

Model E3N (insulated AC current probe/DC)

Current	10 A peak	100 A peak
Output	100 mV/A	10 mV/A

DESCRIPTION

The E3N clamp is designed to measure AC and DC currents by using Hall-effect technology. Its narrow, elongated shape makes it ideal for measurements in cable bundles or in confined spaces such as the wiring on switchboards, motor control units and electrical circuits on motor vehicles. It is particularly appreciated for its True RMS measurements on AC+DC signals. It offers 2 different sensitivities.

ELECTRICAL SPECIFICATIONS

- **Current range:**
0.1 A .. 10 A peak
0.5 A .. 100 A peak
- **Output signal:**
100 mV AC+DC / A AC+DC (1 V for 10 A)
10 mV AC+DC / A AC+DC (1 V for 100 A)
- **Accuracy and phase shift ⁽¹⁾:**

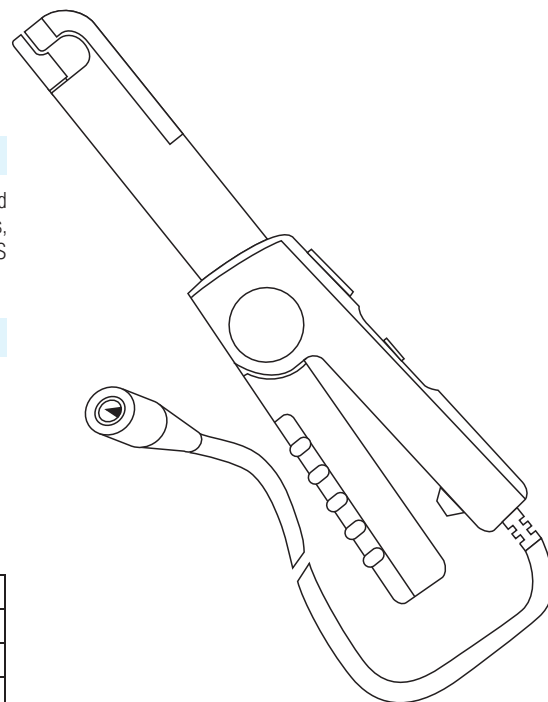
Calibre	10 A		100 A	
	Current range	% Accuracy of output signal	Phase shift	
Current range	100 mA .. 10 A peak	500 mA .. 40 A peak	40 A .. 100 A peak	
% Accuracy of output signal	≤ 3% + 5 mV	≤ 4% + 500 μV	≤ 15%	
Phase shift	≤ 1.5°	≤ 1°	≤ 1°	

- **Bandwidth:**
DC .. 100 kHz (-3 dB) (depending on current value)
- **Rise/fall time from 10% to 90%:**
10 A calibre: 3 μs
100 A calibre: 4 μs
- **10% delay time:**
10 A calibre: 2,7 μs
100 A calibre: 1,8 μs
- **Insertion impedance (at 10 kHz / 50 kHz):**
< 1.3 mΩ / < 10 mΩ
- **DC zero adjustment:**
20 turns of potentiometer
- **Typical output noise level (peak-peak) from DC to 100 kHz:**
10 A calibre: 6 mV
100 A calibre: 600 μV
- **Battery:**
9 V alkaline (NEDA 1604A, IEC 6LR61)
- **Battery life:**
55 hours typical
- **Typical consumption:**
8.6 mA typical / 12 mA max.
- **Battery level indicator:**
Green LED when > 6.5 V
- **Overload indication:**
Red LED indicates the measured current is too high for the selected range
- **Influence of temperature:**
≤ 2,000 ppm /°C
- **Influence of conductor position in jaws:**
≤ 0.5% of output signal at 1 kHz

- **Common mode voltage (600 V max) for AC measurements (typical/max):**
10 A calibre:
At 50 Hz: 3.48 mA/100 V / 5 mA/100 V
At 400 Hz: 25.91 mA/100 V / 50 mA/100 V
100 A calibre: no measurement

MECHANICAL SPECIFICATIONS

- **Clamping capacity:**
Cable: Ø max 11.8 mm
- **Output:**
Via 2 m coaxial cable terminated by BNC insulated plug
- **Dimensions:**
231 x 67 x 36 mm
- **Weight:**
330 g with battery
- **Operating temperature:**
0° à +50°C
- **Storage temperature:**
-30°C to +80°C
- **Relative humidity for operation:**
0 to 85% RH with a linear decrease above 35°C
- **Operating altitude:**
0 to 2,000 m
- **Casing protection rating:**
IP20 (IEC 529)
- **Drop test:**
1 m (IEC 68-2-32)



