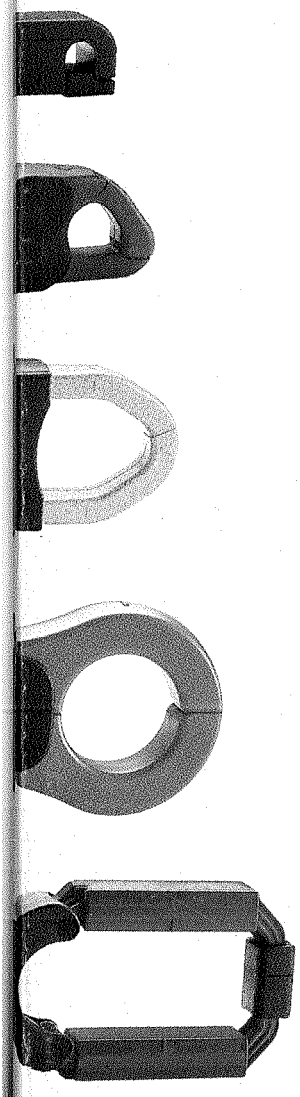
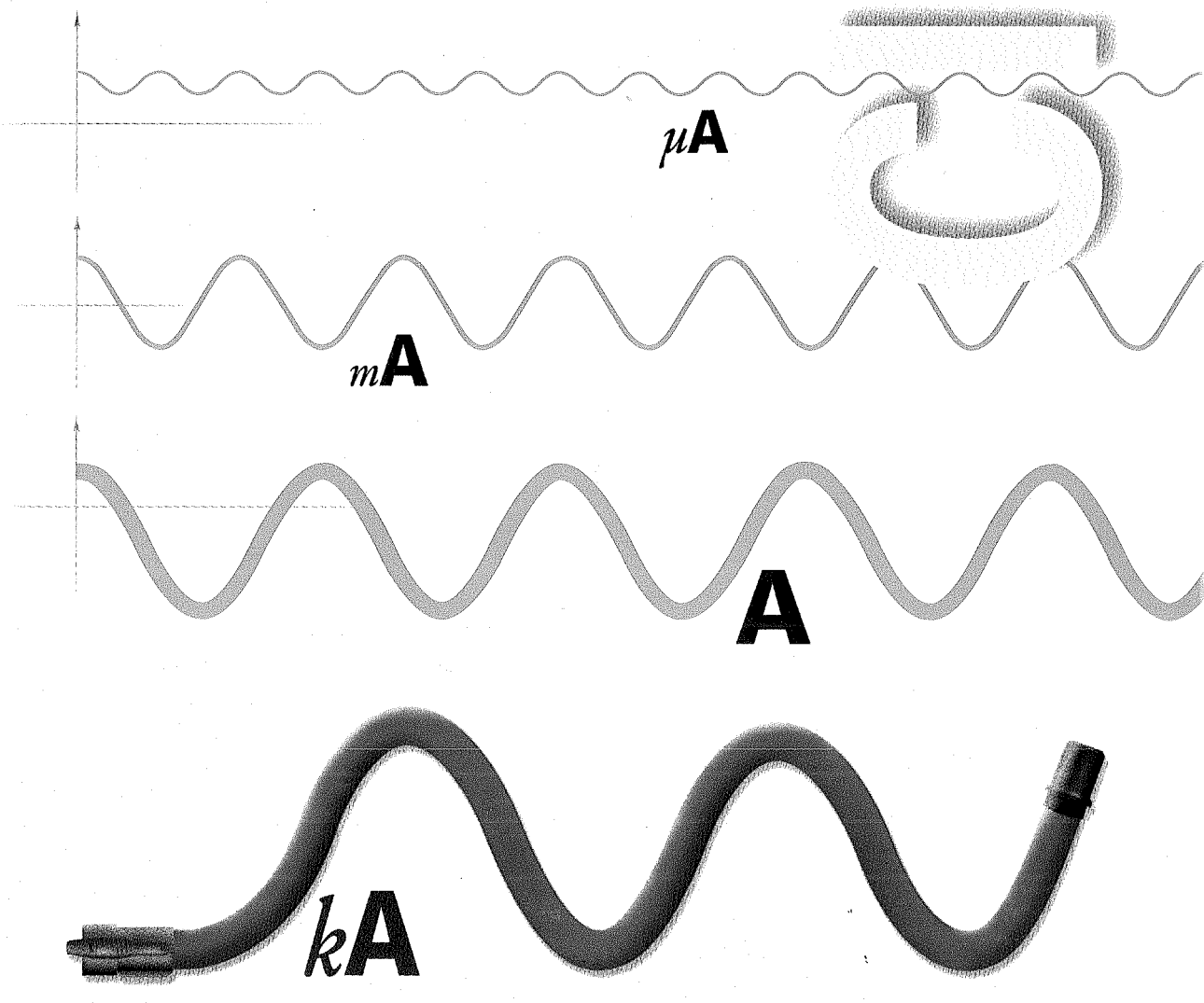
The

Current Clamps Catalogue





CHAUVIN ARNOUX

The
Chauvin Arnoux

Current ***Clamps***

Catalogue

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SEE LAST PAGE FOR DETAILS OF "MADE TO ORDER " MODEL.

Current Clamps
A modern method for measuring electrical intensity

INTRODUCTION

Clamp-on current probes are designed to extend the current measuring capabilities of DMMs, power instruments, oscilloscopes, hand-held scopes, recorders or loggers, and other diverse instruments. The probe is "clamped" around the current carrying conductor to perform non contact current measurements and without interrupting the circuit under test. The Probe outputs current or voltage signals directly proportional to the measured current, thereby providing current measuring and displaying capabilities to instruments with low current or voltage inputs.

When making a measurement, the current carrying conductor circuit is not broken and remains electrically isolated from the meter input terminals. As a result, the meter's low input terminal may be either floated or grounded. It is not necessary to interrupt the power supply when using a clamp-on current probe for taking measurements, so costly down time can be eliminated.

True RMS measurements within the probe frequency response are possible by using most CHAUVIN ARNOUX current probes with a true RMS Multimeter. In most cases, RMS measurements are not limited by the probes, but by the instrument to which they are connected. Best results are provided by probes offering inherent high accuracy, good frequency response, and minimal phase shift.

CHAUVIN ARNOUX offers the widest selection of current probes available to measure AC or DC current. Several CHAUVIN ARNOUX probes are patented for their unique circuitry and design.

AC CLAMP-ON CURRENT PROBES

Theory of Operation

An AC clamp-on current probe may be viewed as a variance of a simple current transformer.

A transformer (Figure 1) is essentially two coils wound on a common iron core. A current I1 is applied through the coil C1, inducing through the common core a current I2 in the coil C2. The number of turns of each coil and the current are related by :

N1 x I1 = N2 x I2, where N1 and N2 are the number of turns in each coil. From this relationship :

I2 = N1 x I1/N2 ou I1 = N2 x I2/N1.

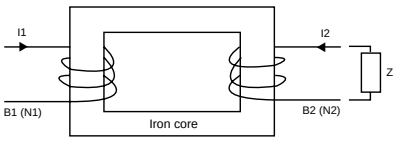


Figure 1

This same principle is applied to a clamp-on current probe (Figure 2). The articulated magnetic core holds the coil B2 and clamps onto a conductor where the current I1 is flowing.
B1 is simply the conductor where the user is measuring the current with the number of turns N1 equal to one. The current probe clamped around the conductor provides an output proportional to the number of turns in its coil B2, such that :

I2 (probe output) = N1/N2 x I1 where N1 = 1 or Probe output = I1/N2 (Number of turns in the probe coil)

It is often difficult to measure I1 directly because of currents which are too high to be fed directly into a meter or simply because breaking into the circuit is not possible. To provide a manageable output level multiple turns are set into the probe coil bobbin.

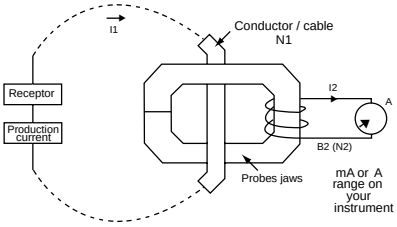


Figure 2

The number of turns in the clamp-on coil are generally simple multiples (e.g. 100, 500 or 1000).
If N2 equals 1000, then the clamp has a ratio of N1/N2 or 1/1000, which is expressed as 1000:1. Another way to express this ratio is to say that the probe output is 1mA/A - the probe output is 1mA (I2) for 1A (or 1A @ 1000A) flowing in the jaw window.

There are numerous other ratios possible : 500:5, 2000:2, 3000:1, 3000:5, etc. for different applications.

The most common application is the use of a current probe with a digital multimeter. Take as an example a current probe with a ratio of 1000:1 (Model C30) with an output of 1mA/A.

This ratio means that any current flowing through the probe jaws will result in a current flowing at the output :

Conductor input	Probe ouput
1000 A	1 A
750 A	750 mA
250 A	250 mA
10 A	10 mA

The probe output is connected to a DMM set on the AC current range to handle the probe output. Then, to determine the current in the conductor, multiply the reading of the DMM by the ratio (e.g., 150 mA read on the 200 mA DMM range represents 150 mA x 1000 = 150 A in the conductor measured).

Current probes may be used with other instruments with current ranges, provided that these instruments have the required input impedance (see Figure 3).

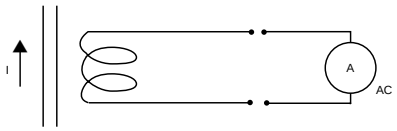


Figure 3

Current probes may also have AC or DC voltage outputs to accommodate current measurements with instruments (loggers, scopes, etc.) with voltage ranges only (Figures 4 and 5).

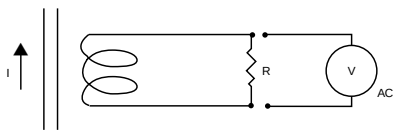


Figure 4

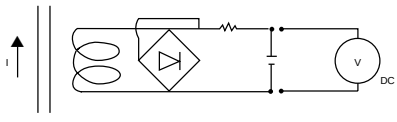


Figure 5

This is simply done by conditioning the current probe output inside the probe to provide voltage (e.g., Model Y4N or Mini 1). In these cases, the probe mV output is proportional to the measured current (e.g., 1 mV AC/A AC).

AC/DC CLAMP-ON CURRENT PROBES

Theory of Operation (Hall effect)

Differing from traditional AC transformers, AC/DC current sensing is often achieved by measuring the strength of a magnetic field created by a current-carrying conductor in a semiconductor chip using the Hall effect principle.

When a thin semiconductor (Figure 6) is placed at right angles to a magnetic field (B), and a current (Id) is applied to it, a voltage (Vh) is developed across the semiconductor. This voltage is known as the Hall voltage, named after the US scientist Edwin Hall who first reported the phenomenon.

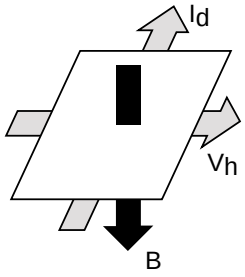


Figure 6

When the Hall device drive current (Id) is held constant, the magnetic field (B) is directly proportional to the current in a conductor. Thus, the Hall output voltage (Vh) is representative of that current. Such an arrangement has two important benefits for universal current measurement.

First, since the Hall voltage is not dependent on a reversing magnetic field, but only on its strength, the device can be used for DC measurement.

Second, when the magnetic field strength varies due to varying current flow in the conductor, response to change is instantaneous. Thus, complex AC wave forms may be detected and measured with high accuracy and low phase shift.

The basic construction of a probe jaw assembly is shown in Figure 7, (Note: one or two Hall generators are used depending on the type of current probe).

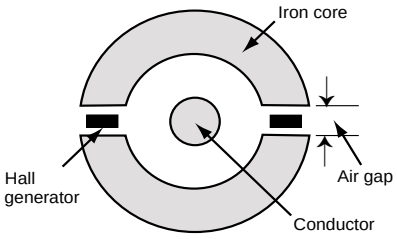


Figure 7

The many CHAUVIN ARNOUX AC/DC Current Probes were developed based on the above principle, together with patented electronic circuitry incorporating signal conditioning for linear output and a temperature compensation network. These have a wide dynamic range and frequency response with highly accurate linear output, for application in all areas of current measurement up to 1500 A. Direct currents can be measured without the need of expensive, power consuming shunts, and alternating currents up to several kHz can be measured with fidelity to respond to the requirements of complex signals and RMS measurements.

The probe outputs are in mV (mV DC when measuring DC, and mV AC when measuring AC) and may be connected to most instruments with a voltage input, such as DMMs, loggers, oscilloscopes, hand held scopes, recorders, etc.

CHAUVIN ARNOUX also offers different technologies for DC measurements such as in the K1 and K2 designed to measure very low DC currents and using saturated magnetic technology.

AC/DC probes also offer the opportunity to display or measure True RMS in AC or AC+DC.

AC OR DC CURRENT MEASUREMENT

- Connect the probe to the instrument.
- Select the function and range.
- Clamp the probe around a single conductor.
- Read the conductor's current value.

***Examples** (figure 8):*

AC : Probe Model : Y2N
Ratio : 1000:1
Output : 1 mA AC/ A-AC.
DMM : Set to 200 mA AC range
DMM Reading : 125 mA AC
Current in Conductor :
125 mA x 1000 = 125 A AC

DC : Probe Model : PAC 21
1mV DC/A DC (Hall sensor)
DMM : Set to 200 mV DC range
DMM Reading : 160 mV DC
Current in Conductor : 160 A DC

AC : Probe Model : PAC 11
Output :-1 mV AC/A AC
(Hall sensor)
DMM : Set to 200 mV AC range
DMM Reading : 120 mV AC
Current in Conductor : 120 A AC

DC : Micro probe K1
Output : 1 mV/mA
DMM : Set to 200 mV DC range
DMM Reading : 7.4 mV DC
Current in Conductor : 7.4 mA DC

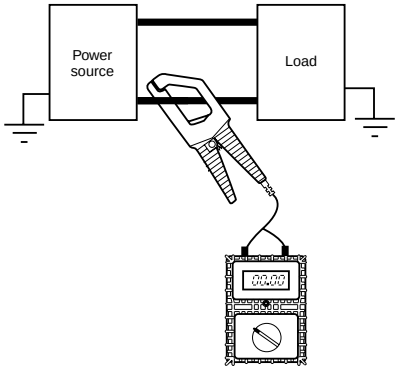


Figure 8

LOW CURRENT, PROCESS LOOPS, LEAKAGE AND DIFFERENTIAL MEASUREMENTS

Numerous probes are offered for low current measurements. for example, the Models K1 and K2 have a 50 mA DC sensitivity and the Model K2 may be used on 4-20 mA process loops. The selection guide has a special section on low current probes.

Example : 4-20 mA loop

Probe Model K2
Output : 10mV/mA
DMM : Set to 200 mV DC range
DMM reading : 135 mV DC
Loop Current : 13.5 mA DC

When the current to be measured is too low for the probe or better accuracy is required, it is possible to insert the conductor multiple times through the probe jaws. The value of the current is the ratio of the reading to the number of turns.

Example : *Figure 9*

Probe Model C30

Ratio : 1000:1

DMM : Set to 200 mA AC range

Turns in Probe Jaw : 10

DMM Reading : 60 mA AC

Current in Conductor :
60 mA x 1000 / 10 = 6000 mA = 6 A

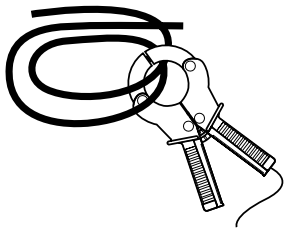


Figure 9

When the probe is clamped around two conductors with different polarities, the resulting reading will be the difference between the two currents. If the currents are the same, the reading will be zero (Figure 10). When a reading other than zero is obtained, the reading is the amount of leakage current on the load

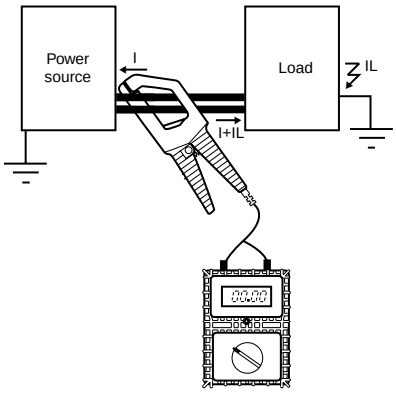


Figure 10

To measure low currents or leakage, you need a clamp-on which will measure low values, such as the Model B2.
Leakage current on grounds also may be measured directly with the simple model (Figure 11).

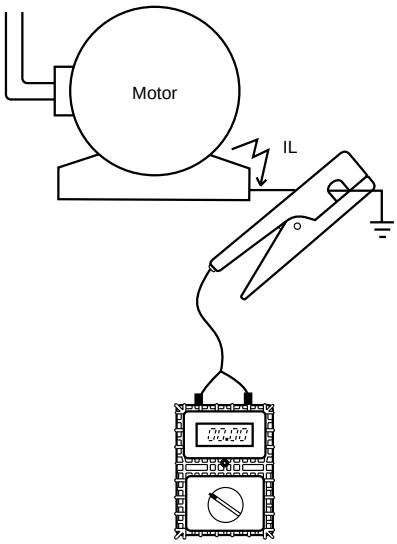


Figure 11

Example : *Figure 11*

MINIPINCE 1

Ratio : 1 mV AC/mA AC
DMM : Set to 200 mV AC range
DMM Reading : 10 mV AC
Leakage current : 10 mA AC

SELECTING A CURRENT PROBE

A selection chart for all of the CHAUVIN ARNOUX Instruments current probes can be found at the front of this catalogue. We recommend you use the chart as a reference, then consult the more detailed catalogue pages.

