

AC/DC CURRENT CLAMPS



E Series

The E Series is designed to measure alternating and direct currents by means of Hall-effect technology. The currents measured extend from a few milliamperes to more than 100 A.

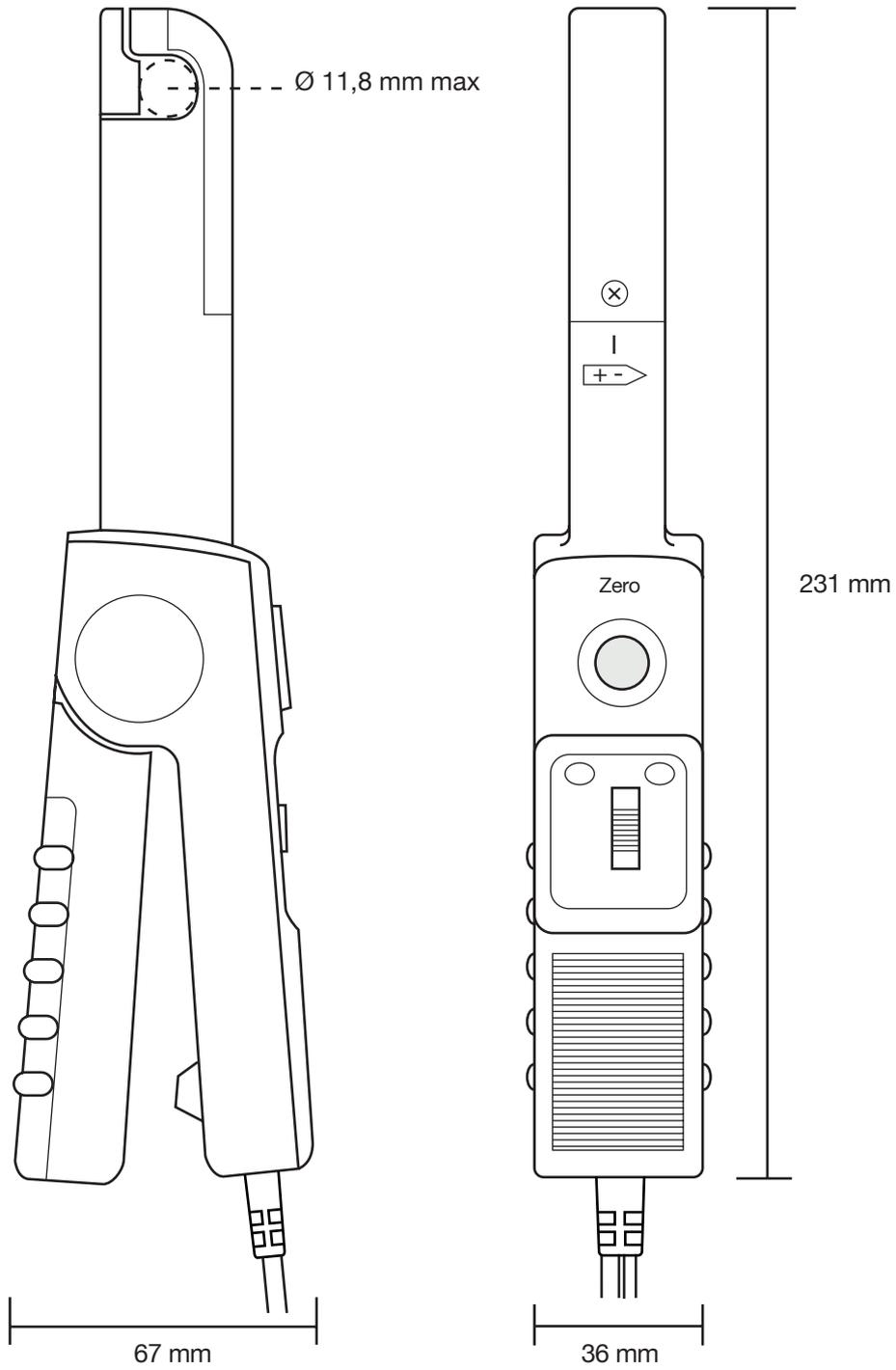
The long, narrow shape of these clamps makes them ideal for measurements in cable strands or confined spaces such as switchboard wiring, motor control units and the electrical circuits in automotive vehicles.