- **Shock resistance:**
100 g / 6 ms / half-period (IEC 68-2-27)
- **Vibration resistance:**
10/55/10 Hz, 0.15 mm (IEC 68-2-6)
- **Self-extinguishing capability:**
UL94 V2
- **Colour:**
Dark grey

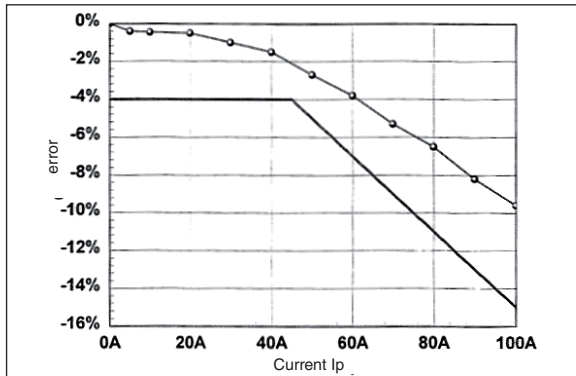
SAFETY SPECIFICATIONS

- **Electrical safety:**
Instrument with double insulation or reinforced insulation between the primary the secondary and the grippable part located under the guard as per IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution degree 2
- 300 V category IV, pollution degree 2
- **Electromagnetic compatibility (EMC):**
EN 50081-1: class B
EN 50082-2:
- Electrostatic discharge IEC 1000-4-2:
4 kV level 2 performance criterion B
8 kV in the air level 3 performance criterion B
- Radiated field IEC 1000-4-3:
10 V/m performance criterion A
- Fast transients IEC 1000-4-4:
1 kV level 2 performance criterion B
2 kV level 3 performance criterion B
- Magnetic field at the network frequency (IEC 1000-4-8):
field of 400 A/m at 50 Hz: < 1 A

