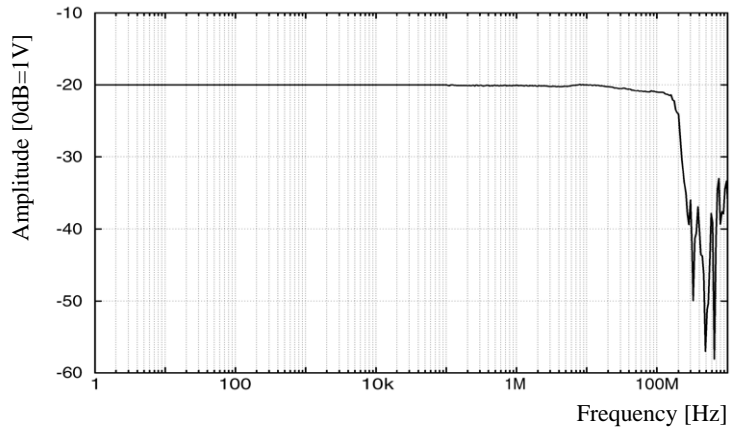


Figure 17 Derating according to frequency N2783A/B

Continuous Maximum Input

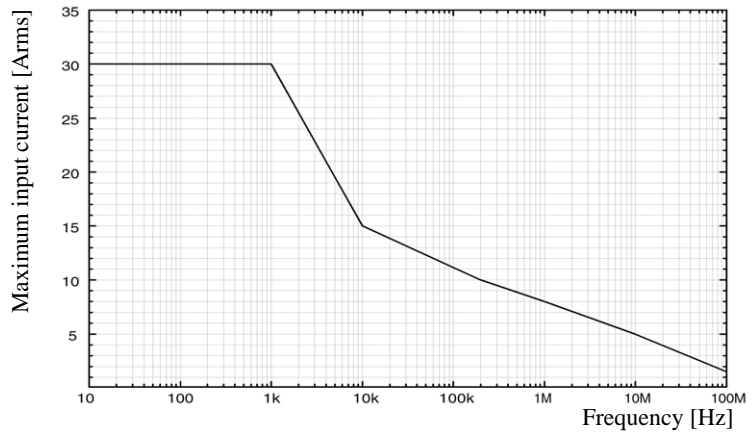


Figure 18 Insertion Impedance N2783A/B

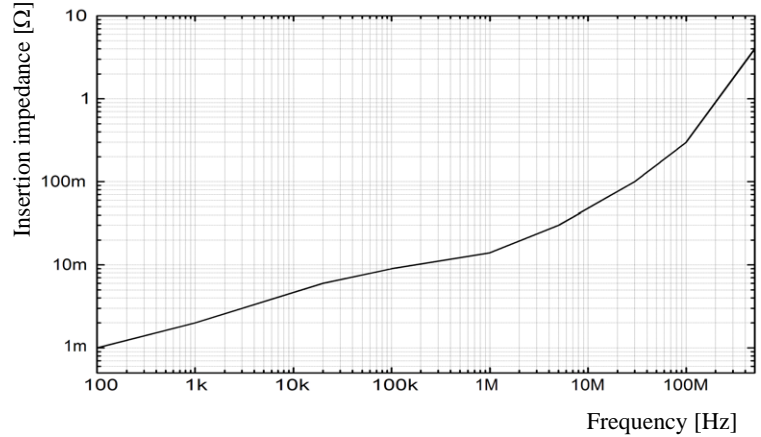


Figure 19 DC Accuracy Characteristic N2783A/B

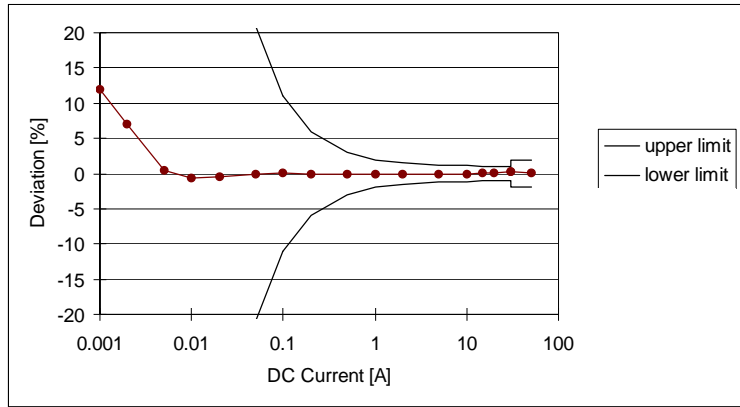
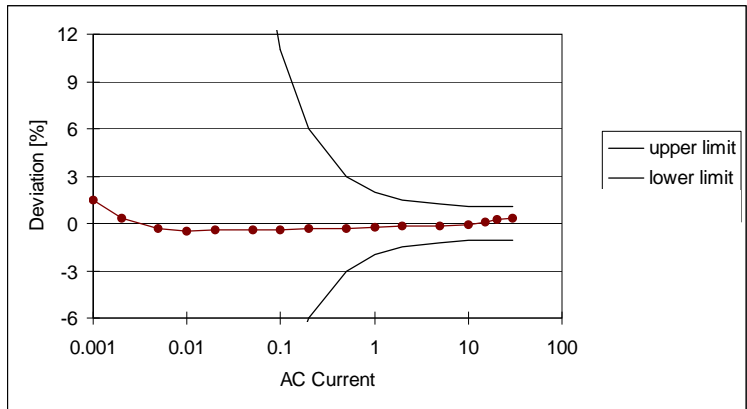


Figure 20 AC Amplitude Accuracy Characteristic N2783A/B



Measurement Procedure

Preparations for Measurement

CAUTION

1 Have the N2779A power supply and oscilloscope ready for waveform measurement ready.

Before turning on the power, make sure that the voltage of the power supply being used matches the supply voltage indicated on the rear panel of the N2779A.

2 Turn the power switch off and connect the power cord.

3 Connect the power plug of the current probe to the power receptacle of the N2779A.

4 Turn the N2779A power switch on, and check that the front panel power indicator lights.

Demagnetization and Zero Adjustment

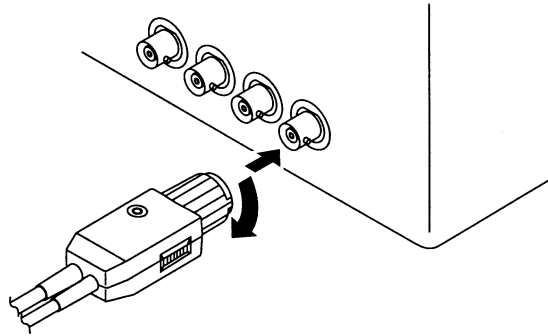
NOTE

The output of this unit is terminated internally. Use a high impedance input to the measuring instrument. Accurate measurements are not possible when the input impedance of the oscilloscope is set to 50 Ω . Be sure to set the input impedance to 1 M Ω before making measurements. If the oscilloscope input impedance cannot be set to 1 M Ω then the Agilent E2697A impedance adaptor can be purchased.

1 With the oscilloscope input at ground, adjust the trace to the zero position.

2 Set the input coupling of the oscilloscope to DC.

- 3 Connect the output connector of the current probe to the input connector of the oscilloscope. Turn the collar until it clicks, and check that it is locked securely.



CAUTION