Their low phase shift ensures excellent power measurement performance.

These clamps are equipped with a voltage output (mV). Their ability to measure AC+DC signals is particularly useful for True RMS measurements.

The E25 model provides higher sensitivity for low current measurements. This clamp can be hooked up to multimeters, loggers, data processors, etc. The E27 can be connected directly to an oscilloscope.

AC/DC CURRENT CLAMPS



AC/DC CURRENT CLAMP

E25 model

Current	2 A DC - 1.5 A AC	80 A DC - 60 A AC
Output	1 mV/mA	10 mV/A

Description

The E25 clamp is designed to measure alternating and direct currents by means of Hall-effect technology. Its long, narrow shape makes it ideal for measurements in confined spaces where access is difficult. Via a cable terminated by 2 x Ø4 mm isolated male banana plugs, this clamp provides an AC+DC mV signal which is an image of the current measured in terms of waveform and amplitude.

The E25 clamp is equipped with an automatic DC Zero system and a deactivatable Auto Power Off (APO) function. It can be powered by battery or by a standard mains power pack via a Micro USB connector and offers 2 different sensitivities.



Electrical specifications

- Current calibre:**
5 mA .. 80 A DC / 60 A AC over 2 calibres
- Accuracy and phase shift ⁽¹⁾:**

Calibre	1 mV/mA (1 V/A)		10 mV/A	
	5 mA .. 2 A DC 5 mA .. 1.5 A AC	50 mA .. 50 A DC 50 mA .. 40 A AC	50 A .. 80 A DC 40 A .. 60 A AC	
Primary current				
Accuracy as % of output signal	≤ 2% + 5 mV	≤ 4% + 500 μV	≤ 12%	
Phase shift	≤ 1° (DC .. 65 Hz)	≤ 1° (DC .. 65 Hz)	≤ 1° (DC .. 65 Hz)	
Noise ⁽²⁾	DC: 8 mV DC AC: 4 mV AC _{RMS}	DC: 120 μV DC AC: 180 μV AC _{RMS}	DC: 120 μV DC AC: 180 μV AC _{RMS}	

- Output signal:**
1 mV AC+DC / mA AC+DC (2 V at 2 A)
10 mV AC+DC / A AC+DC (0.8 V at 80 A)
- Bandwidth:**
DC .. 20 kHz (-3 dB) (depending on current value)
- DC Zero adjustment:**
Automatic for the currently-selected sensitivity by pressing the command button.
- Typical output noise level (peak-peak) from DC to 100 kHz:**
 - 2 A calibre: 4 mV_{RMS} / 8 mV DC
 - 80 A calibre: 180 μV_{RMS} / 120 μV DC
- Power supply:**
9 V alkaline battery (NEDA 1604A, IEC 6LR61)
5V DC via μUSB connector
- Battery life:**
80 hours typical (alkaline battery)
- «ON» LED ⁽³⁾:**
«Lit» = Operational and battery level OK
«Flashing» = battery life < 4 hours
«Colour = green» = APO ON
«Colour = yellow» = APO OFF
- «OL» LED:**
Overload indication, measured current too high for the calibre used.
- Influence of temperature:**
≤ 800 ppm/°C, 10 mA DC/°C
- Influence of relative humidity:**
≤ 0.5% from 10% to 85% RH at ambient temperature
- Influence of conductor position in jaws:**
≤ 0.5%
- Common mode voltage (600V max) for AC measurement (max):**
at 50/60 Hz: ≤ 1 mA/100 V
- Remanence:**
at 80 A DC: 370 mA DC typical
- Relative humidity for operation:**
0 to 85% RH with a linear decrease above 35°C
- Operating altitude:**
0 to 2,000 m
- Enclosure ingress protection:**
IP 20 (IEC 60529)
- Fall height:**
1 m (IEC 60068-2-31)
- Colours:**
Dark grey/red