Answering the following questions will help you to select the appropriate probe for your applications.

1. Determine if you are measuring AC or DC (DC current probes are categorized as AC/DC because they measure both).

2. What is the the maximum current you will measure, and what is the minimum current you will measure? Check that the accuracy at low levels is appropriate, or select a low current measurement probe. Most probes perform with greater accuracy at the upper end of their range. Several probes are designed to measure very low DC or AC.

3. What size conductor will you clamp onto? This parameter determines the probe jaw size needed.

4. What type of probe output do you need or can you work with (mA, mV, AC, DC, etc.)? Check the maximum receiver impedance to ensure that the probe will perform to specifications.

Other factors you may want to consider :

■ What is the working voltage of the conductor to be measured ?

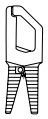
CHAUVIN ARNOUX probes must not be used above 600 volts (see specifications).

■ What type of termination do you need : jacks, leads or BNC ?

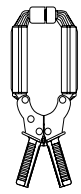
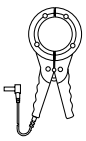
■ Will the probe be used for harmonics or power measurements ?

Look at the frequency specifications and phase shift specifications.

Measurement of AC current

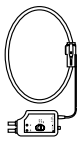
Series	Model	Input: Measuring scope (1) — Very weak current	Weak current	Medium current	Strong current	~ AC	⎓ DC	Ouput / Connections: Current	Voltage	Lead + Ø 4 mm safety connectors (3)	Ø 4 mm female sockets	BNC connector (coaxial)	Specific features: Transformation ratio (input/ ouput)	Ouput protected against voltages surges	Automatic DC zero	Measurement of power (slight phase shift)	Bandwith (frequency in Hz)	Typical accuracy	To Order	Page (4)
	**Minipince 1**	1 mA...10 A 1 A...100 A				●			10 V AC 0.1 V AC	●			1 mA/1 mV 1 A/1 mV				45 Hz..500 Hz	≤ 3 % ≤ 2 %	P01.**1050.01**	***1.01***
	Minipince 2		1 A...150 A			●			15 V DC (2)		●		1 A/100 mV				70 Hz..400 Hz	≤ 3%	P01.**1050.02**	***1.02***
	Minipince 3		0.5...150 A			●		0.3 A AC			●		500/1				45 Hz..450 Hz	≤ 4%	P01.**1050.03**	***1.02***
	Minipince 4		2...150 A			●		0.15 A AC			●		1000/1				30 Hz..1 kHz	≤ 2.5%	P01.**1050.04**	***1.03***
	Minipince 5	50 mA...100 A				●		0.1 A AC			●		1000/1			●	45 Hz..10 kHz	≤ 1%	P01.**1050.05**	***1.04***
	**MN08**		0.5...240 A			●		0.2 A AC			●		1000/1				40 Hz..10 kHz	≤ 1%	P01.**1204.01**	***2.01***
	MN09		0.5...240 A			●		0.2 A AC		●			1000/1				40 Hz..10 kHz	≤ 1%	P01.**1204.02**	***2.01***
	MN10		0.5...240 A			●		0.2 A AC			●		1000/1	●			40 Hz..10 kHz	≤ 2%	P01.**1204.03**	***2.02***
	MN11		0.5...240 A			●		0.2 A AC		●			1000/1	●			40 Hz..10 kHz	≤ 2%	P01.**1204.04**	***2.02***
	MN12		0.5...240 A			●			2 V AC		●		1 A/10 mV				40 Hz..10 kHz	≤ 1%	P01.**1204.05**	***2.03***
	MN13		0.5...240 A			●			2 V AC	●			1 A/10 mV				40 Hz..10 kHz	≤ 1%	P01.**1204.06**	***2.03***
	MN14		0.5...240 A			●			0.2 V AC		●		1 A/1 mV				40 Hz..10 kHz	≤ 1%	P01.**1204.16**	***2.04***
	MN15		0.5...240 A			●			0.2 V AC	●			1 A/1 mV				40 Hz..10 kHz	≤ 1%	P01.**1204.17**	***2.04***
	MN21		0.1...240 A			●		0.2 A AC		●			1000/1	●			40 Hz..10 kHz	≤ 2%	P01.**1204.18**	***2.05***
	MN23		0.1...240 A			●			2 V AC	●			1 A/10 mV				40 Hz..10 kHz	≤ 1.5%	P01.**1204.19**	***2.06***
	MN38		0.1...24 A 0.5...240 A			●			2 V AC 2 V AC		●		1 A/100 mV 1 A/10 mV				40 Hz..10 kHz	≤ 1%	P01.**1204.07**	***2.07***
	MN39		0.1...24 A 0.5...240 A			●			2 V AC 2 V AC	●			1 A/100 mV 1 A/10 mV				40 Hz..10 kHz	≤ 1%	P01.**1204.08**	***2.07***
	MN60		0.1...60 A peak 0.5...600 A peak			●			2 V AC 2 V AC			●	1 A/100 mV 1 A/10 mV				40 Hz..40 kHz	≤ 2% ≤ 1.5%	P01.**1204.09**	***2.08***
	MN71	10 mA...12 A				●			1 V AC	●			1 A/100 mV				40 Hz..10 kHz	≤ 1%	P01.**1204.20**	***2.09***
	MN73		10 mA...2.4 A 100 mA...240 A			●			2 V AC 2 V AC	●			1 mA/1 mV 1 A/10 mV				40 Hz..10 kHz	≤ 1% ≤ 2%	P01.**1204.21**	***2.10***
	MN88		0.5...240 A			●			20 V DC (2)		●		1 A/100 mV				40 Hz..10 kHz	≤ 2%	P01.**1204.10**	***2.11***
	MN89		0.5...240 A			●			20 V DC (2)	●			1 A/100 mV				40 Hz..10 kHz	≤ 2%	P01.**1204.15**	***2.11***
	**Y1N**		4 A...600 A			●		0.5 A AC		●			1000/1	●			48 Hz..1 kHz	≤ 3%	P01.**1200.01A**	***3.01***
	Y2N		4 A...600 A			●		0.5 A AC		●			1000/1	●			48 Hz..1 kHz	≤ 1%	P01.**1200.28A**	***3.02***
	Y3N		4 A...600 A			●		5 A AC		●			100/1				48 Hz..1 kHz	≤ 3%	P01.**1200.29A**	***3.03***
	Y4N		4 A...600 A			●			0.5 V DC (2)	●			500 A/ 0.5 V				48 Hz..1 kHz	≤ 1%	P01.**1200.05A**	***3.04***

(1) *The upper value corresponds to 120% of the maximum nominal value.*
(2) *Regeneration of the AC signal by diodes*
(3) *Lead + electronic unit with Ø 4 mm safety connectors, centre distance 19 mm, for K and AmpFLEX™ series*
(4) *This pagination refers to the clamps catalogue*

Series	Model	Input: Measuring scope (1) — Very weak current	Weak current	Medium current	Strong current	~ AC	⎓ DC	Ouput / Connections: Current	Voltage	Lead + Ø 4 mm safety connectors (3)	Ø 4 mm female sockets	BNC connector (coaxial)	Specific features: Transformation ratio (input/ ouput)	Ouput protected against voltages surges	Automatic DC zero	Measurement of power (slight phase shift)	Bandwith (frequency in Hz)	Typical accuracy	To Order	Page (2)
	**C100**	0.1...1200 A				●		1 A AC			●		1000/1				30 Hz..10 kHz	≤ 0.5%	P01.**1203.01**	***4.01***
	C102	0.1...1200 A				●		1 A AC			●		1000/1	●			30 Hz..10 kHz	≤ 0.5%	P01.**1203.02**	***4.02***
	C103	0.1...1200 A				●		1 A AC		●			1000/1	●			30 Hz..10 kHz	≤ 0.5%	P01.**1203.03**	***4.02***
	C106	0.1...1200 A				●			1 V AC		●		1 A/1 mV				30 Hz..10 kHz	≤ 0.5%	P01.**1203.04**	***4.03***
	C107	0.1...1200 A				●			1 V AC	●			1 A/1 mV				30 Hz..10 kHz	≤ 0.5%	P01.**1203.05**	***4.03***
	C112	1 mA...1200 A				●		1 A AC			●		1000/1	●		●	30 Hz..10 kHz	≤ 0.3%	P01.**1203.14**	***4.04***
	C113	1 mA...1200 A				●		1 A AC		●			1000/1	●		●	30 Hz..10 kHz	≤ 0.3%	P01.**1203.15**	***4.04***
	C116	1 mA...1200 A				●			1 V AC		●		1 A/1 mV			●	30 Hz..10 kHz	≤ 0.3%	P01.**1203.16**	***4.05***
	C117	1 mA...1200 A				●			1 V AC	●			1 A/1 mV			●	30 Hz..10 kHz	≤ 0.3%	P01.**1203.17**	***4.05***
	C122	1...1200 A				●		5 A AC			●		1000/5	●			30 Hz..10 kHz	≤ 1%	P01.**1203.06**	***4.06***
	C148	1...300 A 1...600 A 1...1200 A				●		5 A AC			●		250/5 500/5 1000/5	●			48 Hz..1 kHz	≤ 2% ≤ 1% ≤ 1%	P01.**1203.07**	***4.07***
	C160	0.1...30 A peak 0.1...300 A peak 1...2000 A peak				●			3 V peak 3 V peak 2 V peak			●	10 A/1 V 100 A/1 V 1000 A/1 V				10 Hz..100 kHz	≤ 3% ≤ 2% ≤ 1%	P01.**1203.08**	***4.08***
	C173	1 mA...1,2 A 0.01...12 A 0.1...120 A 1...1200 A				●			1 V AC	●			1 A/1 V 10 A/1 V 100 A/1V 1000 A/1 V				10 Hz..3 kHz	≤ 0.7% ≤ 0.5% ≤ 0.3% ≤ 0.2%	P01.**1203.09**	***4.09***
	**D30N**	1 A...3600 A				●		1 A AC			●		3000/1	●		●	30 Hz..5 kHz	≤ 0.5%	P01.**1200.49A**	***5.01***
	D30CN	1 A...3600 A				●		1 A AC		●			3000/1	●		●	30 Hz..5 kHz	≤ 0.5%	P01.**1200.64**	***5.01***
	D31N	1...600 A 1...1200 A 1...1800 A				●		1 A AC			●		500/1 1000/1 1500/1	●			30 Hz..1.5 kHz	≤ 3% ≤ 1% ≤ 0.5%	P01.**1200.50A**	***5.02***
	D32N	1...1200 A 1...2400 A 1...3600 A				●		1 A AC			●		1000/1 2000/1 3000/1	●		●	30 Hz..1 kHz	≤ 1% ≤ 0.5% ≤ 0.5%	P01.**1200.51A**	***5.03***
	D33N	1...3600 A				●		5 A AC			●		3000/5				30 Hz..5 kHz	≤ 1%	P01.**1200.52A**	***5.04***
	D34N	1...600 A 1...1200 A 1...1800 A				●		5 A AC			●		500/5 1000/5 1500/5				30 Hz..1,5 kHz	≤ 3% ≤ 1% ≤ 0.5%	P01.**1200.53A**	***5.05***
	D35N	1...1200 A 1...2400 A 1...3600 A				●		5 A AC			●		1000/5 2000/5 3000/5			●	30 Hz..1.5 kHz	≤ 1% ≤ 0.5% ≤ 0.5%	P01.**1200.54A**	***5.06***
	D36N	1...3600 A				●		3 A AC			●		3000/3	●		●	30 Hz..5 kHz	≤ 0.5%	P01.**1200.55A**	***5.07***
	D37N	0.1...36 A RMS 1...360 A RMS 1...3600 A RMS				●			3 V AC		●		30 A/3 V 300 A/3 V 3000 A/3 V				30 Hz..5 kHz	≤ 2%	P01.**1200.56A**	***5.08***
	D38N	1...90 A peak 1...900 A peak 1...9000 A peak				●			1 V AC			●	1 A/10 mV 1 A/1 mV 1 A/0.1 mV				30 Hz..50 kHz	≤ 2%	P01.**1200.57A**	***5.09***
	**B2**	500 µA...4 A 0.5...400 A					●		4 V AC 0.4 V AC	●			1 mA/1 mV 1 A/1 mV				10 Hz..1 kHz	≤ 0.5% ≤ 0.35%	P01.**1200.33**	***6.01***

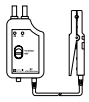
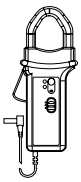
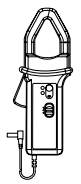
(1) *The upper value corresponds to 120% of the maximum nominal value.*
(2) *This pagination refers to the clamps catalogue*
(3) *Lead + electronic unit with Ø 4 mm safety connectors, centre distance 19 mm, for K and AmpFLEX® series*

Measurement of AC current (cont.)

Series	Model	Input: Measuring scope (1) — Very weak current	Weak current	Medium current	Strong current	~ AC	⎓ DC	Ouput / Connections: Current	Voltage	Lead + Ø 4 mm safety connectors (3)	Ø 4 mm female sockets	BNC connector (coaxial)	Specific features: Transformation ratio (input/ ouput)	Ouput protected against voltages surges	Automatic DC zero	Measurement of power (slight phase shift)	Bandwith (frequency in Hz)	Typical accuracy	To order	Page (2)
	**A100 20-200 (45 cm)**	0.5...20 A 0.5...200 A				●			2 V AC	●			1 A/100 mV 1 A/10 mV				10 Hz..20 kHz	1% 1%	P01.**1205.03**	***7.01***
	A100 2000-2 (45 cm)		0.5...2000 A			●			2 V AC	●			1 A/1 mV				10 Hz..20 kHz	1%	P01.**1205.01**	***7.02***
	A100 2000-2 (80 cm)		0.5...2000 A			●			2 V AC	●			1 A/1 mV				10 Hz..20 kHz	1%	P01.**1205.02**	***7.02***
	A100 0.2-2k/2 (45 cm)	0.5...200 A 0.5...2000 A				●			2 V AC	●			1 A/10 mV 1 A/1 mV				10 Hz..20 kHz	1% 1%	P01.**1205.04**	***7.03***
	A100 0.2-2k/2 (80 cm)	0.5...200 A 0.5...2000 A				●			2 V AC	●			1 A/10 mV 1 A/1 mV				10 Hz..20 kHz	1% 1%	P01.**1205.05**	***7.03***
	A100 0.3-3k/3 (45 cm)	0.5...300 A 0.5...3000 A				●			3 V AC	●			1 A/10 mV 1 A/1 mV				10 Hz..20 kHz	1% 1%	P01.**1205.06**	***7.04***
	A100 0.3-3k/3 (80 cm)	0.5...300 A 0.5...3000 A				●			3 V AC	●			1 A/10 mV 1 A/1 mV				10 Hz..20 kHz	1% 1%	P01.**1205.07**	***7.04***
	A100 0.3-3k/3 (120 cm)	0.5...300 A 0.5...3000 A				●			3 V AC	●			1 A/10 mV 1 A/1 mV				10 Hz..20 kHz	1% 1%	P01.**1205.08**	***7.04***
	A100 1k-10k/1 (120 cm)	0.5...1000 A 0.5...10000 A				●			1 V AC	●			1 A/1 mV 1 A/0.1 mV				10 Hz..20 kHz	1% 1%	P01.**1205.09**	***7.05***

(1) *The upper value corresponds to 120% of the maximum nominal value.*
(2) *This pagination refers to the clamps catalogue*
(3) *Lead + electronic unit with Ø 4 mm safety connectors, centre distance 19 mm, for K and AmpFLEX™ series*