- When disconnecting the output connector, be sure to release the lock, then pull the connector. Forcibly pulling the connector without releasing the lock, or pulling on the cable will result in damage to the terminator.
- Do not demagnetize while the conductor being measured is clamped. This could damage the components of the circuit being measured.
- Check that the conductor being measured is not clamped when supplying power to the current probe for the same reason. Demagnetized waveforms are generated when switching on the supply.

-
- 4 Without clamping the conductor to be measured, press the opening lever until the "UNLOCK" indication disappears, and check that the sensor head is properly closed.
 - 5 Press the demagnetizing switch (DEMAG) on the terminator.
 - 6 Turn the zero adjustment dial on the terminator to adjust the trace to the zero position.
 - 7 If zero adjustment is not possible in step 6, turn the coarse adjustment trimmer to bring the trace within the range of adjustment by the zero adjustment dial.

Making the Measurement

- 1 Check that the system is safe and that the preparations described in the preceding section have been carried out.
- 2 Pull the sensor opening lever with the sensor head opens.
- 3 Align the sensor so that the current direction indication corresponds to the direction of current flow through the conductor to be measured. Also, align the clamp so that the conductor is in the center of the sensor aperture.
- 4 Press the opening lever on the sensor head until the "UNLOCK" indication disappears. Also check that the opening lever is firmly locked and the sensor head securely closed.
- 5 Before making current measurements, the oscilloscope must be set up as follows.

The N2780A/B and N2781A/B oscilloscope setup.

Input Impedance	1 M Ω
Attenuation Ratio	100:1
Units	Amperes

The N2782A/B and N2783A/B oscilloscope setup.