Mechanical specifications

- Clamping capacity:**
Cable: max. Ø 11.8 mm
- Output:**
Two-wire cable 1.5 m long terminated by 2 x Ø4 isolated male banana plugs
- Dimensions:**
231 x 67 x 36 mm
- Weight:**
330 g with battery
- Operating temperature:**
-10° to +50°C
- Storage temperature:**
-30° to +80°C

Safety specifications

- Electrical:**
Type-A instrument with double insulation or reinforced insulation between the primary, the secondary and the grippable part located under the guard, as per IEC 61010-1 & IEC 61010-2-032
- 600 V Category III, pollution degree 2
- 300 V Category IV, pollution degree 2
- Electromagnetic compatibility (EMC):**
Complies with IEC 61326-1: 2013 (portable instrument) with influences at 10 V/m:
≤ 4 A DC @[80 MHz, 1 GHz]

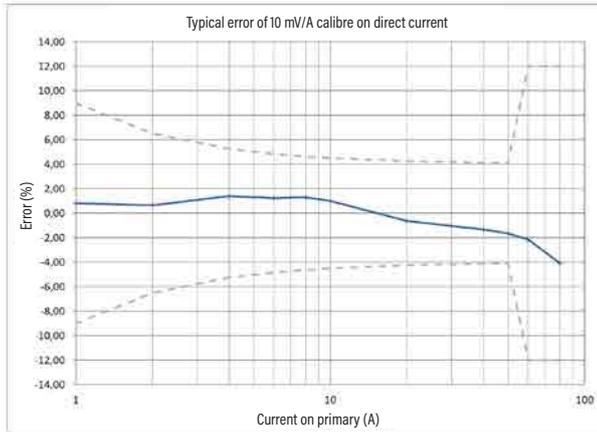
AC/DC CURRENT CLAMP

E25 model

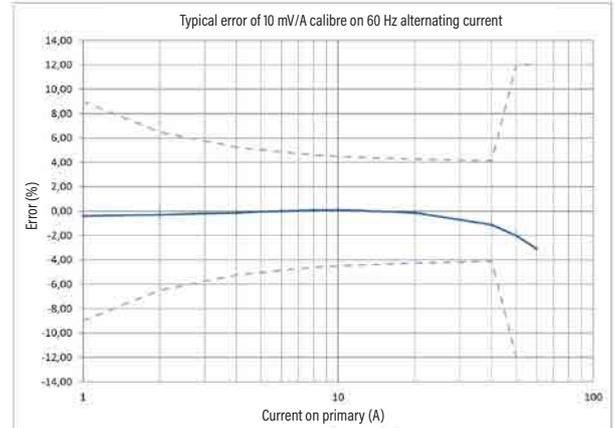
Curves

80 A calibre

DC linearity



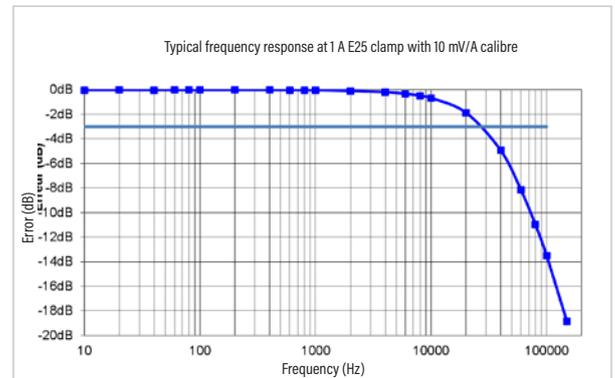
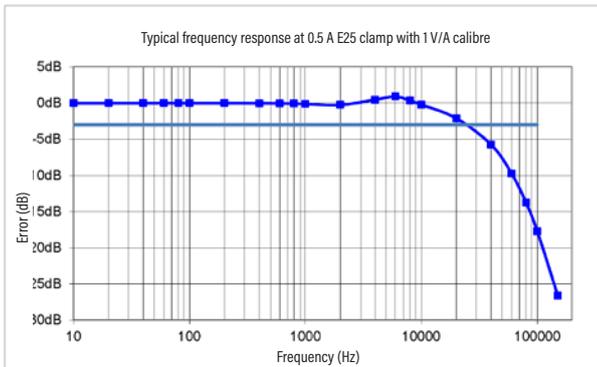
AC linearity