Measurement of AC / DC current

Series	Model	Input: Measuring scope (1) — Very weak current	Weak current	Medium current	Strong current	~ AC	⎓ DC	Ouput / Connections: Current	Voltage	Lead + Ø 4 mm safety connectors (3)	Ø 4 mm female sockets	BNC connector (coaxial)	Specific features: Transformation ratio (input/ ouput)	Lead + Ø 4 mm safety connectors	Automatic DC zero	Measurement of power (slight phase shift)	Bandwith (frequency in Hz)	Typical accuracy	To Order	Page (2)
	**K1**	1 mA...4.5 A DC 1 mA...3 A RMS 1 mA...4.5 A peak				●	●		4.5 V DC 3 V RMS 2 V peak	●			1 mA/1 mV				DC..2 kHz	≤ 1%	P01.**1200.67**	***8.01***
	K2	0.1...450 mA DC 0.1...300 mA RMS 0.1...450 mA peak				●	●		4.5 V DC 3 V RMS 2 V peak	●			1 mA/10 mV				DC..1,5 kHz	≤ 1%	P01.**1200.74**	***8.02***
	**E1N**	0.05...2 A DC 0.05...1.5 A AC 0.5...150 A AC/DC				●	●		2 V DC 1.5 V AC 150 mV AC/DC	●			1 A/1 V 1 A/1 mV				DC..2 kHz DC..8 kHz	≤ 2% ≤ 1.5%	P01.**1200.30A**	***9.01***
	E3N	0.05...10 A peak 1...100 A peak				●	●		1 V peak			●	1 A/100 mV 1 A/10 mV				DC..100 kHz	≤ 3% ≤ 4%	P01.**1200.43A**	***9.02***
	E6N	5 mA...2 A DC 5 mA...1,5 A AC 20 mA...80 A AC/DC				●	●		2 V DC 1.5 V AC 0.8 V AC/DC	●			1 A/1 V 1 A/10 mV				DC..2 kHz DC..8 kHz	≤ 2% ≤ 4%	P01.**1200.40A**	***9.03***
	**PAC10**	0.5...400 A AC 0.5...600 A DC				●	●		600 mV AC/DC	●			1 A/1 mV				DC..5 kHz	≤ 2%	P01.**1200.70**	***10.01***
	PAC11	0.2...40 A AC 0.4...60 A DC 0.5...400 A AC 0.5...600 A DC				●	●		600 mV AC/DC	●			1 A/10 mV 1 A/1 mV		●		DC..10 kHz	≤ 1.5% ≤ 2%	P01.**1200.68**	***10.02***
	PAC12	0.2...60 A peak 0.4...60 A DC 0.5...600 A peak 0.5...600 A DC				●	●		600 mV AC/DC			●	1 A/10 mV 1 A/1 mV		●		DC..10 kHz	≤ 1.5% ≤ 2%	P01.**1200.72**	***10.03***
	**PAC20**	0.5...1000 A AC 0.5...1400 A DC				●	●		1.4 V AC/DC	●			1 A/1 mV				DC..5 kHz	≤ 2%	P01.**1200.71**	***10.04***
	PAC21	0.2...100 A AC 0.4...150 A DC 0.5...1000 A AC 0.5...1400 A DC				●	●		1.4 V AC/DC	●			1 A/10 mV 1 A/1 mV		●		DC..10 kHz	≤ 1.5% ≤ 2.5%	P01.**1200.69**	***10.05***
	PAC22	0.2...150 A peak 0.4...150 A DC 0.5...1400 A peak 0.5...1400 A DC				●	●		1.4 V AC/DC			●	1 A/10 mV 1 A/1 mV		●		DC..10 kHz	≤ 1.5% ≤ 2.5%	P01.**1200.73**	***10.06***

(1) *The upper value corresponds to 120% of the maximum nominal value.*
(2) *This pagination refers to the clamps catalogue*
(3) *Lead + electronic unit with Ø 4 mm safety connectors, centre distance 19 mm, for K and AmpFLEX® series*

Leak current measurement

Series	Model	Measuring scope (1): Very weak current	Weak current	Medium current	Strong current	~ AC	⎓ DC	Current	Voltage	Lead + Ø 4 mm safety connectors (3)	Ø 4 mm female sockets	BNC connector (coaxial)	Transformation ratio (input/ ouput)	Ouput protected against voltages surges	Automatic DC zero	Measurement of power (slight phase shift)	Bandwith (frequency in Hz)	Typical accuracy	To Order	Page (2)
	**MN73**	10 mA...2.4 A 100 mA...240 A				●			2 V AC 2 V AC	●			1 A/1000 mV 1 A/10 mV				40 Hz..10 kHz	≤ 1% ≤ 2%	P01.**1204.21**	***2.10***
	**C173**	1 mA...1,2 A 0.01...12 A 0.1...120 A 1...1200 A				●			1 V AC	●			1 A/1 V 10 A/1 V 100 A/1V 1000 A/1 V				10 Hz..3 kHz	≤ 0.7% ≤ 0.5% ≤ 0.3% ≤ 0.2%	P01.**1203.09**	***4.09***
	**B2**	500 µA...4 A 0.5...400 A				●			4 V AC 0.4 V AC	●			1 mA/1 mV 1 A/1 mV				10 Hz..1 kHz	≤ 0.5% ≤ 0.35%	P01.**1200.33**	***6.01***

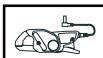
Measurement on oscilloscope

	**MN60**	0.1...60 A peak 0.5...600 A peak	●			2 V AC 2 V AC			●	1 A/100 mV 1 A/10 mV				40 Hz..40 kHz	≤ 2% ≤ 1.5%	P01.**1204.09**	***2.05***
	**Y7N**	1 A...1200 A peak	●			1 V AC			●	1 mA/1 mV				5 Hz..10 kHz	≤ 2%	P01.**1200.75**	***3.05***
	**C160**	0.1...30 A peak 1...300 A peak 1...2000 A peak	●			3 Vpeak 3 V peak 2 V peak			●	10 A/1 V 100 A/1 V 1000 A/1 V				10 Hz..100 kHz	≤ 3% ≤ 2% ≤ 1%	P01.**1203.08**	***4.08***
	**D38N**	1...90 A peak 1...900 A peak 1...9000 A peak	●			1 V AC			●	1 A/10 mV 1 A/1 mV 1 A/0,1 mV				30 Hz..50 kHz	≤ 2%	P01.**1200.57A**	***5.09***
	**E3N**	0.05...10 A peak 1...100 A peak	●	●		1 V peak			●	1 A/100 mV 1 A/10 mV				DC..100 kHz	≤ 3% ≤ 4%	P01.**1200.43A**	***9.02***
	**PAC12**	0.2...60 A peak 0.4...60 A DC 0.5...600 A peak 0.5...600 A DC	●	●		600 mV AC/DC			●	1 A/10 mV 1 A/1 mV		●		DC..10 kHz	≤ 1.5% ≤ 2%	P01.**1200.72**	***10.03***
	**PAC22**	0.2...150 A peak 0.4...150 A DC 0.5...1400 A peak 0.5...1400 A DC	●	●		1.4 V AC/DC			●	1 A/10 mV 1 A/1 mV		●		DC..10 kHz	≤ 1.5% ≤ 2.5%	P01.**1200.73**	***10.06***

Measurement of process current

	**K1**	1...4.5 A DC 1...3 A RMS 1...2 A peak	●	●		4.5 V DC 3 V RMS 2 V peak	●			1 mA/1 mV				DC..2 kHz	≤ 1%	P01.**1200.67**	***8.01***
	**K2**	0.1...450 mA DC 0.1...300 mA RMS 0.1...450 mA peak	●	●		4.5 V DC 3 V RMS 2 V peak	●			1 mA/10 mV				DC..1.5 kHz	≤ 1%	P01.**1200.74**	***8.02***

Measurement on secondary widing of current transformers

	**MN71**	10 mA...12 A	●			1 V AC	●			1 A/100 mV				40 Hz..10 kHz	≤ 1%	P01.**1204.20**	***2.09***

(1) *The upper value corresponds to 120% of the maximum nominal value.*
(3) *Lead + electronic unit with Ø 4 mm safety connectors, centre distance 19 mm, for K series*

(2) *This pagination refers to the clamps catalogue*

MINIPINCE SERIES

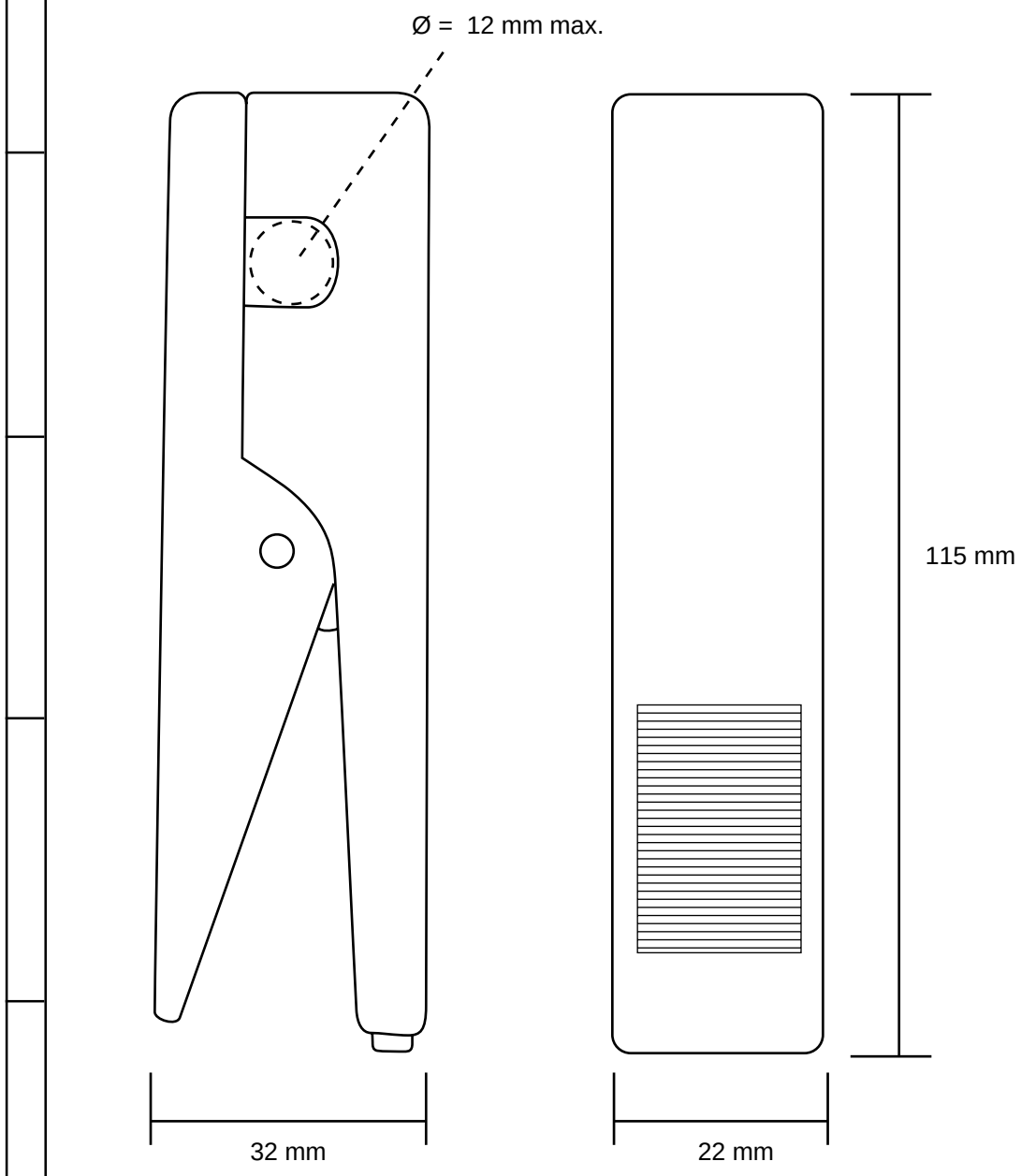
This line of miniature clamps has been designed for the measurement of currents as low as a few milliamps right up to 150 A AC. Their small size makes them particularly handy when working in cramped spaces such as circuit breaker boards, control boards or switch board cabinets. MINIPINCES also make very good work companions for multimeters.

There are two types of MINIPINCE available, the first acting as a traditional current transformer (with current transformation ratios of 100:1 or 1000:1), supplying an output current in the order of mA for use with multimeters, logging equipment or equipment with suitable current input ranges.

The second variety of MINIPINCE supplies an output voltage proportional to the measured current (1 mV/A,10 mV/A or 100 mV/A) so that devices with AC voltage inputs may be used to measure, display and memorise currents. There is also another model that gives a DC voltage output.

MINIPINCES also make true RMS measurement possible when used in conjunction with true RMS instruments.

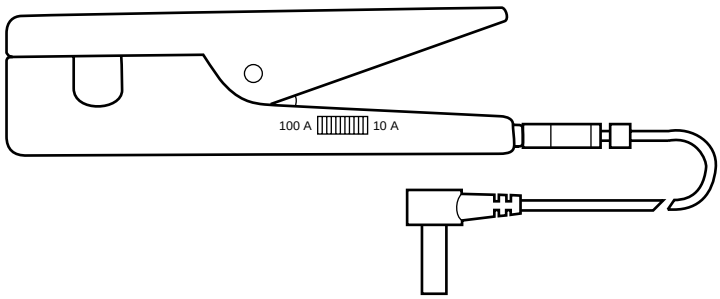
There are some subtle differences between the different models available in the range, MINIPINCE 1 is particularly suited to measuring very weak AC currents for example, MINIPINCE 2 is designed for the measurement of 5 A signals and MINIPINCE 5 uses special magnetic circuits to achieve a high level of precision and low phase shifting.



Title : MINIPINCE Series	
Drawing N°	Dessiné par :
Manufactured by CHAUVIN ARNOUX	

Clamp-on AC current probe
Model MINIPINCE 1

Current	10 A AC	100 A AC
Ouput	1 mV/mA	1 mV/A



■ Electrical Specification

Current Range:
10 A: 1 mA...10 A AC
100 A: 1...100 A AC

Output Signal:
1 mV AC/mA AC (10 V for 10 A)
1 mV AC/A AC (100 mV for 100 A)

Accuracy *(1)* (% of output signal)**:**
■ Accuracy: 1 mA...10 A AC
45 to 65 Hz: ± 3% ± 1 mV
65 to 500 Hz: ≤ 6% ± 1 mV
■ Accuracy: 1...100 A AC
45 to 65 Hz: ± 2% ± 0.5 mV
65 to 500 Hz: ≤ 2% ± 0.5 mV

Bandwidth:
45...500 Hz

Load Impedance:
10 A Range: ≥ 1 MΩ
100 A Range: ≥ 10 kΩ

■ Mechanical Specification

Operating Temperature:
-10°...50°C

Storage Temperature:
-40°...80°C

Clamps a max. diameter of:
Max Ø 12 mm

Self-extinguishing ability:
Casing : UL 94 V0

Dimensions:
32 x 115 x 22 mm

Weight:
160 g

Colour:
Dark grey casing

Output:
Via 1.5 m lead with 4 mm banana plugs

■ Safety Specification

Electrical:
- double insulated device or extra insulation between the primary and secondary circuits and outer casing, in accordance with IEC 1010-1 and IEC 1010-2-032
- 30 V category III, pollution degree 2

⚠ For conductors where the voltage exceeds 30 V in relation to earth, only use the clamp if the conductors are insulated.

- 30 V max common mode between output and earth
- 3 kV 50/60 Hz dielectric for 1 min

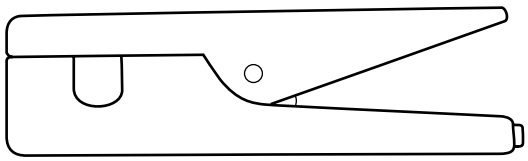
Electromagnetic Compatibility (EC stamp):
EN 50081-1: Class B
EN 50082-2:
- Electrostatic Discharge IEC 1000-4-2
- Radial Field IEC 1000-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field up to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23 °C ±3°K, 20 to 70 % RH, external magnetic field< 40 A/m, No DC component, no external current carrying conductor, centred test sample, load impedance1 MΩ.

To Order	Reference
Clamp-on AC current probe model **MINIPINCE 1** with user's manual	P01.**1050.01**

Clamp-on AC current probe
Model MINIPINCE 2

Current	150 A AC
Ouput	100 mV DC/A



■ Electrical Specification

Current range:
1 A...150 A AC

Output Signal:
100 mV DC/A AC (15 V for 150 A)

Accuracy *(1)* (% of output signal)**:**
1 to 5 A : ≤ 10% ± 20 mV
5 to 15 A : ≤ 6%
15 to 150 A : ≤ 3%

Load Impedance:
≥ 50 kΩ

Overload:
170 A DC

Bandwidth:
70...400 Hz

■ Mechanical Specification

Operating Temperature:
-10°...50°C

Storage Temperature:
-40°...80°C

Temperature Influence:
< 0.2% for every 10°K

Clamps a max. diameter of:
12 mm Ø

Self-extinguishing ability:
Casing : UL 94 V0

Dimensions:
32 x 115 x 22 mm

Weight:
160 g

Colours:
Dark grey casing

Output:
Via standard 4 mm sockets

■ Safety Specification

Electrical:
- double insulated device or extra insulation between the primary and secondary circuits and outer casing, in accordance with IEC 1010-1 and IEC 1010-2-032
- 30 V category III, pollution degree 2

⚠ For conductors where the voltage exceeds 30 V in relation to earth, only use the clamp if the conductors are insulated.

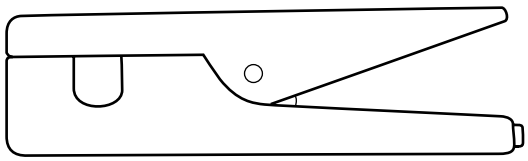
- 30 V max common mode between output and earth
- 3 kV 50/60 Hz dielectric for 1 min

Electromagnetic Compatibility (EC stamp):
EN 50081-1: Class B
EN 50082-2:
- Electrostatic Discharge IEC 1000-4-2
- Radial Field IEC 1000-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field up to 50/60 Hz IEC 1000-4-8

(1) Reference conditions : 23 °C ±3°K, 20 to 70 % RH, external magnetic field < 40 A/m, no DC component, no external current carrying conductor, centred test sample, load impedance 1 MΩ.