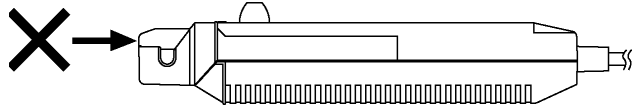
Input Impedance	1 M Ω
Attenuation Ratio	10:1
Units	Amperes

CAUTION

- The maximum continuous input range is based on heat that is internally generated during measurement. Never input current in excess of this level. Exceeding the rated level may result in damage to the probe.
 - The maximum continuous input range varies according to the frequency of the current being measured. See the figures in “Specifications and Standards Applying”
 - If excess current is input, generated heat activates a built-in safety function that blocks normal output. If this happens, remove the input immediately (remove the sensor from the conductor being measured or reduce the input current to zero). Wait until the sensor has had sufficient time to cool before resuming operation.
 - Even if the input current does not exceed the rated continuous maximum, continuous input for an extended period of time may result in activation of the safety circuit to prevent damage resulting from heating of the sensor.
 - At high ambient temperatures, the built-in safety circuit may activate at current input levels below the rated continuous maximum.
 - Continuous input of current exceeding the rated maximum or repeated activation of the safety function may result in damage to the unit.
 - The probe is rated for maximum input under two conditions in addition to the input maximums shown in the “[Specifications and Characteristics](#)” on page 18. These are (1) 30 A_{peak} for noncontinuous input and (2) 50 A_{peak} for pulse widths 10 μ s. (1) indicates an upper waveform response limit of 30 A_{peak}. Use the sensor at RMS current input levels that are within the rated continuous maximums. (2) indicates the upper response limit for a single input pulse.
-

CAUTION

- When opening the sensor head of the probe, be sure to operate with the opening lever. If an upper core is forced to open when the sensor head is locked, the open-close mechanism can be damaged.