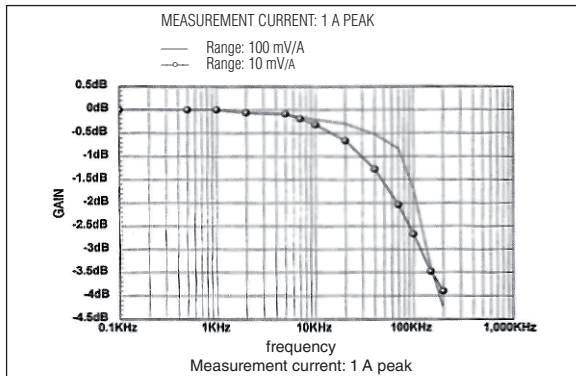
CURVES

100 A calibre

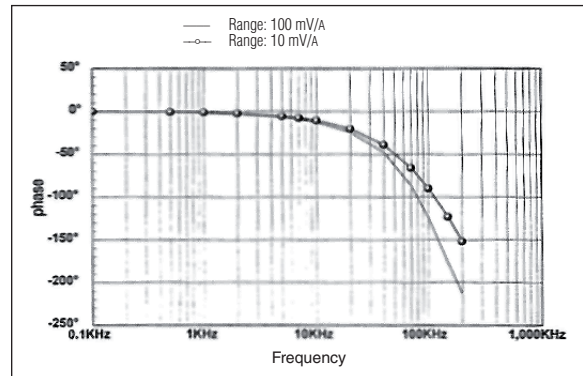
Linearity with DC



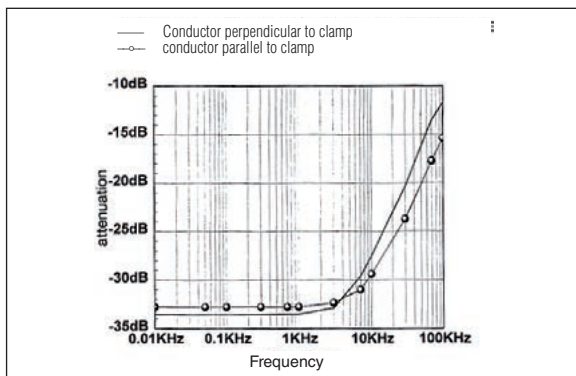
Frequency response



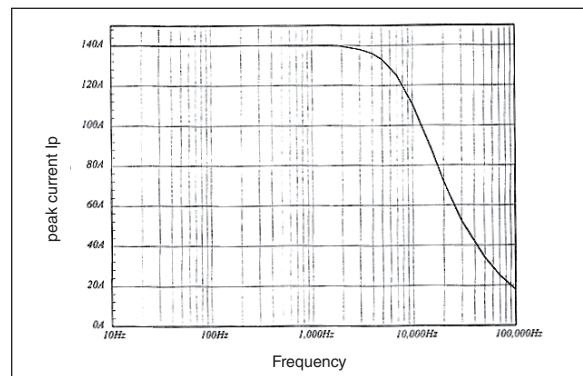
Phase shift



Immunity regarding an external conductor



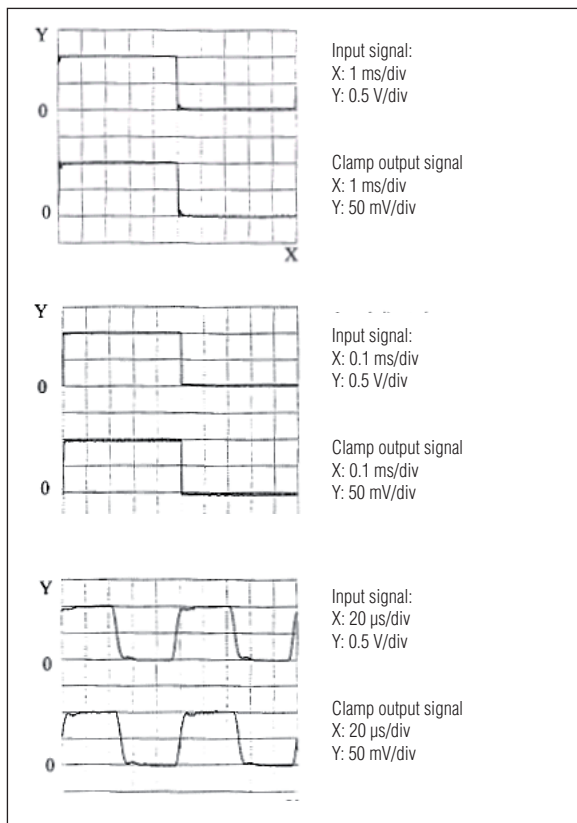
Limitation of measurable current according to the frequency