To Order	Reference
Clamp-on AC current probe model **MINIPINCE 2** with user's manual	P01.**1050.02**

Clamp-on AC current probe
Model MINIPINCE 3



Current	150 A AC
Ratio	500/1
Ouput	2 mA/A

Electrical Specification

Current range:
0.5 A...150 A AC

Current transformation ratio:
500/1

Output Signal:
2 mA AC/A AC (300 mA for 150 A)

Accuracy and phase shift *(1)*
(% of output signal)**:**
0.5...150 A : ≤ 4% ±50 mA
≤ 10° ±3°

Overload:
170 A DC

Band width:
45...450 Hz

Mechanical Specification

Operating Temperature:
-10°...+50°C

Storage Temperature:
-40°...80°C

Temperature Influence:
< 0.2% for every 10°K

Clamps a max. diameter of:
12 mm Ø

Self-extinguishing ability:
Casing : UL 94 V0

Dimensions:
32 x 115 x 22 mm

Weight:
160 g

Colour:
Dark grey casing

Output:
Via standard 4 mm sockets

Safety Specification

Electrical:
- double insulated device or extra insulation between the primary and secondary circuits and outer casing, in accordance with IEC 1010-1 and IEC 1010-2-032
- 30 V category III, pollution degree 2

⚠ For conductors where the voltage exceeds 30 V in relation to earth, only use the clamp if the conductors are insulated.

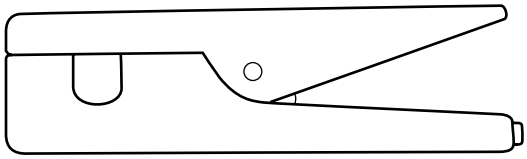
- 30 V max common mode between output and earth
- 3 kV 50/60 Hz dielectric for 1 min

Electromagnetic Compatibility (EC stamp):
EN 50081-1: Class B
EN 50082-2:
- Electrostatic Discharge IEC 1000-4-2
- Radial Field IEC 1000-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field up to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23 °C ±3°K, 20 to 70 % RH, external magnetic field < 40 A/m, no DC component, no external current carrying conductor, centred test sample, load impedance 5 Ω.

To Order	Reference
Clamp-on AC current probe model **MINIPINCE 3** with user's manual	P01.**1050.03**

Clamp-on AC current probe
Model MINIPINCE 4



Current	150 A AC
Ratio	1000/1
Ouput	1 mA/A

■ Electrical Specification

Current Range:
2...150 A AC

Current transformation ratio:
1000/1

Output signal:
1 mA AC/A AC (150 mA for 150 A)

Accuracy and Phase shift*(1)*
(% of output signal):
■ Accuracy: 1 mA to 10 A AC
45...65 Hz : ± 2.5% ± 0.15 mA
65...1000 Hz: + 4.5% ± 0.15 mA

■ Phase shift :
≤ 10° from 1 to 120 A, 50...60 Hz

Overload:
170 A DC

Bandwidth:
30...1000 Hz

Load impedance:
5 Ω max

Maximum tension at output :
(Secondary circuit open)
Electrical protection circuit limits tension to 20 V

■ Mechanical Characteristics

Operating Temperature:
-10°...50°C

Storage Temperature:
-40°...80°C

Temperature Influence:
< 0.2% for every 10°K

Clamps a max. diameter of:
12 mm Ø

Self-extinguishing ability:
Casing: UL 94 V0

Dimensions :
32 x 115 x 22 mm

Weight:
160 g

Colours:
Dark grey casing

Output:
Via standard 4 mm sockets

■ Safety Specification

Electrical:
- double insulated device or extra insulation between the primary and secondary circuits and outer casing, in accordance with IEC 1010-1 and IEC 1010-2-032
- 30 V category III, pollution degree 2

⚠ For conductors where the voltage exceeds 30 V in relation to earth, only use the clamp if the conductors are insulated.

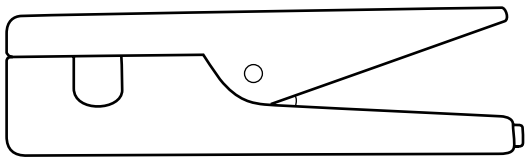
- 30 V max common mode between output and earth
- 3 kV 50/60 Hz dielectric for 1 min

Electromagnetic Compatibility (EC stamp):
EN 50081-1: Class B
EN 50082-2:
- Electrostatic Discharge IEC 1000-4-2
- Radial Field IEC 1000-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field up to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23 °C ± 3°K, 20 to 85 % RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component , no external current carrying conductor, centred test sample, load impedance 1 Ω.

To Order	Reference
Clamp-on AC current probe model **MINIPINCE 4** with user's manual	P01.**1050.04**

Clamp-on AC current probe
Model MINIPINCE 5



Current	100 A AC
Ratio	1000/1
Ouput	1 mA/A

■ Electrical Specification

Current Range:
50 mA...100 A AC

Current transformation ratio:
1000/1

Output signal:
1 mA AC/A AC (100 mA for 100 A)

Accuracy and phase shift*(1)*:
(% of output signal)
■ Accuracy:
≤ 1% ± 0.01 mA
■ Phase shift:
≤ 3.5° from 1 to 100 A, 50...60 Hz

Overload:
170 A DC

Bandwidth:
45 Hz...10 kHz

Load Impedance:
5 Ω max

Maximum output tension:
(Secondary circuit open)
≤ 10 V at 50 Hz

■ Mechanical Specification

Operating Temperature:
-10°...+50°C

Storage Temperature:
-40°...+80°C

Temperature Influence:
< 0.2% for every 10°K

Clamps max. diameter of:
12 mm ∅

Self-extinguishing ability:
Casing : UL 94 V0

Dimensions:
32 x 115 x 22 mm

Weight:
160 g

Colours:
Dark grey casing

Output:
Via standard 4 mm sockets

■ Safety Specification

Electrical:
- double insulated device or extra insulation between the primary and secondary circuits and outer casing, in accordance with IEC 1010-1 and IEC 1010-2-032
- 30 V category III, pollution degree 2

⚠ For conductors where the voltage exceeds 30 V in relation to earth, only use the clamp if the conductors are insulated.

- 30 V max common mode between output and earth
- 3 kV 50/60 Hz dielectric for 1 min

Electromagnetic Compatibility (EC stamp):
EN 50081-1: Class B
EN 50082-2:
- Electrostatic Discharge IEC 1000-4-2
- Radial Field IEC 1000-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field up to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions: 23 °C ± 3°K, 20 to 85 % RH, 48 to 65 Hz, external magnetic field< 40 A/m, no DC component, no external current carrying conductor, centred test sample, Load impedance 1 Ω.

To Order	Reference
Clamp-on AC current probe model **MINIPINCE 5** with user's manual	P01.**1050.05**

MN Series

These ergonomic mini-clamps are designed to make light work of measuring low and medium currents from 0.01 A to 240 A AC.

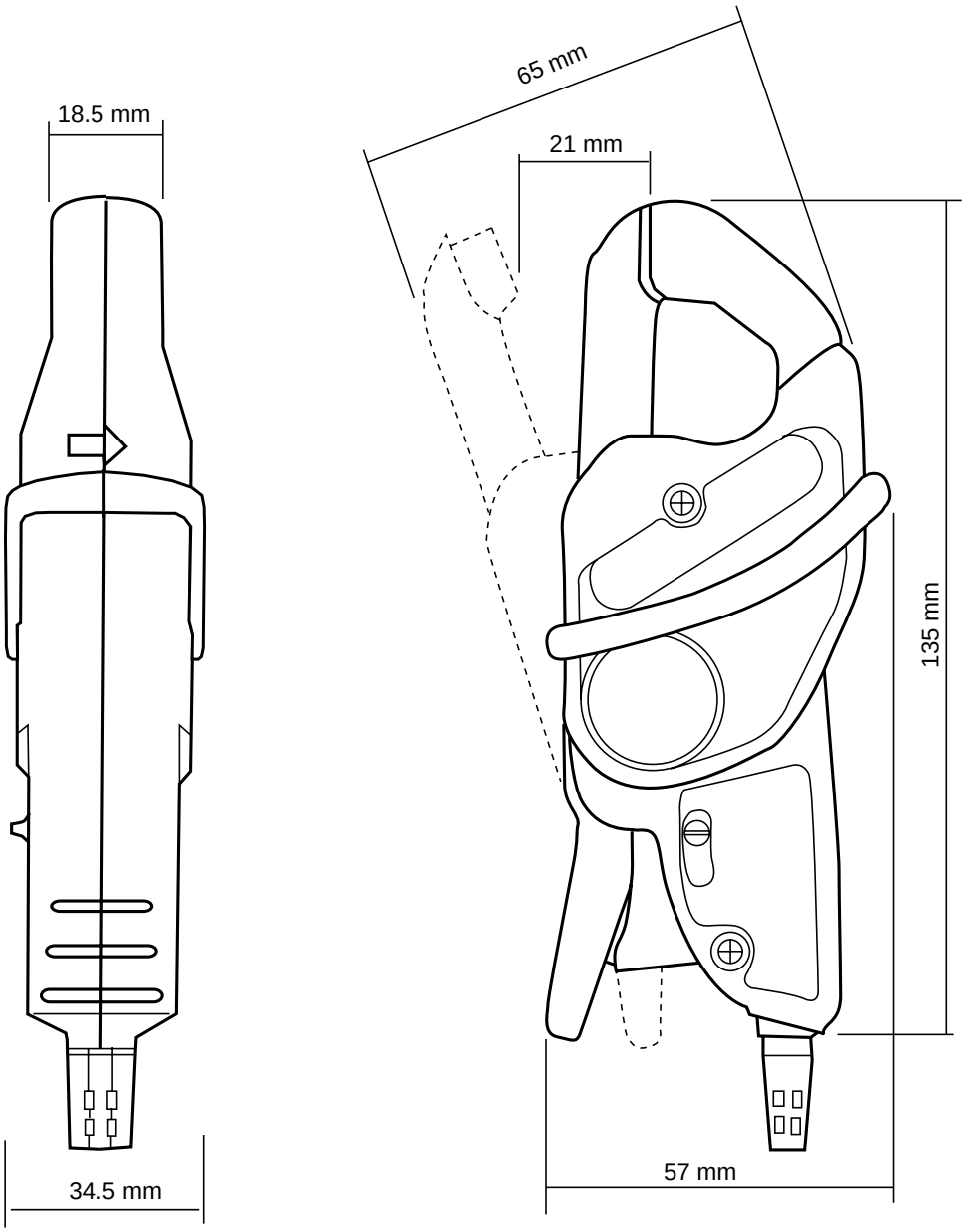
The shape of the jaws makes 'hooking' onto cables easy, even in areas of restrictive access. The jaws can grip conductors up to 20 mm in diameter.

Depending on the particular model, they have one or two ranges. The output is via either jack sockets or a lead with 4 mm ∅ plugs, hence these probes are compatible with all multimeters and testers on the market.

There are two types of MN series probes available. The first kind operates as a current transformer (ratio 1000/1) and gives a current output (mA) for use with any tester with current ranges.

The second type gives a voltage output (DC or AC depending on the model) proportional to the measured current (1, 10, 100 or 1000 mV/A). This voltage output means that even instruments with DC or AC voltage ranges can be used to measure currents.

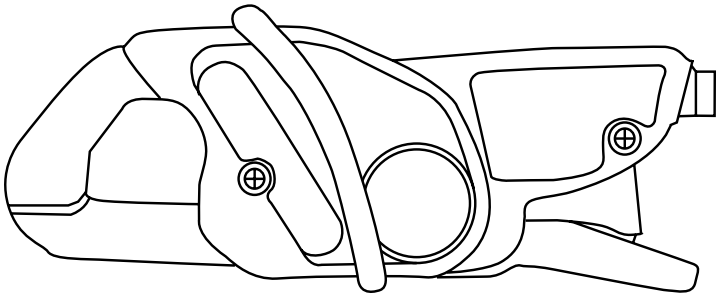
There are specific models in the MN series that have been designed with particular applications in mind like measurement of current transformer outputs, on oscilloscopes and even of leakage currents.



Title : MN series	
Drawing N°	Drawn by :
Manufactured by : CHAUVIN ARNOUX	

AC Current Probes
Models MN08 and MN09

Current	200 A AC
Ratio	1000/1
Ouput	1 mA/A



Electrical specifications

Current range :
0.5...240 A AC

Current transformation ratio :
1000/1

Output signal :
1 mA AC/A AC (240 mA at 240 A)

Accuracy and Phase Shift *(1)* **:**

Primary current	0.5...10 A	10...40 A	40...100 A	100...240 A
% Accuracy of output signal	≤ 3% + 0.5 mA	≤ 2.5% + 0.5 mA	≤ 2% + 0.5 mA	≤ 1% + 0.5 mA
Phase shift	not specified	≤ 5°	≤ 3°	≤ 2.5°

Bandwidth :
40 Hz...10 kHz

Crest factor :
3 for a current of 200 A rms

Max. current :
200 A continuous for a frequency ≤ 3 kHz (limitation proportional to the inverse of one third of frequency beyond)

Load impedance :
≤ 10 Ω

Working voltage :
600 V rms

Common mode voltage :
600 V category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50/60 Hz

Load influence :
< 0.5% on measurement
< 0.5° on phase

Frequency influence *(2)* **:**
< 3% of output signal of 40 Hz...1 kHz
< 12% of output signal of 1 kHz...10 kHz

Crest factor influence :
< 4% of output signal for a crest factor of 3 and current 200 A rms

Mechanical specifications

Operating temperature :
-10° to +55 °C

Storage temperature :
-40° to +70 °C

Influence of temperature :
≤ 0.15% of output signal per 10° K

Working humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2 % of output signal from 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max. 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
■ MN08 :
Safety jacks (4 mm)

■ MN09 :
Double insulated 1.5 m lead with safety banana plugs (4 mm)

Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032

- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, 1 Ω load.

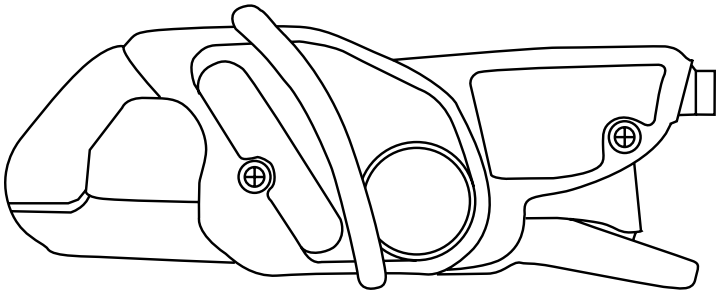
(2) Out of reference field

Ordering information	Reference
AC current probe model **MN08** including user's manual	P01.**1204.01**
AC current probe model **MN09** including user's manual	P01.**1204.02**

AC Current Probes
Models MN10 and MN11

Current	200 A AC
Ratio	1000/1
Ouput	1 mA/A

A voltage electronic limiting system protects output of clamp when operating, in case of accidental opening of secondary circuit.



Electrical specifications

Current range :
0.5...240 A AC

Transformation ratio :
1000/1

Output signal :
1 mA AC/A AC (240 mA at 240 A)

Accuracy and Phase Shift *(1)* **:**

Primary current	0.5...10 A	10...40 A	40...100 A	100...150 A	150...200 A	200...240 A
% Accuracy of output signal	≤ 3% + 0.5 mA	≤ 2,5% + 0.5 mA	≤ 2% + 0.5 mA	≤ 1% + 0.5 mA	≤ 2% + 0.5 mA	≤ 3% + 0.5 mA
Phase shift	not specified	≤ 5°	≤ 3°	≤ 2.5°	≤ 2.5°	≤ 2.5°

Bandwidth :
40 Hz...10 kHz

Crest factor :
3 for a current of 200 A rms

Max. current :
200 A continuous for a frequency ≤ 3 kHz (limitation proportional to the inverse of one third of frequency beyond)

Load impedance :
≤ 10 Ω

Open secondary voltage :

Limited to 8 V peak max.

Working voltage :
600 V rms

Common mode voltage :
600 V category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50/60 Hz

Load influence :
< 0.5% on measurement
< 0.5° on phase

Frequency influence *(2)* **:**
< 3% of output signal from 40 Hz...1 kHz
< 12% of output signal from 1 kHz...10 kHz

Crest factor influence :
< 4% of output signal for a crest factor of 3 and current 200 A rms

Mechanical specifications

Operating temperature :
-10° to +55 °C

Storage temperature :
-40° to +70 °C

Influence of temperature :
≤ 0.15% of output signal per 10° K

Working humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2 % of output signal from 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max. 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibrations resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL 94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
■ MN10 :
Safety jacks (4 mm)

■ MN11 :
Double insulated 1.5 m lead with safety banana plugs (4 mm)

Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032

- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50/60 Hz : IEC 1000-4-8

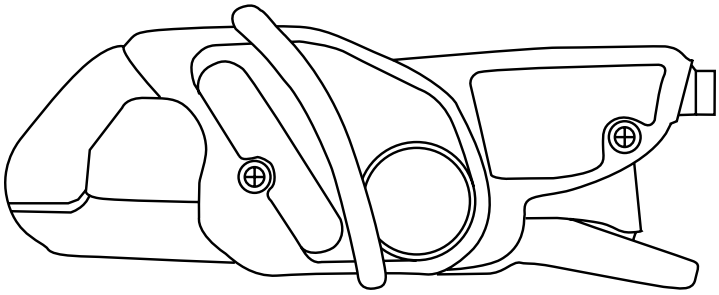
(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field < 40 A/m, no DC components, no external current carrying conductor, test sample centered, 1 Ω load.

(2) Out of reference field.