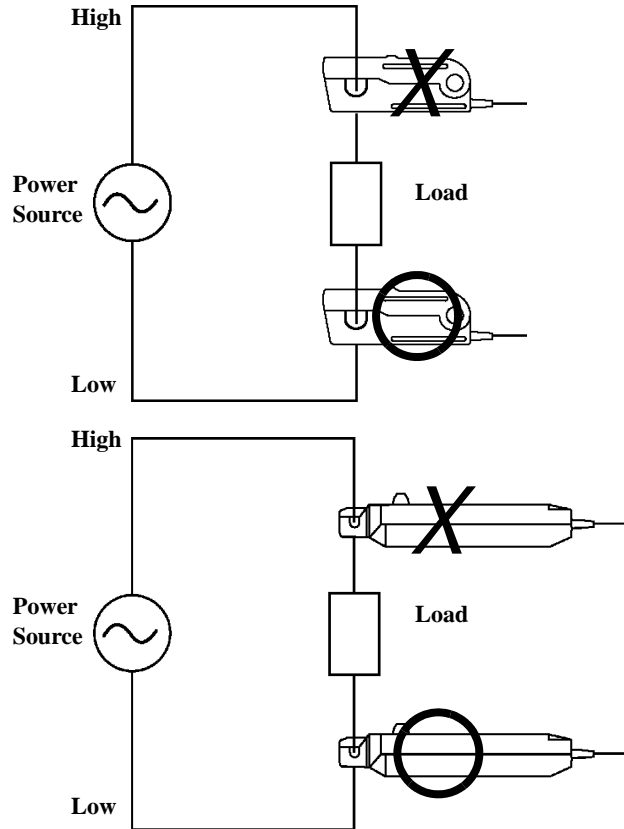


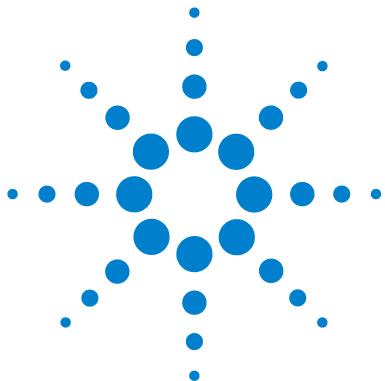
NOTE

- The output of this unit is terminated internally. Use an oscilloscope with an input impedance of at least 1 M Ω or use the Agilent E2697A impedance adapter.
 - Immediately after powering on the probe, the probe may be subject to an appreciable offset drift due to the effect of self-heating. To counteract this, allow the probe to warm up for about 30 minutes before carrying out measurement.
 - When performing continuous measurements, it is necessary to be aware that the offset voltage drifts, depending on factors such as the ambient temperature.
 - Under certain circumstances, oscillation may occur if the probe is connected to the N2779A power supply while the power supply is on. This does not indicate a malfunction. Oscillation can be stopped and operation restored to normal by opening and closing the sensor head.
 - Depending on the measured current frequency, some sound maybe produced by resonance, but has no effect on measurements.
 - The reading may be affected by the position within the clamp aperture of the conductor being measured. The conductor should be in the center of the clamp aperture.
 - When carrying out a measurement, press the opening lever until the “UNLOCK” indication disappears and check that the sensor head is properly closed. If the sensor head is not properly closed, an accurate measurement is not possible.
 - Accurate measurement may be impossible in locations subject to strong external magnetic fields, such as transformers and high-current conductors, or in locations subject to strong external electric fields, such as radio transmission equipment. .
-

NOTE

- At high frequencies, common mode noise may affect measurements taken on the high voltage side of circuits. If this occurs, reduce the frequency range of the waveform measuring instrument or clamp onto the low-voltage side of the circuit, as appropriate.





2 **Service Guide**

Service Strategy

To return the probe to optimum performance requires factory repair. If the probe is under warranty, normal warranty services apply.

To return the current probe to Agilent Technologies for Service

In the U.S., call (800) 829-4444 for further details and the location of your nearest Agilent Technologies service center. Outside the U.S., call your nearest Agilent sales office and ask them how to contact the nearest Agilent service center.

- 1 Write the following information on a tag and attach it to the current probe.
 - Name and address of the owner
 - Current probe model number
 - Description of service required or failure indications
- 2 Retain all accessories.
- 3 Return the current probe in its original shipping materials or pack the power supply in foam or other shock-absorbing material and place it in a strong shipping container. If the original shipping materials are not available, place 3 to 4 inches of shock-absorbing material around the instrument and place it in a box that does not allow movement during shipping.
- 4 Seal the shipping container securely.
- 5 Mark the shipping container as FRAGILE. In all correspondence, refer to the current probe by model number and full serial number.

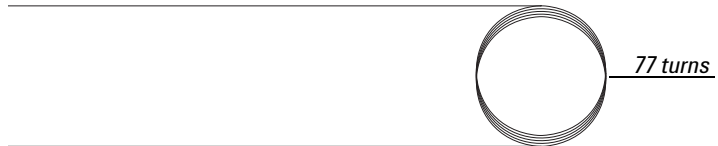
Performance Verification Testing

Required Test Equipment

Description	Critical Specifications	Recommended
Probe Power Supply	No substitute	Agilent N2779A
Digital Multimeter (DMM)	AC/DC voltage and current measurement accuracy better than $\pm 0.1\%$ of reading at 10 mA	Agilent 34401A
Signal Generator	Input resistance in AC/DC voltage mode $\geq 1 \text{ M}\Omega$	Agilent 6813B
Adapter	DC to 66 Hz sine waves able to generate more than 10 A in the test coil (e.g. an inductive load).	Pomona 1269
Test Coil	BNC (f) to dual stacking banana plug 5, 50, or 77 turns (See coil construction instructions that follow.)	16-AWG 155C CU round magnetic wire (NEMA MW 35-C); Red enamel (transformer wire)

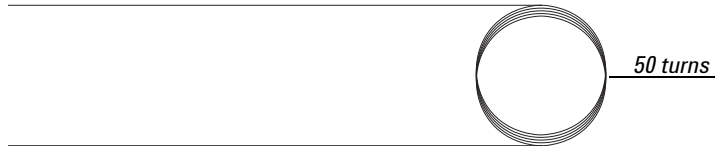
Test Coil Construction for the N2780A/B

Construct a 77-turn coil with a diameter of about 4 inches (10 cm) using transformer wire.



Test Coil Construction for the N2781A/B

Construct a 50-turn coil with a diameter of about 4 inches (10 cm) using transformer wire.



Test Coil Construction for the N2782A/B and N2783A/B

Construct a 5-turn coil with a diameter of about 4 inches (10 cm) using transformer wire.