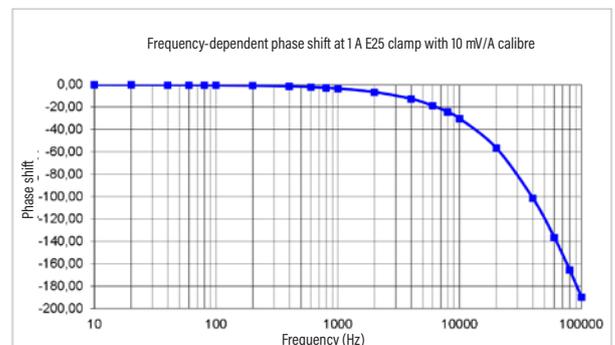
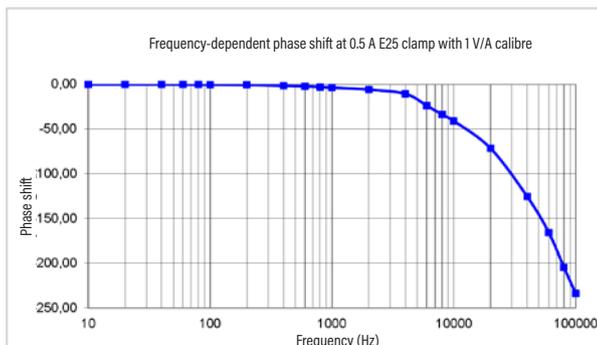
2 A calibre

80 A calibre

Frequency response



Frequency phase shift



AC/DC CURRENT CLAMP

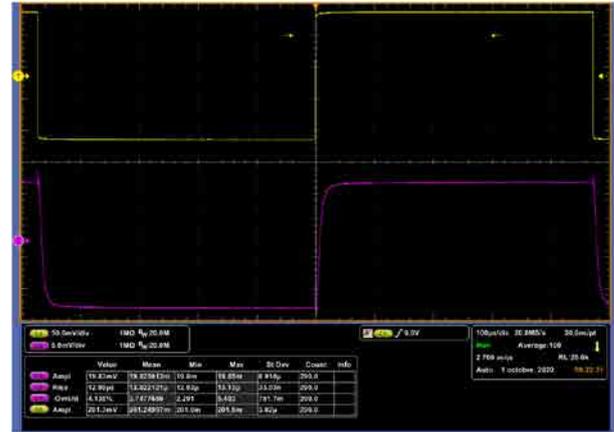
E25 model

Curves

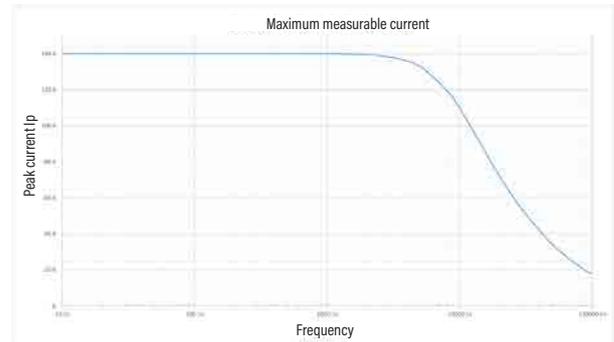
2 A calibre

80 A calibre

Pulse response



Limitation of measurable current according to the frequency



(1) Conditions of reference: 23°C ± 5°K, 20 to 75% RH, power supply voltage 6.5 V DC to 9.0 V DC, sinusoidal signal with a frequency from DC to 1 kHz, external magnetic field < 40 A/m, no DC component, no current flowing in external conductor, conductor measured centred, load impedance ≥ 1 MΩ / ≤ 100 pF.

(2) Typical value(s)

(3) With alkaline battery, no external power supply present

To order	Reference
E25 model AC/DC current sensor with battery and user's manual	P01120025

AC/DC CURRENT CLAMP

E27 model (isolated AC/DC current sensor)

Current	10 A PEAK	100 A PEAK
Output	100 mV/A	10 mV/A

Description

The E27 clamp is designed to measure alternating and direct currents by means of Hall-effect technology. Its long, narrow shape makes it ideal for measurements in cable strands or confined spaces such as switchboard wiring, motor control units or power supplies or the electrical circuits of automotive vehicles.