Ordering information	Reference
AC current probe model **MN10** including user's manual	P01.**1204.03**
AC current probe model **MN11** including user's manual	P01.**1204.04**

AC Current Probes
Models MN12 and MN13

Current	200 A AC
Ouput	10 mV/A



■ Electrical specifications

Current range :
0.5...240 A AC

Output signal :
10 mV AC/A AC (2.4 V at 240 A)

Accuracy and Phase Shift *(1)* **:**

Primary current	0.5...10 A	10...40 A	40...100 A	100...240 A
Accuracy in % of output signal	≤ 3.5% + 5 mV	≤ 2.5% + 5 mV	≤ 2% +5 mV	≤ 1% +5 mV
Phase shift	not specified	≤ 5°	≤ 3°	≤ 2.5°

Bandwidth :
40 Hz...10 kHz

Crest factor :
3 for a current of 200 A rms

Max. current :
200 A continuous for a frequency ≤ 1 kHz (derating proportional to the inverse of frequency beyond)

Load impedance :
≤ 1 MΩ

Working voltage :
600 V rms

Common mode voltage :
600 V category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50/60 Hz

Frequency influence *(2)* **:**
< 3% of output signal from 40 Hz...1 kHz
< 12% of output signal from 1 kHz...10 kHz

Crest factor influence :
< 4% of output signal for a crest factor of 3 and current 200 A rms

■ Mechanical specifications

Operating temperature :
-10° to +55 °C

Storage temperature :
-40° to +70 °C

Influence of temperature :
≤ 0.15% of output signal per 10° K

Working humidity:
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2 % of output signal from 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max. 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
■ MN12 :
Safety jacks (4 mm)

■ MN13 :
Double insulated 1.5 m lead with safety banana plugs (4 mm)

■ Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50/60 Hz : IEC 1000-4-8

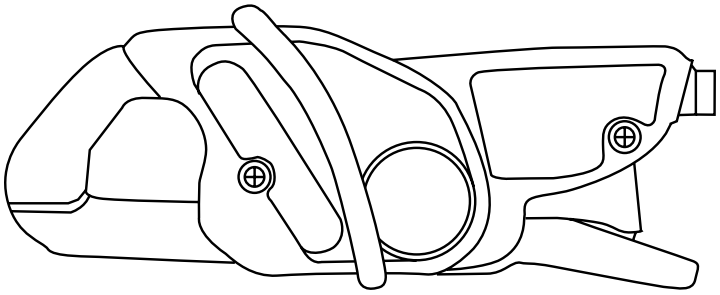
(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, 1 MΩ load.

(2) Out of reference field

Ordering information	Reference
AC current probe model **MN12** including user's manual	P01.**1204.05**
AC current probe model **MN13** including user's manual	P01.**1204.06**

AC Current Probes
Models MN14 and MN15

Current	200 A AC
Ouput	1 mV/A



Electrical specifications

Current range :
0.5...240 A AC

Output signal :
1 mV AC/A AC (240 mV at 240 A)

Accuracy and Phase Shift *(1)* **:**

Primary current	0.5...10 A	10...40 A	40...100 A	100...240 A
% Accuracy of output signal	≤ 3% + 5 mV	≤ 2.5% +5 mV	≤ 2% +5 mV	≤ 1% +5 mV
Phase shift	not specified	≤ 5°	≤ 3°	≤ 2.5°

Bandwidth :
40 Hz...10 kHz

Crest factor :
3 for a current of 200 A rms

Max. current :
200 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)

Load impedance :
≤ 1 MΩ

Working voltage :
600 V rms

Common mode voltage :
600 V category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50/60 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50/60 Hz

Frequency influence *(2)* **:**
< 3% of output signal from 40 Hz...1 kHz
< 12% of output signal from 1 kHz...10 kHz

Crest factor influence :
< 3% of output signal for a crest factor of 3 and current 200 A rms

Mechanical specifications

Operating temperature :
-10° to +55 °C

Storage temperature :
-40° to +70 °C

Influence of temperature :
≤ 0.15% of output signal per 10° K

Working humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2 % of output signal from 10% to 90% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max. 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
■ MN14 :
Safety jacks (4 mm)

■ MN15 :
Double insulated 1.5 m lead with safety banana plugs (4 mm)

Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

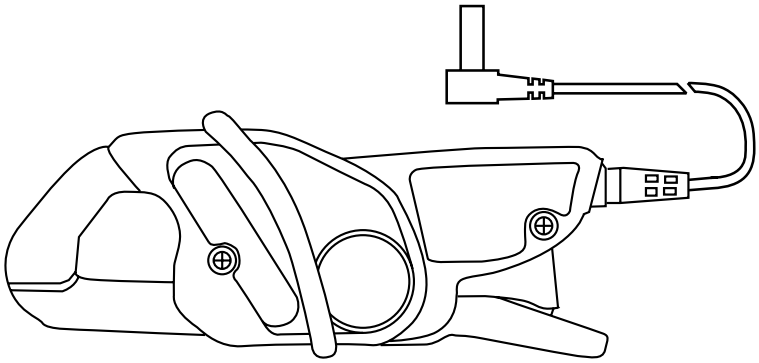
Electromagnetic compatibility (EMCMark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, 1 MΩ load.
(2) Out of reference field

Ordering information	Reference
AC current probe model **MN14** including user's manual	P01.**1204.16**
AC current probe model **MN15** including user's manual	P01.**1204.17**

AC Current Probe
Model MN21

Current	200 A AC
Ratio	1000/1
Ouput	1 mA/A



An electronic voltage limiting system protects output of clamp when operating, in case of accidental opening of secondary circuit.

Electrical specifications

Current range :
0.5...240 A AC

Current transformation ratio :
1000/1

Output signal :
1 mA AC/A AC (240 mA at 240 A)

Accuracy and Phase Shift *(1)* **:**

Primary current	0.1...1 A	1...20 A	20...80 A	80...150 A	150...200 A
% Accuracy of output signal	≤ 2% + 20 µA	≤ 1% + 20 µA	≤ 1%	≤ 2%	≤ 4%
Phase shift	not specified	≤ 2°	≤ 1.5°	≤ 1.5°	≤ 2°

Bandwidth :
40 Hz...10 kHz

Crest factor :
5 for a current of 280 A peak

Max. current :
200 A continuous for a frequency ≤ 3 kHz (limitation proportional to the inverse of one third of frequency beyond)

Load impedance :
≤ 10 Ω

Open secondary voltage :

Limited to 8 V peak max.

Working voltage :
600 V rms

Common mode voltage :
600 V category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50/60 Hz

Load influence :
< 0.5% on measurement
< 0.5° on phase

Frequency influence Ip < 150A *(2)* **:**
< 5% of output signal from 40 Hz...1 kHz
< 15% of output signal from 1 kHz...10 kHz
Add 5% error if 150 A < Ip < 200 A

Crest factor influence :
< 3% of output signal for a crest factor < 5 to a current < 280 A peak (50 A rms)

Mechanical specifications

Operating temperature :
-10° to +55 °C

Storage temperature :
-40° to +70 °C

Influence of temperature :
≤ 0.20% of output signal per 10° K

Working humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2 % of output signal from 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max. 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL 94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
Double insulated 1.5 m lead with safety banana plugs (4 mm)

Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

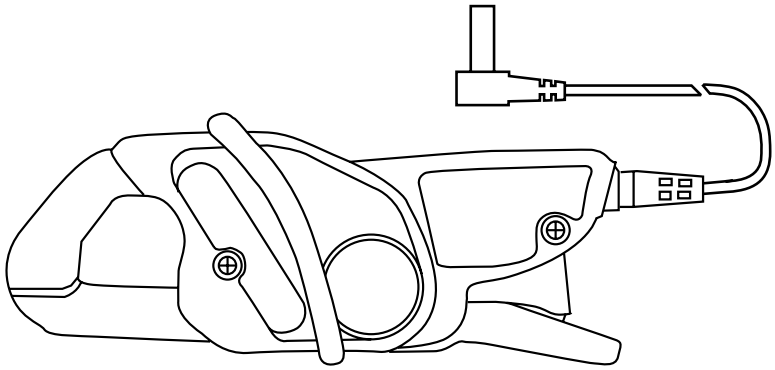
Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, 1 Ω load. *(2)* Out of reference field

Ordering information	Reference
AC current probe model **MN21** including user's manual	P01.**1204.18**

AC Current Probe
Model MN23

Current	200 A AC
Ouput	10 mV/A



Electrical specifications

Current range :
0.1...240 A AC

Output signal :
10 mV AC/A AC (2.4 V at 240 A)

Accuracy and Phase Shift *(1)* **:**

Primary current	0.1...1 A	1...20 A	20...80 A	80...150 A	150...200 A
% Accuracy of output signal	≤ 3% + 200 µV	≤ 2% + 200 µV	≤ 1%	≤ 4%	≤ 10%
Phase shift	not specified	≤ 3°	≤ 2°	≤ 2.5°	≤ 3.5°

Frequency range :
40 Hz...10 kHz

Crest factor :
5 for a current of 280 A peak

Max. current :
200 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)

Load impedance :
≤ 1 MΩ

Working voltage :
600 V rms

Common mode voltage :
600 V category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50/60 Hz

Frequency influence Ip < 100A *(2)* **:**
< 5% of output signal from 40 Hz...1 kHz**
< 15% of output signal from 1 kHz...10 kHz

**Add 10% error if 100 < Ip < 200A

Crest factor influence :
< 3% of output signal for a crest factor < 5 to a current < 280 A peak (50 A rms)

Mechanical specifications

Operating temperature :
-10° to +55 °C

Storage temperature :
-40° to +70 °C

Influence of temperature :
≤ 0.20% of output signal per 10° K

Working humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2 % of output signal from 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max. 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
Double insulated 1.5 m lead with safety banana plugs (4 mm)

Safety specifications :

Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (EMCMark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50 Hz : IEC 1000-4-8

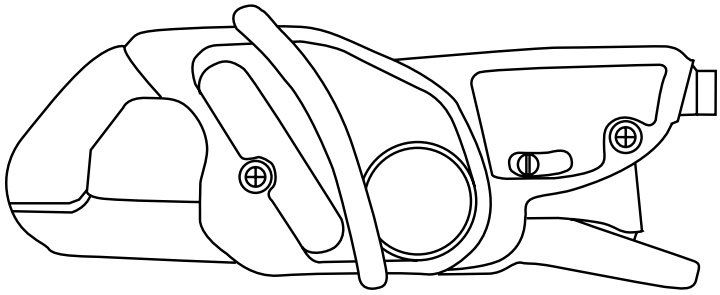
(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, >1 MΩ load.

(2) Out of reference field

Ordering information	Reference
AC current probe model **MN23** including user's manual	P01.**1204.19**

AC Current Probes
Models MN38 and MN39

Current	20 A AC	200 A AC
Ouput	100 mV/A	10 mV/A



■ Electrical specifications

Current range :
0.1...24 A AC
0.5...240 A AC

Output signal:
100 mV AC/A AC (2.4 V at 24 A)
10 mV AC/A AC (2.4 V at 240 A)

Accuracy and phase shift *(1)* **:**

Range	20 A	200 A			
Primary current	0.1...20 A	0.5...10 A	10...40 A	40 A ...100 A	100...240 A
% Accuracy of output signal	≤ 1% + 50 mV	≤ 3% + 5 mV	≤ 2.5% + 5 mV	≤ 2% + 5 mV	≤ 1% + 5 mV
Phase shift	not specified	not specified	≤ 5°	≤ 3°	≤ 2.5°

Bandwidth :
40 Hz...10 kHz

Crest factor :
3 for a current of 200 A rms

Max. currents :
200 A continuous for a frequency ≤ 1 kHz (Limitation proportional to inverse frequency beyond)

Load impedance :
> 1 MΩ

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal 50/60 Hz

Influence of frequency *(2)* **:**
■ 20 A range :
< 5% of output signal 40 Hz...1 kHz
< 15% of output signal 1 kHz...10 kHz
■ 200 A range :
< 3% of output signal 40 Hz...1kHz
< 12% of output signal 1 kHz...10 kHz

Influence of crest factor :
< 3% of output signal for a crest factor of 3 and current of 200 A rms

■ Mechanical specifications

Operating temperature :
-10° to +55°C

Storage temperature :
-40° to +70°C

Influence of temperature :
≤ 0.15% of output signal per 10 K

Working humidity :
From 0 to 85% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection level :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL 94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Ouput :
■ MN38 :
Safety jacks (4 mm)

■ MN39 :
Insulated 1.5 m lead with safety (4 mm) banana plugs.

■ Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, >1 MΩ load.

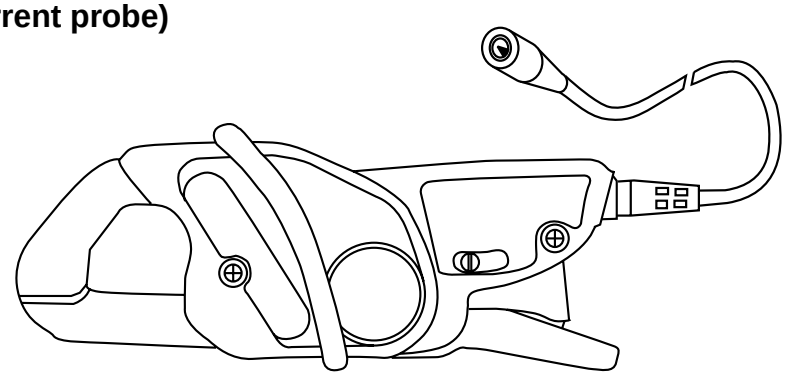
(2) Out of reference field

Ordering information	Reference
AC current probe model **MN38** including user's manual	P01.**1204.07**
AC current probe model **MN39** including user's manual	P01.**1204.08**

AC Current Oscilloscope Probe

Model MN60 (insulated AC current probe)

Current	60 A peak	600 A peak
Ouput	100 mV/A	10 mV/A



This 200 A AC clamp enables easy visualisation and measurement of "current" curves.

It fits any oscilloscope since it has a coaxial lead with BNC plug.

It produces a mV signal directly proportional to current.

It offers 2 different sensitivities.

■ Electrical specifications

Current range :
0.1...24 A AC (60 A peak)
0.5...240 A AC (600 A peak)

Accuracy and phase shift *(1)* **:**

Range	20 A	200 A			
Primary current	0.1...20 A	0.5...10 A	10...40 A	40 A ...100 A	100...240 A
% Accuracy of output signal	≤ 2% + 50 mV	≤ 3.5% + 5 mV	≤ 3% + 5 mV	≤ 2.5% + 5 mV	≤ 1.5% + 5 mV
Phase shift	not specified	not specified	≤ 6°	≤ 4°	≤ 3°

Output signal :
100 mV AC/A AC (2.4 V at 24 A)
10 mV AC/A AC (2.4 V at 240 A)

Bandwidth :
40 Hz...40 kHz (-3 dB) (depending on current value)

Crest factor :
3 for a current of 200 A rms

Max. currents :
200 A continuous for a frequency ≤ 3 kHz (limitation proportional to inverse of one third of frequency beyond)

dI/dt max :
10 A/µs

Load impedance :
≥ 1 MΩ and ≤ 100 pF

Output impedance at 1kHz :
20 A range : ≤ 20 Ω
200 A range : ≤ 10 Ω

Insertion impedance (at 50/60Hz)
< 10 mΩ

Ampere x second product :
0.1 As

Rise/fall time :
≤ 40 µs

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50 Hz

Influence of frequency *(2)* **:**
■ 20 A range :
< 10% of output signal 40 Hz...1 kHz
< 15% of output signal 1 kHz...10 kHz
■ 200 A range :
< 3% of output signal 40 Hz...1 kHz
< 12% of output signal 1 kHz...10 kHz

Influence of crest factor :
< 3% of output signal for a crest factor of 3 with current of 200 A rms

■ Mechanical specifications

Operating temperature :
-10° to +55°C

Storage temperature :
-40° to +70°C

Influence of temperature :
≤ 0.15% of output signal per 10 K

Working humidity :
From 0 to 85% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection level :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL 94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
1.5 m insulated coaxial lead with safety 4 mm banana plug

Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032

- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (CE Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, >1 MΩ and ≤ 100 pF load impedance.

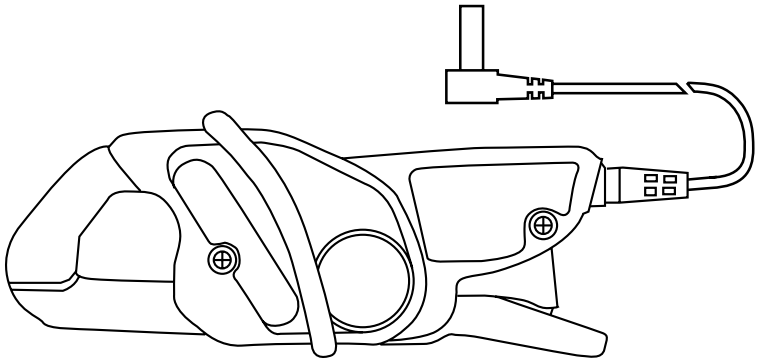
(2) Out of reference field

Ordering information	Reference
AC current probe model **MN60** for oscilloscope including user's manual	P01.**1204.09**

AC Current Probe
Model MN71

Current	10 A AC
Ouput	100 mV/A

This clamp was specially designed to measure current on currents transformer secondary circuits.