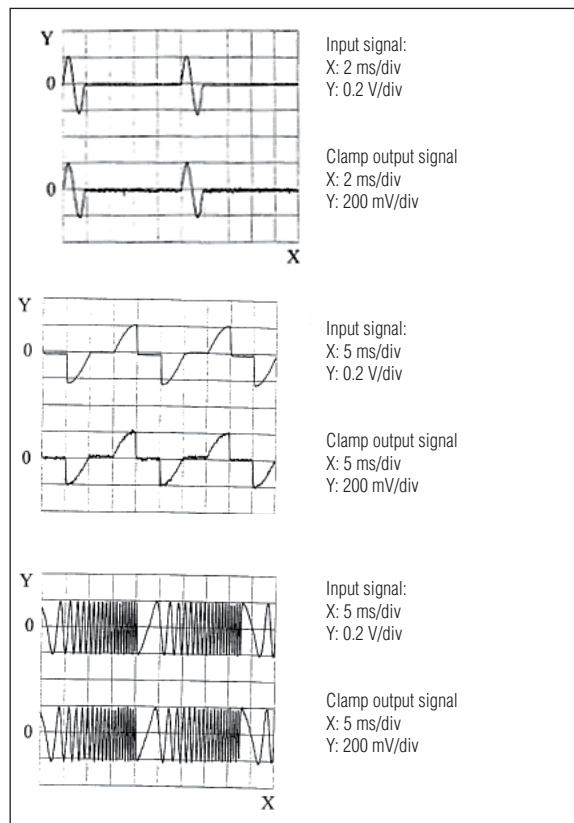
CURVES

100 A calibre

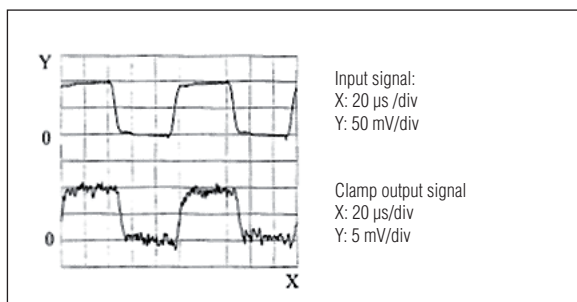
1 A peak



2 A peak



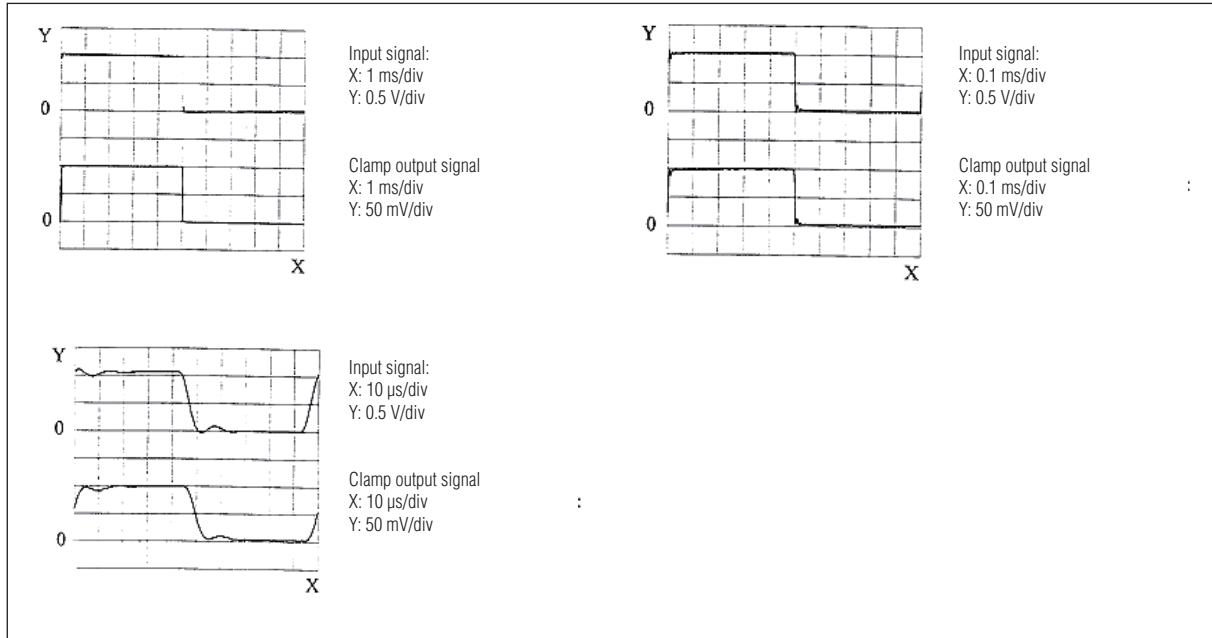
0.1 A peak



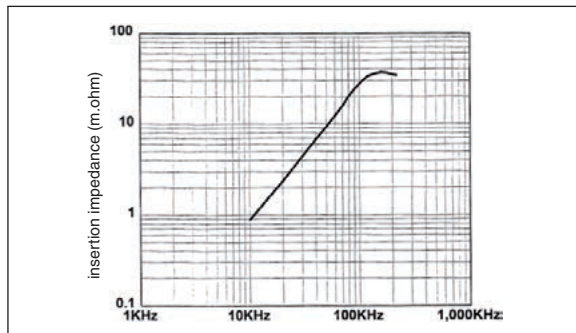
CURVES

10 A calibre

10 A peak



Insertion impedance



(1) Conditions of reference: 23 °C ± 5 °K, 20 % to 75 % RH, power supply voltage 8 V ± 0.1 V DC sinusoidal signal with frequency of DC to 1 kHz, external magnetic field < 40 A/m, no DC components, no external conductor with circulating current, conductor centred for measurement, load impedance > 1 MΩ / < 100 pF.

To order	Reference
AC/DC current clamp model E3N for oscilloscope, with battery and user's manual	P01120043A
AC/DC current clamp model E3N for oscilloscope, with mains power, battery and user's manual	P01120047