Via a coaxial cable terminated by an isolated BNC plug, this clamp outputs a signal in mV which is an image of the current measured in terms of waveform and amplitude.

The E27 clamp is equipped with an automatic DC Zero system and a deactivatable Auto Power Off (APO) function and can be powered by a standard mains power pack via a micro-USB connector.

This clamp offers 2 different sensitivities and a large bandwidth. It is particularly appreciated for measuring and viewing complex AC+DC signals on an oscilloscope.



Electrical specifications

- **Current calibre:**
0.1 .. 10 A peak
0.5 .. 100 A peak
- **Accuracy and phase shift ⁽¹⁾:**

Calibre	10 A	100 A	
Primary current	100 mA .. 10 A peak	500 mA .. 40 A peak	40 A .. 100 A peak
Accuracy as % of output signal	< 3% + 5 mV	< 4% + 500 μ V	< 15%
Phase shift	$\leq 1.5^\circ$	$\leq 1^\circ$	$\leq 1^\circ$

- **Output signal:**
100 mV AC+DC / A AC+DC (1 V to 10 A)
10 mV AC+DC / A AC+DC (1 V to 100 A)
- **Bandwidth:**
DC .. 100 kHz (-3 dB) (depending on current value)
- **Rise time (10 to 90%) and fall time (90 to 10%):**
 - 10 A calibre: 3 μ s
 - 100 A calibre: 3 μ s
- **10% delay time:**
 - 10 A calibre: 1.8 μ s
 - 100 A calibre: 1.8 μ s
- **Insertion impedance (at 10 kHz / 50 kHz):**
 ≤ 2 m Ω / ≤ 10 m Ω
- **DC Zero adjustment:**
Automatic for the selected sensitivity by pressing the command button.
- **Typical noise output level (peak-peak) from DC to 100 kHz:**
 - 10 A calibre: 5 mV_{peak-peak}
 - 100 A calibre: 600 μ V_{peak-peak}
- **Power supply:**
9 V alkaline battery (NEDA 1604A, IEC 6LR61)
5 V DC via μ USB connector
- **Battery life:**
80 hours typical (alkaline battery)
- **«ON» LED ⁽²⁾:**
«Lit» = Operational and battery level OK
«Flashing» = battery life < 4 hours
«Colour = green» = APO ON
«Colour = yellow» = APO OFF
- **«OL» LED:**
Indication of overload, measured current too high for the calibre used.
- **Influence of temperature:**
 ≤ 800 ppm/ $^\circ$ C, 10mA DC/ $^\circ$ C
- **Influence of relative humidity:**
 $\leq 0.5\%$ from 10% to 85% RH at ambient temperature
- **Influence of an adjacent conductor:**
 ≤ 4 mA/A @60Hz
- **Influence of conductor position in jaws:**
 $\leq 0.5\%$ of output signal at 1 kHz
- **Common mode voltage (600V max) with AC measurement (max):**
at 50/60 Hz: ≤ 1 mA/100 V
at 400 Hz: ≤ 7 mA/100 V
- **Rémanence :**
at 100 A DC: 450 mA DC typical

Mechanical specifications

- **Clamping capacity:**
Cable: \varnothing max 11.8 mm
- **Output:**
Coaxial cable 2 m long terminated by 1 insulated BNC plug
- **Dimensions:**
231 x 67 x 36 mm
- **Weight:**
330 g with battery

- **Operating temperature:**
-10 $^\circ$ to +50 $^\circ$ C
- **Storage temperature:**
-30 $^\circ$ to +80 $^\circ$ C
- **Relative humidity for operation:**
0 to 85% RH with linear decrease above 35 $^\circ$ C
- **Operating altitude:**
0 to 2,000 m
- **Enclosure ingress protection:**
IP 20 (IEC 60529)
- **Fall height:**
1 m (IEC 60068-2-31)
- **Colours:**
Dark grey/red