Electrical specifications

Current range :
0.01...12 A AC

Output signal :
100 mV AC/A AC (1.2 V at 12 A)

Accuracy and phase shift *(1)* **:**

Primary current	0.01...0.1 A	0.1...1 A	1...5 A	5...12 A
% Accuracy of output signal	≤ 3% + 0.1 mV	≤ 2.5%	≤ 1%	
Phase shift	not specified	≤ 5°	≤ 3°	≤ 3°

Bandwidth :
40 Hz...10 kHz

Crest factor :
5 for a current of 40 A peak (8 A rms)

Max. currents :
20 A continuous for a frequency ≤ 10 kHz (limitation proportional to the inverse of the tenth of frequency beyond)

Load impedance :
> 1 MΩ

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of an adjacent conductor :
< 15 mA/A at 50 Hz

Influence of instrument position in the jaws :
< 0.5% of output signal at 50/60 Hz

Influence of frequency *(2)* **:**
< 5% of output signal 20 Hz...1 kHz
< 10% of output signal 1 kHz...10 kHz

Influence of crest factor :
< 3% of output signal for crest factor < 5 with current < 40 A rms

Mechanical specifications

Working temperature :
-10° to +55 °C

Storage temperature :
-40° to +70 °C

Influence of temperature :
≤ 0.2% of output signal per 10 K

Operating humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2 % of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection level :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
1.5 m insulated or reinforced insulation lead with 2 safety banana plugs (4 mm)

Safety specifications :

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (CE Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, load impedance > 1 MΩ.

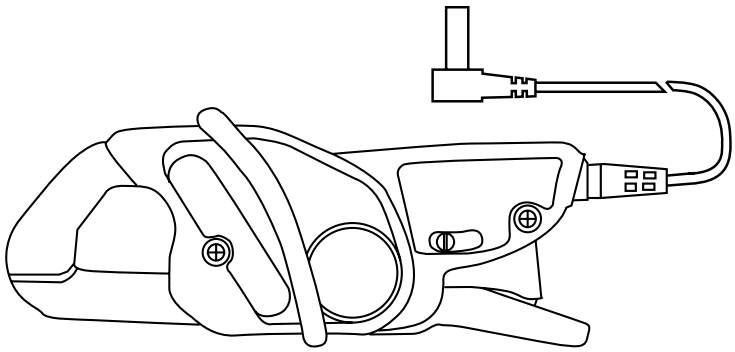
(2) Out of reference field

Ordering information	Reference
AC current probe model **MN71** including user's manual	P01.**1204.20**

AC Current Probe
Model MN73

Current	2 A AC	200 A AC
Ouput	1000 mV/A	10 mV/A

This clamp has a wide measurement range (up to 200 A), and it can also measure very low currents.
We call it the " universal " probe.



■ Electrical specifications

Current range :
0.01...2.4 A AC
0.1...240 A AC

Output signal:
1000 mV AC/A AC (2 V at 2 A)
10 mV AC/A AC (2.4 V at 240 A)

Accuracy and phase shift *(1)* **:**

Range	2 A				200 A				
Primary current	0.01...0.1 A	0.1...1 A	1...2 A	2 A ...2.4 A	0.1...1 A	1...20 A	20...80 A	80...150	150...200 A
% Accuracy of output signal	≤ 5% + 2 mV	≤ 3% + 1 mV	≤ 1%	≤ 1%	≤ 3% + 200 µV	≤ 2% + 200 µV	≤ 1%	≤ 4%	≤ 10%
Phase shift	not specified				not specified	≤ 3°	≤ 2°	≤ 3°	≤ 4°

Bandwidth :
40 Hz...10 kHz

Crest factor :
5 for a current of 280 A peak (200 A rms)

Max. currents :
200 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse frequency beyond)

Load impedance :
> 1 MΩ

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA/A at 50 Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50/60 Hz

Frequency influence *(2)* **:**
■ 2 A range :
< 10% of output signal 40 Hz...10 kHz

■ 200 A range :
< 5% of output signal 40 Hz...1 kHz**
< 15% of output signal 1 kHz...10 kHz
** add 10% error if 100 A < Ip < 200 A

Crest factor influence :
< 5% of output signal for a crest factor < 5 with current < 280 A rms

■ Mechanical specifications

Operating temperature :
-10° to +55°C

Storage temperature :
-40° to +70°C

Influence of temperature :
≤ 0.20% of output signal per 10 K

Working humidity :
From 0 to 85% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL 94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
Insulated or reinforced 1.5 m lead with 2 safety banana plugs (4 mm)

■ Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (CE Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, load impedance > 1 MΩ.

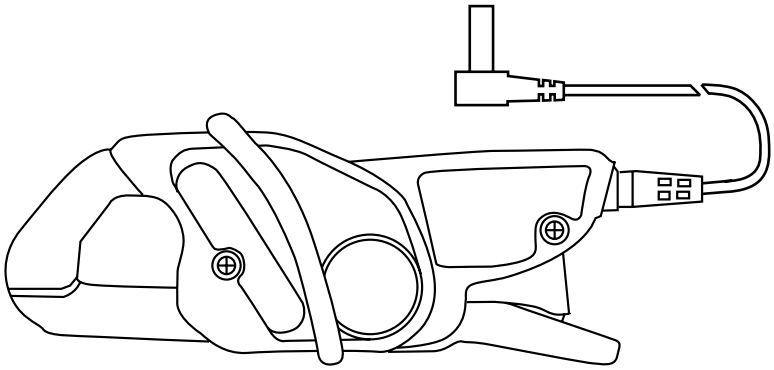
(2) Out of reference field

Ordering information	Reference
AC current probe model **MN73** including user's manual	P01.**1204.21**

AC Current Probes
Models MN88 and MN89

Current	200 A AC
Ouput	100 mV DC/A

These clamps produce a DC voltage output which is very useful for multimeters whose sensitivity in V or A is too weak.



Electrical specifications

Current range :
0.5...240 A AC

Output signal :
100 mV DC/A (24 V at 240 A)

Accuracy *(1)* **:**

Primary current	0.5...10 A	10...40 A	40...100 A	100...240 A
% Accuracy of output signal	≤ 5% + 50 mV	≤ 3% + 50 mV	≤ 2% + 50 mV	≤ 2%

Bandwidth :
40 Hz...10 kHz

Crest factor :
3 for a current of 200 A rms

Max. currents :
200 A continuous for a frequency ≤ 1kHz (derating proportional to the inverse of frequency and beyond)

Load impedance :
> (1 MΩ + filter RC 2s)

Working voltage :
600 V rms

Common mode voltage:
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 15 mA / A at 50Hz

Influence of conductor position in the jaws :
≤ 0.5% of output signal at 50 Hz

Frequency influence *(2)* **:**
< 5% of output signal 40 Hz...1 kHz
< 12% of output signal 1kHz...10 kHz

Influence of crest factor
< 3% of output signal for a crest factor of 3 with current of 200 A rms

Mechanical specifications

Working temperature :
-10° to +55°C

Storage temperature :
-40° to +70°C

Influence of temperature :
≤ 0.15% of output signal per 10 K

Operating humidity :
From 0 to 85% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
20 mm

Max. conductor size :
Cable : ∅ max 20 mm
Busbar : 1 busbar of 20 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability :
Case : UL 94 V2
Jaws : UL 94 V0

Dimensions :
135 x 51 x 30 mm

Weight :
180 g

Colours :
Dark grey case with red jaws

Output :
■ MN88 :
Safety jacks (4 mm)

■ MN89 :
1.5 m insulated or reinforced lead with 2 safety banana plugs (4 mm)

Safety specifications

Electrical :
Double insulated or reinforced insulation between primary, secondary and outer case according to IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (CE Mark) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic field to 50 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 70 % RH, sinusoidal signal frequency 48 Hz to 65 Hz, external magnetic field< 40 A/m, no DC components, no external current carrying conductor, test sample centered, load impedance > 1 MΩ.

(2) Out of reference field

Ordering information	Reference
AC current probe model **MN88 i**ncluding user's manual	P01.**1204.10**
AC current probe model **MN89** including user's manual	P01.**1204.15**

Clamp-on AC current probes

Y Series

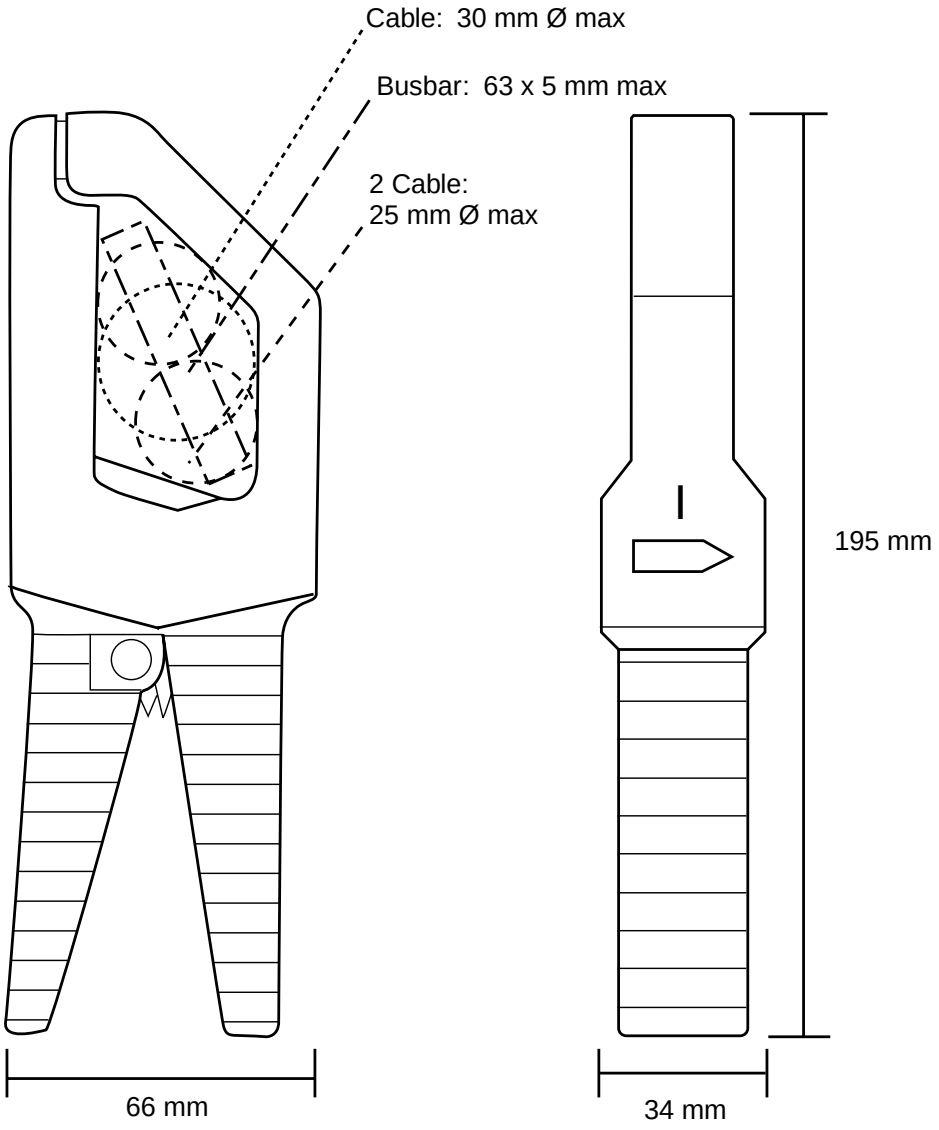
The Y series clamps are designed to be both rugged and versatile whilst remaining easy to use. The jaw design is such that cables are easily hooked onto and small busbars are easily gripped for current measurement up to 600 A AC.

There are two types of Y series clamp available :

The first acts as a current transformer (ratios of 100:1 or 1000:1), giving an output current that may be read by a multimeter, logging equipment or other suitable devices with current inputs in the appropriate range.

The other kind of Y series clamp has a DC voltage output proportional to the AC current measured (1 mV/A or 10 mV/A), allowing instruments without current ranges to measure, display and record currents on a DC voltage range.

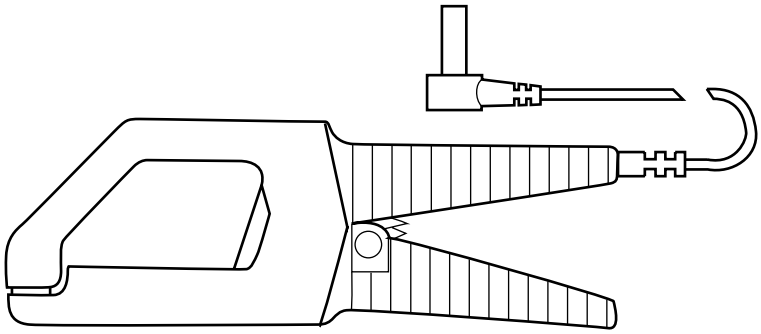
There is also a model available specifically for direct use with oscilloscopes.



Title : Y SERIES	
Drawing N°	Drawn:
Manufactured by: CHAUVIN ARNOUX	

Clamp-on AC current probe
Model Y1N

Current	600 A AC
Ratio	1000/1
Ouput	1 mA/A



Electrical Specification

Current range:
4...600 A AC

Current transformation ratio:
1000:1

Output signal:
1 mA AC/A AC

Accuracy *(1)***:**

Primary current	4 A	25 A	100 A	250 A	500 A	600A *(2)*
% Accuracy of output signal	4.5% +0.5 mA	4.5%	3.5%	3%	3%	3%
Phase shift	non-specified	4°	2°	2°	2°	2°

Class 3 at 1.25 VA

Bandwidth:
48...1000 Hz

Load impedance:
5 Ω max

Overload:
700 A for 10 min

Max. Tension at output (Secondary circuit open):
Electronic protection circuit limiting tension to 10 V peak max.

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent and parallel conductors:
< 30 mA/A at 50 Hz

Influence of conductor positioning in jaws:
±1.5%

Mechanical specification

Operating temperature:
-15°...+50°C

Storage temperature:
-40°...+85°C

Temperature Influence:
< 0.1% for every 10°K

Operating altitude:
0 to 2000 m

Max. jaw opening:
33 mm

Max. clamp jaw insertion capacity:
Cable : 30 mm Ø max
Busbar : 63 x 5 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
1.5 m (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm test in accordance with
IEC 68-2-6

Self-extinguishing ability:
UL 94V0

Dimensions:
66 x 195 x 34 mm

Weight:
420 g

Colour:
Dark grey

Output:
Via 1.5 m double-wound lead with reinforced or double insulation and two 4mm elbowed male safety plugs

Safety Specification

Electrical:
Double or reinforced insulation between the primary and secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

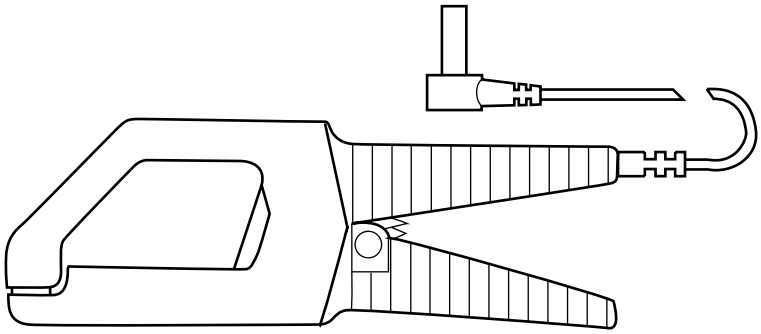
Electromagnetic Compatibility (E.M.C.):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field< 40 A/m, no current carrying conductor nearby, centred test sample, load impedance : 5Ω.
(2) 600 A for 10 minutes max.

To order	Reference
Clamp-on AC current probe model **Y1N** with user's manual	P01.**1200.01A**

Clamp-on AC current probe
Model Y2N

Current	600 A AC
Ratio	1000/1
Ouput	1 mA/A



Electrical Specification

Current range:
4...600 A AC

Current transformation ratio:
1000:1

Output signal:
1 mA AC/A AC

Accuracy *(1)***:**

Primary current	4 A	25 A	100 A	250 A	500 A	600A *(2)*
% Accuracy of output signal	3% +0.5 mA	3%	1.5%	1%	1%	1%
Phase shift	non-specified	3°	1.5°	1°	1°	1°

Class 1 to 1.25 VA

Bandwidth:
48...1000 Hz

Load impedance:
5 Ω max

Overload:
700 A for 10 min

Max. tension at output:
(Secondary circuit open):
Electronic protection circuit limiting voltage to 10 V peak max.

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent and parallel conductors:
< 30 mA/A at 50 Hz

Influence of conductor positioning in the clamp's jaws:
< 1%

Mechanical Specification

Operating Temperature:
-15°...+50°C

Storage temperature:
-40°...+85°C

Temperature Influence:
< 0.1% for every 10°K

Operating Altitude:
0 to 2000 m

Max. jaw opening:
33 mm

Max. clamp jaw insertion capacity :
Cable: 30 mm Ø max
Busbar: 63 x 5 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
1.5 m (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0,15 mm test in accordance with IEC 68-2-6

Self-extinguishing ability:
UL94 V0

Dimensions:
66 x 195 x 34 mm

Weight:
420 g

Colour:
Dark grey

Output:
Via 1.5 double-wound lead with reinforced or double insulation and two 4 mm elbowed safety plugs

Safety Specification

Electrical:
Double or reinforced insulation between the primary and secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

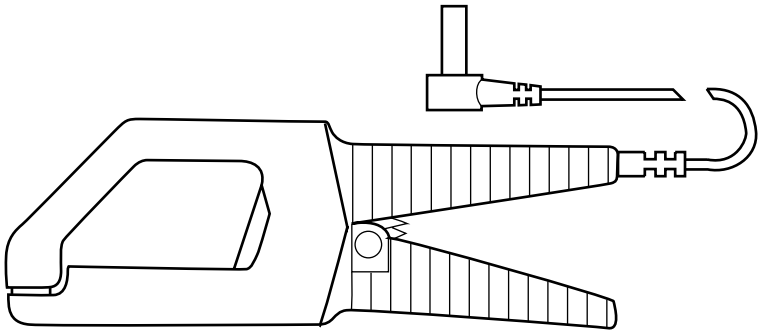
Electromagnetic Compatibility (E.M.C.):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transits IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no current carrying conductor nearby, centred test sample, load impedance 5Ω.
(2) 600 A for 10 minutes max.