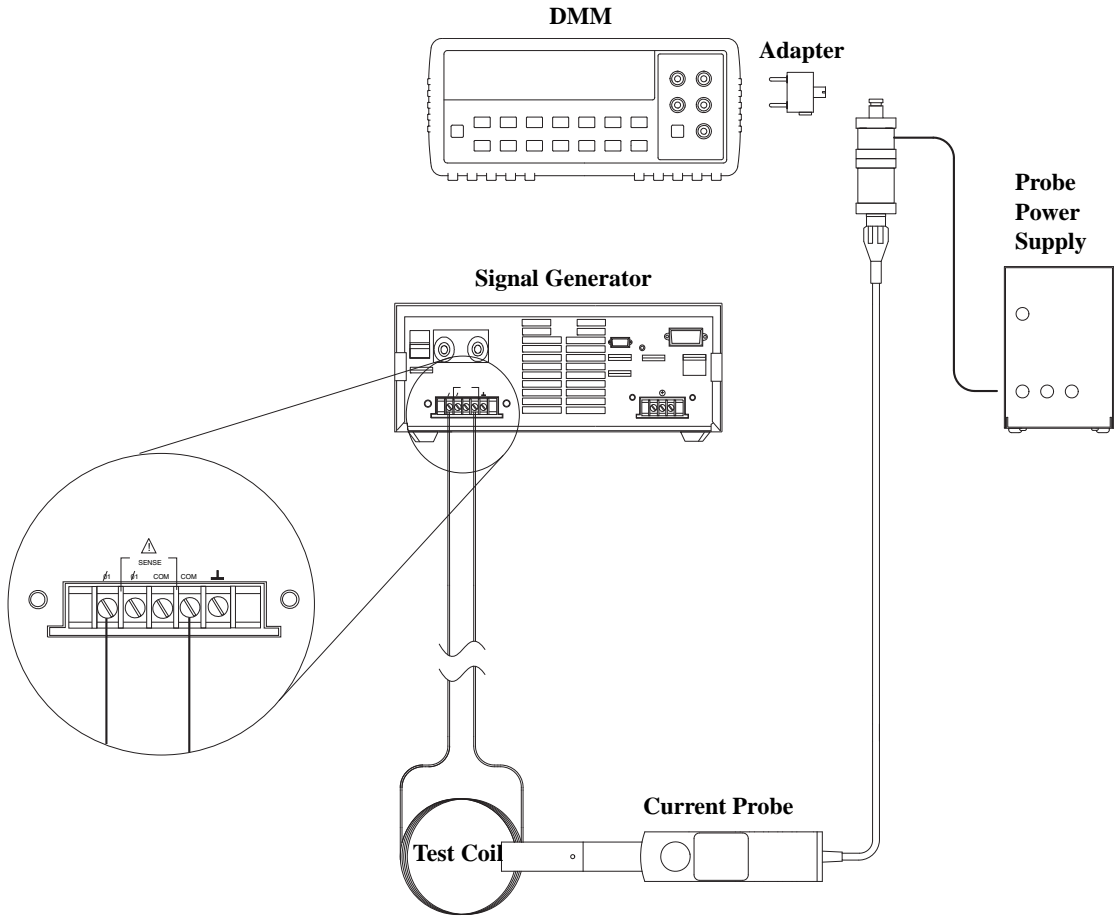


Amplitude Accuracy Test

The following procedure measures the accuracy of the current probe.

- 1** Connect the equipment as shown below. Allow all instruments 30 minutes for warm up before starting the

test procedure. While the test system is warming up, clean the magnetic contacts on the probe jaw.



- 2 Press the **DEMAG** button on the probe terminator.
- 3 Configure the DMM to measure AC Volts.
- 4 Clamp the probe around the coil and ensure that the probe is as perpendicular as possible to the coils of wire.
- 5 Set up the signal generator as follows:
 - Wave shape: Sine
 - Frequency: 50 Hz

- Amplitude:

<i>N2780A/B</i>	<i>N2781A/B</i>	<i>N2782A/B</i>	<i>N2783A/B</i>
<i>6.5 A rms</i>	<i>3 A rms</i>	<i>6 A rms</i>	<i>6 A rms</i>

- Offset: 0.0 Vdc

6 Measure the voltage output of the probe on the DMM and record this value in [Table 2](#).

7 Do the current calculation by multiplying the DMM Voltage by the value in the Multiplier column of [Table 2](#) and record the answer in the Calculated Amperes column for the probe you are measuring.

8 Compare this value to the Passing Range values to determine if the probe passes the test.

Table 2

Model Number	DMM Voltage	Multiplier	Calculated Amperes	Passing Range
N2780A/B		100		505.5 A to 494.5 A
N2781A/B		100		151.6 A to 148.4 A
N2782A/B		10		30.31 A to 29.69 A
N2783A/B		10		30.31 A to 29.69 A

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