Safety specifications

- **Electrical:**
Type-A instrument with double insulation or reinforced insulation between the primary, the secondary and the grippable part located under the guard, as per IEC 61010-1 & IEC 61010-2-032
- 600 V Category III, pollution degree 2
- 300 V Category IV, pollution degree 2
- **Electromagnetic compatibility (EMC):**
Compliance with IEC 61326-1: 2013 (portable instrument) with influences at 10V/m on the 100mV/A calibre:
 ≤ 400 mA DC @[80 MHz, 280 MHz]
 ≤ 2 A DC @[280 MHz, 460 MHz]
 ≤ 400 mA DC @[460 MHz, 1 GHz]

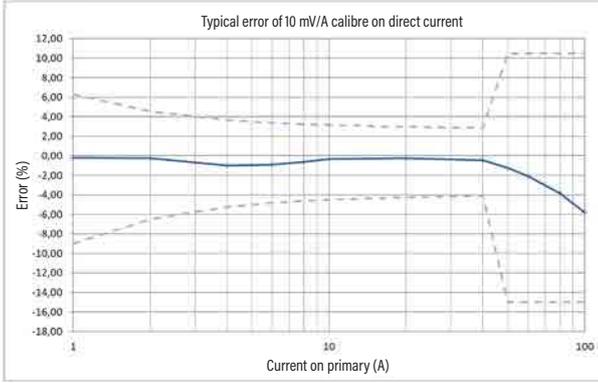
AC/DC CURRENT CLAMP

E27 model (isolated AC/DC current sensor)

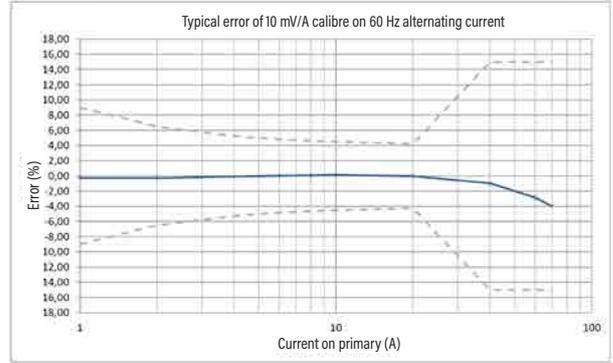
Curves

100 A calibre

DC linearity



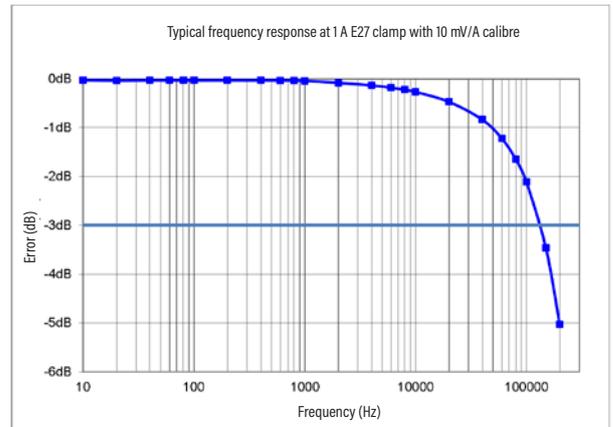
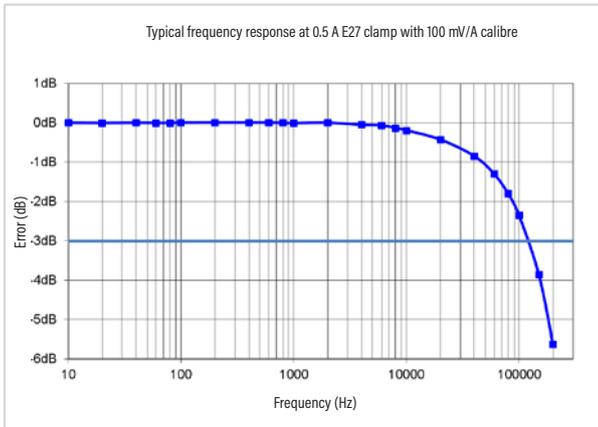
AC linearity



10 A calibre

100 A calibre

Frequency response



Frequency phase shift