To order	Reference
Clamp-on AC current probe model **Y2N** with user's manual	P01.**1200.28A**

Clamp-on AC current probe
Model Y3N

Current	600 A AC
Ratio	100/1
Ouput	10 mA/A



Electrical Specification

Current range:
4...600 A AC

Current transformation ratio:
100:1

Output ratio:
10 mA AC/A AC

Accuracy *(1)***:**

Primary current	4 A	25 A	100 A	250 A	500 A	600A *(2)*
% Accuracy of output signal	5% +5 mA	5%	3%	3%	3%	3%
Phase shift	non-specified	6°	5°	3°	3°	3°

Class 3 at 2.5 VA

Bandwidth:
48...1000 Hz

Load impedance:
0.1 Ω max

Overload:
700 A for 10 min

Max. tension at output (Secondary circuit open):
Electronic circuit protection limits voltage to 10 V peak max.

Working voltage:
600 Vrms

Common mode voltage:
30 Vrms

Influence of adjacent and parallel conductors:
< 30 mA/A at 50 Hz

Influence of conductor positioning in the clamp's jaws:
±1%

Mechanical Specification

Operating Temperature:
-15°...+50°C

Storage temperature:
-40°...+85°C

Temperature Influence:
< 0.1% for every 10°K

Operating altitude:
0 to 2000 m

Max. clamp jaw opening:
33 mm

Max. clamp jaw insertion capacity:
Cable : 30 mm Ø max
Busbar : 63 x 5 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
1.5 m (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm test in accordance with IEC 68-2-6

Self-extinguishing ability:
UL 94V0

Dimensions:
66 x 195 x 34 mm

Weight:
420 g

Colour:
Dark grey

Output:
Via 1.5 m double wound lead with reinforced or double insulation and two 4 mm elbowed male safety plugs.

Safety Specification

Electrical:
Double insulation or reinforced insulation between the primary and secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

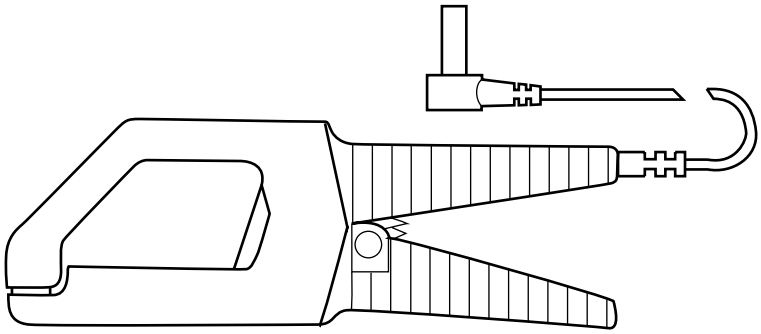
Electromagnetic Compatibility (E.M.C.):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no current carrying conductor nearby, centred test sample, load impedance 0.1 Ω.
(2) 600 A for 10 minutes max.

To order	Reference
Clamp-on AC current probe model **Y3N** with user's manual	P01.**1200.29A**

Clamp-on AC current probe
Model Y4N

Current	600 A AC
Ouput	1 mV DC/A AC



■ Electrical Specification

Current range:
4...600 A AC

Output signal:
1 mV DC/A AC

Accuracy *(1)*:

Primary current	2 A	25 A	100 A	250 A	500 A	600 A *(2)*
% Accuracy of output signal	5% +0.5 mV DC	5%	2%	1%	1%	2%

Bandwidth:
48...1000 Hz (error : add 2% to reference)

Load impedance:
> 100 kΩ max

Overload:
700 A for 10 min

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent and parallel conductors:
< 30 mA/A at 50 Hz

Influence of conductor positioning in the clamp's jaws:
±1%

■ Mechanical Specification

Operating Temperature:
-15°...+50°C

Storage Temperature:
-40°...+85°C

Temperature Influence:
< 0.1% for every 10°K

Operating Altitude:
0 to 2000 m

Max. jaw opening:
33 mm

Max. clamp jaw insertion capacity:
Cable : 30 mm Ø max
Busbar : 63 x 5 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
1.5 m (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm test in accordance with IEC 68-2-6

Self-extinguishing ability:
UL 94V0

Dimensions:
66 x 195 x 34 mm

Weight:
420 g

Colour :
Dark grey

Output:
Via 1.5 m double-wound lead with double or reinforced insulation and two 4 mm elbowed male safety plugs

■ Safety Specification

Electrical:
Double or reinforced insulation between the primary and secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

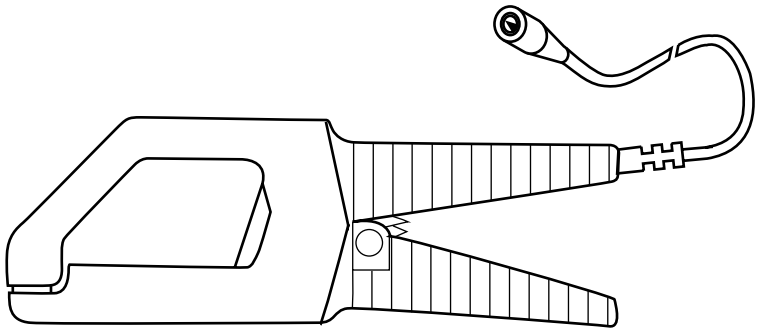
Electromagnetic compatibility (E.M.C.):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no current carrying conductor nearby, centred test sample, load impedance 10 MΩ.
(2) 600 A for 10 minutes max

To order	Reference
Clamp-on AC current probe model **Y4N** with user's manual	P01.**1200.05A**

Clamp-on AC current oscilloscope probe
Model Y7N (Insulated AC current probe)

Current	1200 A peak
Ouput	1 mV/A



This 500 A AC probe can be used in the display and measurement of 'current' curves.
It comes with a coaxial cable ended with a BNC plug, thus making it the ideal tool for use in conjunction with oscilloscopes.
It supplies a mV output signal that is directly proportional to the measured current.

Electrical Specification

Current range:
1...500 A rms (1200 A peak)

Output signal:
1 mV AC/A AC (500 mV to 500 A)

Accuracy and phase shift *(1)***:**

Primary current	1...20 A	20...100 A	100...500 A
% Accuracy of output signal	≤ 5% +0.3 mV	≤ 5%	≤ 2%
Phase shift	non-specified	≤ 3°	≤ 1°

Bandwidth:
5 Hz...10 kHz (to -3 dB)

dV/dt:
0.24 mV/µs (typical)

Maximum currents:
500 A continuous for a frequency ≤ 2 kHz (Limitation is proportional to the inverse frequency beyond 2 KHz)

Load impedance:
≥ 1 MΩ and ≤ 47 pF

Output impedance:
≤ 100 Ω and ≤ 4.7 nF

Amps.Seconds product:
15 A.s

Rise/Fall time:
Rise time to 5A: 18µs
Fall time to 5A: 23µs

Working voltage:
600 V rms

Influence of an adjacent conductor:
≤ 5µV / A AC at 50Hz

Mechanical Specification

Operating Temperature:
-30° to +50 °C

Storage temperature:
-50° to +80 °C

Temperature Influence:
≤ 0.15% of output signal per 10 K

Operating Relative Humidity:
From 0 to 85 % RH with a linear decrease above 35°C

Operating Altitude:
0 to 2000 m

Clamp jaw insertion capacity:
Cable: 30 mm ∅ max
Busbar: 1 busbar of 63 x 5 mm

Casing Protection:
IP 20 (IEC 529)

Drop test:
1.5m (IEC 68-2-32)

Mechanical Shock:
100 g (IEC 68-2-27)

Vibration:
10/55/10 Hz 0.15 mm (IEC 68-2-6)

Self-extinguishing ability:
UL94V0

Dimensions:
66 x 195 x 34 mm

Weight:
420 g

Colours:
Dark grey

Output:
Via 2 m coaxial cable ended with insulated BNC plug

Safety Specification

Electrical:
Double or reinforced device insulation between the primary and secondary circuits and the outer casing in accordance with IEC 1010-1 & IEC 1010-2-032
- 600V category III, pollution degree 2
- 300V category IV, pollution degree 2

Electromagnetic Compatibility (E.M.C.):
EN 50081-1: Class B
EN 50082-2:
- Electrostatic Discharge: IEC 1000-4-2
- Radial Field: IEC 1000-4-3
- Rapid Transients: IEC 1000-4-4
- Magnetic Field to 50/60 Hz: IEC 1000-4-8

(1) Reference Conditions : 23 °C ± 5°K, 0 to 75 % RH, sinusoidal signal, Frequency from 45 to 65 Hz, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centred test sample.

To order	Reference
Clamp-on AC current oscilloscope probe model **Y7N** with user's manual	P01.**1200.75**

" C 100 " Series

The " C100 " series is a range of thirteen transformer clamps having all the advantages of our old " C30 " series clamps whilst incorporating considerable improvements, particularly in the field of safety, ergonomics and performance:

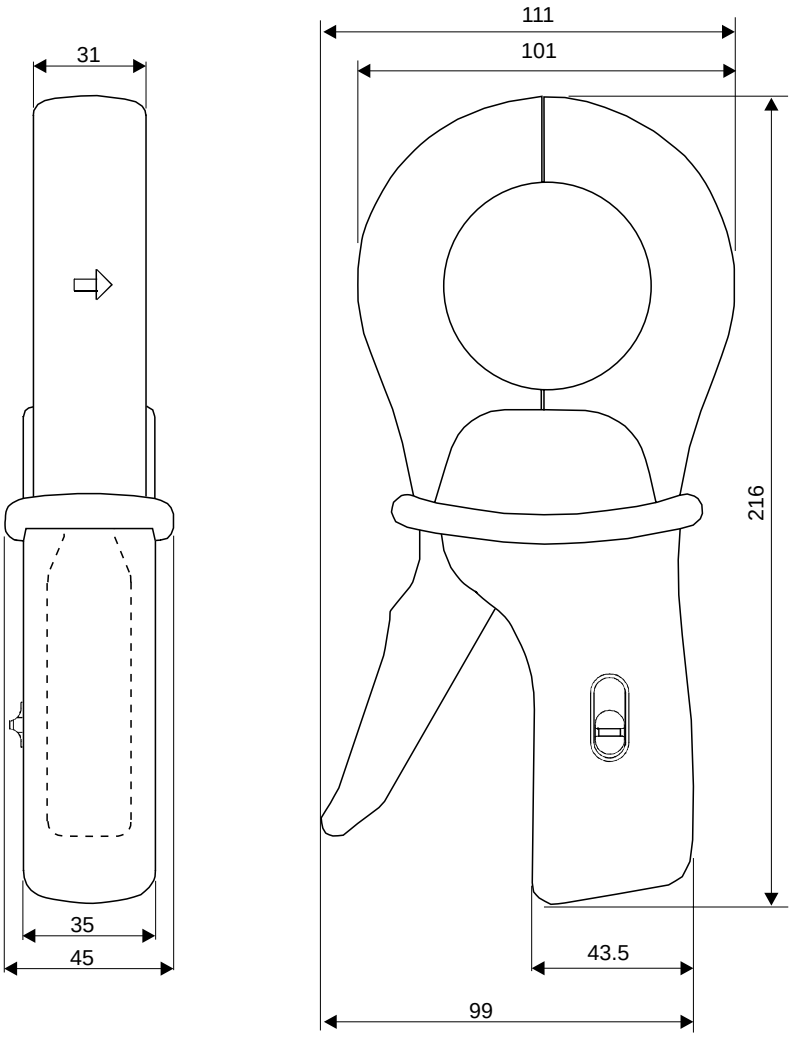
■ 1000 A measurement, excellent metrology, high accuracy, hight level of linearity, symmetrical coil windings for minimum phase shift, pendular adjusting system for magnetic elements, maximum conductor diameter Ø 52 mm and also some models with µ metal core specially made for wattmeter use.

■ Innovative design, its shape is very ergonomic, handle with finger grips, assisted opening system for jaws (patented system).

■ Safety standards IEC 1010 600V cat. III (industry and services), anti-slipping protection, conductor anti-pinching system,...

All this unparalleled technology and quality of manufacturing to get the best measurement possible without any complications.

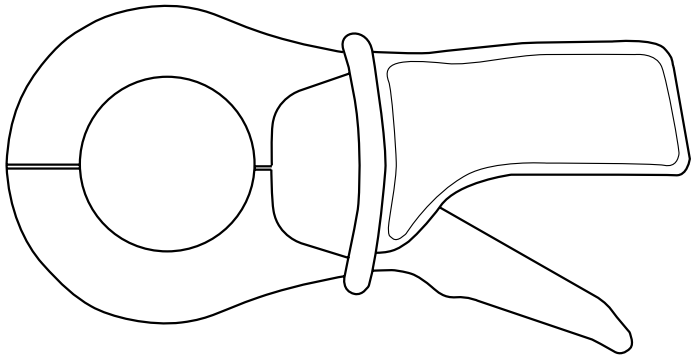
A " C100 " series clamp is compatible with any instrument (multimeter, wattmeter, recorder, oscilloscope...) to measure perfectly any AC currents, both safely and without breaking the circuit.



Title : " C 100 Series "	
Drawing N°	Drawn :
Manufactured by : CHAUVIN ARNOUX	

Current clamp for AC currents
Model C100

Current	1000 A
Ratio	1000:1
Ouput	1 mA/A



■ Electrical specifications

Current range :
0.1 A...1200 A AC

Current transformation ratio
1000:1

Output signal :
1 mA AC/A AC (1A at 1000 A)

Accuracy and phase shift *(1)* **:**

Primary current	0.1...10 A	10 A	50 A (2)	200 A (2)	1000 A (2)	1200 A (2)
% Accuracy of output signal	≤ 3% + 0.1 mA	≤ 3%	≤ 1.5%	≤ 0.75%	≤ 0.5%	≤ 0.5%
Phase shift	not specified	≤ 3°	≤ 1.5°	≤ 0.75°	≤ 0.5°	≤ 0.5°

Bandwidth :
30 Hz...10 kHz (-3 dB)

Crest factor :
≤ 6 for a current ≤ 3000 A peak
(500 A rms)

Max. currents :
1000 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)
1200 A for 40 min max. (pause between measurement > 20 min)

Load impedance :
≤ 15 Ω

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 1 mA/A to 50 Hz

Influence of conductor position in the jaws :
≤ 0.1% of output signal for frequencies ≤ 400 Hz

Load influence : from 5 Ω to 15 Ω
< 0.5% on measurement
< 0.5° on phase

Frequency influence *(3)* **:**
< 1% of output signal 30 Hz...48 Hz
< 0.5% of output signal 65 Hz...1 kHz
< 1% of output signal 1 kHz...5 kHz

Influence of crest factor :
< 1% of output signal for crest factor ≤ 6 with current ≤ 3000 A peak (500 A rms)

Influence of DC current superposed on nominal current :
< 1% of output signal
for a current ≤ 30 A DC

■ Mechanical specifications

Operating temperature :
-10° to +50°C

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.1% of output signal per 10 K

Operating humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.1% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
53 mm
Patented progressive opening system

Max. conductor size :
- Cable : ∅ max 52 mm
- Busbar : 1 busbar of 50 x 5 mm / 4 busbar of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm - 25/55 Hz 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case and jaws : UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws

Output :
Safety jacks (4 mm)

■ Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600V category III, pollution level 2
- 300V category IV, pollution level 2

Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample, load impedance 5 Ω (5VA)

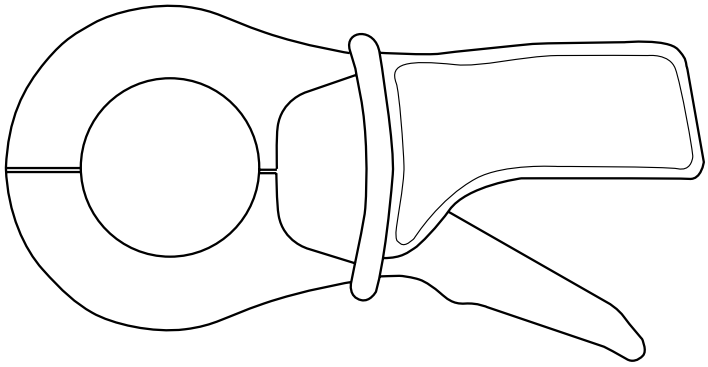
(2) Accuracy class according to IEC 185 : 5 VA - class 0.5 - 48...65 Hz *(3)* Out of frequency field.

Ordering information	Reference
AC current clamp model **C100** including user's manual	P01.**1203.01**

Current clamps for AC currents
Models C102 and C103

Current	1000 A
Ratio	1000:1
Ouput	1 mA/A

An electronic voltage limiter protects the output of the clamp, in case of accidental opening of secondary circuit.



■ Electrical specifications

Current range :
0.1 A...1200 A AC

Current transformation ratio :
1000:1

Output signal :
1 mA AC/A AC (1A at 1000 A)

Accuracy and phase shift *(1)* **:**

Primary current	0.1...10 A	10 A	50 A (2)	200 A (2)	1000 A (2)	1200 A (2)
% Accuracy of output signal	≤ 3% + 0.1 mA	≤ 3%	≤ 1.5%	≤ 0.75%	≤ 0.5%	≤ 0.5%
Phase shift	not specified	≤ 3°	≤ 1.5°	≤ 0.75°	≤ 0.5°	≤ 0.5°

Bandwidth :
30 Hz...10 kHz (-3 dB)

Crest factor :
≤ 6 for a current ≤ 3000 A peak
(500 A rms)

Max. currents :
1000 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)
1200 A for 40 min max. (pause between measurement > 20 min)

Load impedance :
≤ 15 Ω

Max. voltage at output :
Electronic limiter 30V max. peak

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 1 mA/A to 50 Hz

Influence of conductor position in the jaws :
≤ 0.1% of output signal for frequencies ≤ 400 Hz

Load influence : from 5 Ω to 15 Ω
< 0.5% on measurement
< 0.5° on phase

Frequency influence *(3)* **:**
< 1% of output signal 30 Hz...48 Hz
< 0.5% of output signal 65 Hz...1 kHz
< 1% of output signal 1 kHz...5 kHz

Influence of crest factor :
< 1% of output signal for crest factor ≤ 6 with current ≤ 3000 A peak (500 A rms)

Influence of DC current superposed on nominal current :
< 1% of output signal for a current ≤ 30 A DC

■ Mechanical specifications

Operating temperature :
-10° to +50°C

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.1% of output signal per 10 K

Operating humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.1% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
53 mm
Patented progressive opening system

Max. conductor size :
- Cable : ∅ max 52 mm
- Busbar : 1 busbar of 50 x 5 mm / 4 busbars of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm
25/55 Hz 0.25 mm (IEC 68-2-6)

Self- extinguishing ability :
Case and jaws : UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws

Output :
■ C102 :
Safety jacks (4 mm)
■ C103 :
1.5 m insulated lead with two elbowed safety plugs (4mm).

■ Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

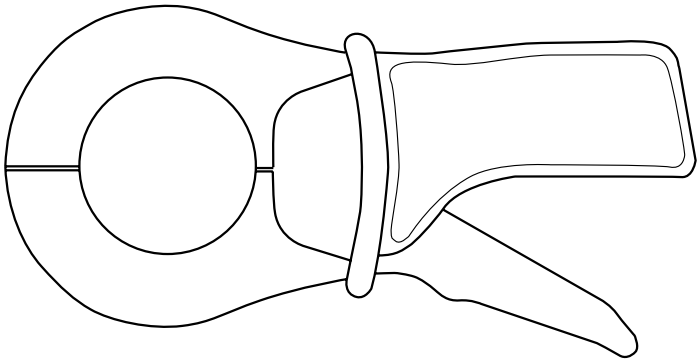
Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample, load impedance 5 Ω (5VA)
(2) Accuracy class according to IEC 185 : 5 VA - class 0.5 - 48...65 Hz *(3)* Out of frequency field.

Ordering information	Reference
AC current clamp model **C102** with user's manual	P01.**1203.02**
AC current clamp model **C103** with user's manual	P01.**1203.03**

Current clamps for AC currents
Models C106 and C107

Current	1000 A
Ouput	1 mV/A



■ Electrical specifications

Current range :
0.1 A...1200 A AC

Output signal :
1 mV AC/A AC (1V at 1000 A)

Accuracy and phase shift *(1)* **:**

Primary current	0.1...10 A	10 A	50 A (2)	200 A (2)	1000 A (2)	1200 A (2)
% Accuracy of output signal	≤ 3% + 0.1 mV	≤ 3%	≤ 1.5%	≤ 0.75%	≤ 0.5%	≤ 0.5%
Phase shift	not specified	≤ 3°	≤ 1.5°	≤ 0.75°	≤ 0.5°	≤ 0.5°

Bandwidth :
30 Hz...10 kHz

Crest factor :
≤ 6 for a current ≤ 3000 A peak (500 A rms)

Max. currents :
1000 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)
1200 A for 40 min max. (pause between measurement > 20 min)

Output impedance :
1 Ω ± 1%

Load impedance :
≥ 1 MΩ and ≤ 100 pF

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 1 µV/A to 50 Hz

Influence of conductor position in the jaws :
≤ 0.1% of output signal for frequencies ≤ 400 Hz

Load influence :
On receiver, for an input impedance of 100 Ω : ≤ 1% on measurement, no measurement on phase.
On receiver, for an input impedance of 1 kΩ : ≤ 0.1% on measurement, no measurement on phase.

Frequency influence *(2)* **:**
< 1% of output signal 30 Hz...48 Hz
< 0.5% of output signal 65 Hz...1 kHz
< 1% of output signal 1 kHz...5 kHz

Influence of crest factor :
< 1% of output signal for crest factor ≤ 6 with current ≤ 3000 A peak (500 A rms)

Influence of DC current superposed on nominal current :
< 1% of output signal for a current ≤ 30 A DC

■ Mechanical specifications

Operating temperature :
-10° to +50°C

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.1% of output signal per 10 K

Operating humidity:
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.1% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
53 mm
Patented progressive opening system

Max. conductor size :
- Cable : ∅ max. 52 mm
- Busbar : 1 busbar of 50 x 5 mm / 4 busbars of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm
25/55 Hz 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case and jaws : UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws

Output :
- C106
Safety jacks (4 mm)
- C107
1.5 m insulated lead with two elbowed safety plugs (4mm).

■ Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600V category III, pollution level 2
- 300V category IV, pollution level 2

Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

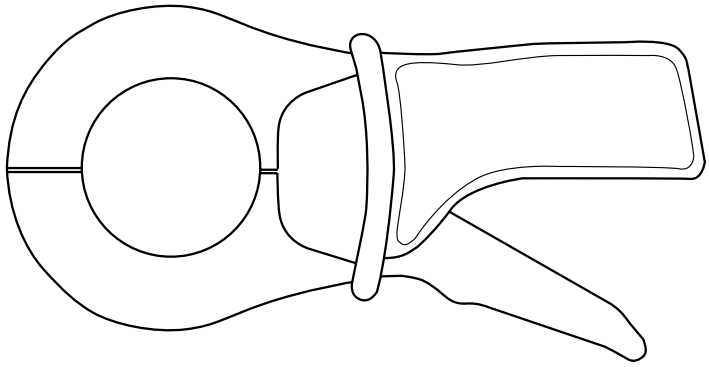
(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample

(2) Out of reference field

Ordering information	Reference
AC current clamp model **C106** including user's manual	P01.**1203.04**
AC current clamp model **C107** including user's manual	P01.**1203.05**

Current clamps for AC currents
Models C112 and C113

Current	1000 A
Ratio	1000:1
Ouput	1 mA/A



Thanks to their excellent technical performance (phase shift and linearity), these core clamps in µ metal are highly recommended for wattmeter use.
These clamps are protected at output against over voltages.

■ Electrical specifications

Current range :
0.001 A...1200 A AC

Current transformation ratio :
1000 :1

Output signal :
1 mA AC/A AC (1A at 1000 A)

Accuracy and phase shift *(1)* **:**

Primary current	1...100 mA	0.1...1 A	1...10 A	10...100 A	100...1200 A
% Accuracy of ouput signal	≤ 3% + 5 µA	≤ 2% + 3 µA	≤ 1%	≤ 0.5%	≤ 0.3%
Phase shift	not specified	not specified	≤ 2°	≤ 1°	≤ 0.7°

Bandwidth :
30 Hz...10 kHz

Crest factor :
≤ 6 for a current ≤ 2000 A peak (300 A rms)

Max. currents :
1000 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)
1200 A for 40 min max. (pause between measurement > 20 min)

Load impedance :
≥ 1 Ω

Max. output voltage :
Electronic limiter 30 V peak max.

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 0.5 mA/A to 50 Hz

Influence of conductor position in the jaws :
≤ 0.1% of output signal for frequencies ≤ 400 Hz

Load influence : from 1 Ω to 5 Ω
<0.1% on measurement
< 0.2° on phase

Frequency influence *(2)* **:**
< 0.5% of output signal 30 Hz...48 Hz
< 1% of output signal 65 Hz...1 kHz
< 2% of output signal 1 kHz...5 kHz

Influence of crest factor :
< 1% of output signal for crest factor ≤ 6 with current ≤ 2000 A peak (300 A rms)

Influence of DC current superposed on nominal current :
< 1% of output signal for a current ≤ 15 A DC

■ Mechanical specifications

Operating temperature :
-10° to +50°C

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.2% of output signal per 10 K

Operating humidity:
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.1% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
53 mm
Patented progressive opening system

Max. conductor size :
- Cable : ∅ max 52 mm
- Busbar : 1 busbar of 50 x 5 mm / 4 busbars of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm
25/55 Hz 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case and jaws : UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws

Output :
- C112 : safety jacks (4 mm)
- C113 : 1.5 m insulated lead with two elbowed safety plugs (4 mm).

■ Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

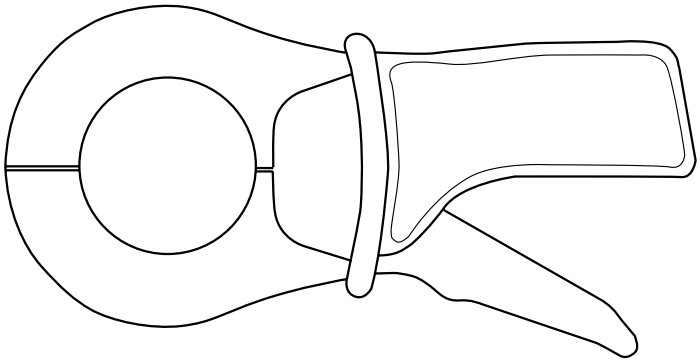
Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample, load impedance 1Ω (1 VA) *(2)* Out of reference field

Ordering information	Reference
AC current clamp model **C112** user's instruction manual	P01.**1203.14**
AC current clamp model **C113** user's instruction manual	P01.**1203.15**

Current clamps for AC currents
Models C116 and C117

Current	1000 A
Ouput	1 mV/A



Thanks to their excellent technical performance (phase shift and linearity), these core clamps in µ metal are highly recommended for wattmeter use.

■ Electrical specifications

Current range :
0.001 A...1200 A AC

Output signal :
1 mV AC/A AC (1V at 1000 A)

Accuracy and phase shift *(1)* **:**

Primary current	1...100 mA	0.1...1 A	1...10 A	10...100 A	100...1200 A
% Accuracy of ouput signal	≤ 3% + 5 µV	≤ 2% + 3 µV	≤ 1%	≤ 0.5%	≤ 0.3%
Phase shift	not specified	not specified	≤ 2°	≤ 1°	≤ 0.7°

Bandwidth :
30 Hz...10 kHz

Crest factor :
≤ 6 for a current ≤ 2000 A peak (300 A rms)

Max. currents :
1000 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)
1200 A for 40 min max. (pause between measurement > 20 min)

Output impedance :
1 Ω ± 1%

Load impedance :
≥ 1 MΩ and ≤ 100 pF

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 0.5 mA/A to 50 Hz

Influence of conductor position in the jaws :
≤ 0.1% of output signal for frequencies ≤ 400 Hz

Load influence :
On receiver, for an input impedance of 100 Ω : ≤ 1% on measurement, no measurement on phase.
On receiver, for an input impedance of 1 kΩ : ≤ 0.1% on measurement, no measurement on phase.

Frequency influence *(2)* **:**
< 0.5% of output signal 30 Hz...48 Hz
< 1% of output signal 65 Hz...1 kHz
< 2% of output signal 1 kHz...5 kHz

Influence of crest factor :
< 1% of output signal for crest factor ≤ 6 with current ≤ 2000 A peak (300 A rms)

Influence of DC current superposed on nominal current :
< 1% of output signal for a current ≤ 15 A DC

■ Mechanical specifications

Operating temperature :
-10° to +50°C

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.2% of output signal per 10 K

Operating humidity:
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.1% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
53 mm
Patented progressive opening system

Max. conductor size :
- Cable : ∅ max 52 mm
- Busbar : 1 busbar of 50 x 5 mm / 4 busbars of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm
25/55 Hz 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case and jaws : UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws

Output :
- C116
Safety jacks (4 mm)
- C117
1.5 m insulated lead with two elbowed safety plugs (4 mm).

■ Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

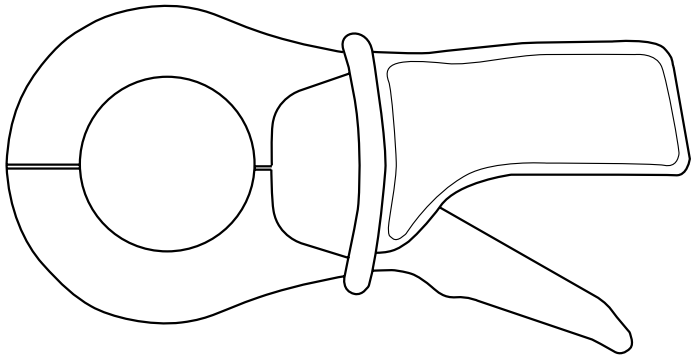
(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample, load impedance ≥ 1 MΩ and ≤ 100 pF *(2)* Out of reference field

Ordering information	Reference
AC current clamp model **C116** including user's manual	P01.**1203.16**
AC current clamp model **C117** including user's manual	P01.**1203.17**

Current clamp for AC currents
Model C122

Current	1000 A
Ratio	1000:5
Ouput	5 mA/A

An electronic voltage limiter protects the output of the clamp, in case of accidental opening of secondary circuit.



Electrical specifications

Current range :
1 A...1200 A AC

Current transformation ratio :
1000:5

Output signal :
5 mA AC/A AC (5 A at 1000 A)

Accuracy and phase shift *(1)* **:**

Primary current	1...20 A	20 A	50 A (2)	200 A(2)	1000 A (2)	1200 A (2)
% Accuracy output signal	≤ 6% + 0.5 mA	≤ 5%	≤ 3%	≤ 1.5%	≤ 1%	≤ 1%
Phase shift	not specified	≤ 5°	≤ 3°	≤ 1.5°	≤ 1°	≤ 1°

Bandwidth :
30 Hz...10 kHz

Crest factor :
≤ 6 for a current ≤ 3000 A peak (500 A rms)

Max. currents :
1000 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)
1200 A for 30 min max (pause between measurement > 15 min)

Load impedance :
≤ 0.6 Ω

Impedance of connection leads :
≤ 40 mΩ

Open secondary voltage :
Electronic limiter 30 V peak max

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Influence of adjacent conductor :
≤ 1 mA/A to 50 Hz

Influence of conductor position in the jaws :
≤ 0.2% of output signal for frequencies ≤ 400 Hz

Load influence : from 0.2 Ω to 0.6 Ω
< 0.5% on measurement
< 0.5° on phase

Frequency influence *(3)* **:**
< 1% of output signal 30 Hz...48 Hz
< 0.5% of output signal 65 Hz...1 kHz
< 1% of output signal 1 kHz...5 kHz

Influence of crest factor :
< 1% of output signal for a crest factor ≤ 6 with current ≤ 3000 A peak (500 A rms)

Influence of a DC current superposed on nominal current :
< 1% of output signal for a current ≤ 30 A DC

Mechanical specifications

Working temperature :
-10° to +50°C

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.1% of output signal per 10 K

Operating humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
53 mm
Patented progressive opening system

Max. conductor size :
- Cable : ∅ max 52 mm
- Busbar : 1 busbar of 50 x 5 mm / 4 busbars of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm
25/55 Hz 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case and jaws : UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws

Output :
Safety jacks (4 mm)

Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

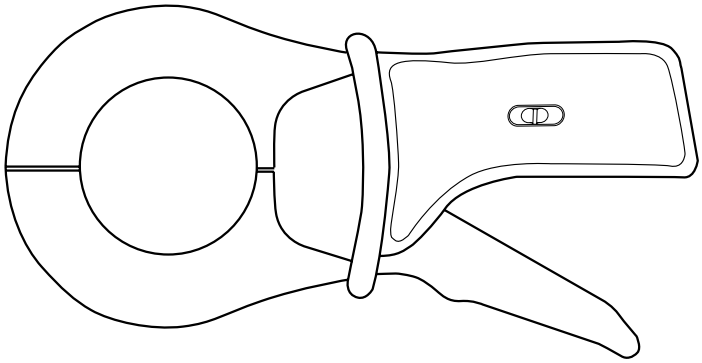
(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample, load impedance 0.2 Ω (5VA)
(2) Accuracy class according to IEC 185 : 5 VA - class 1 - 48...65 Hz *(3)* Out of reference field

Ordering information	Reference
AC current clamp model **C122** including user's manual	P01.**1203.06**

Current clamp for AC currents
Model C148

Current	250 A AC	500 A AC	1000 A AC
Ratio	250:5	500:5	1000:5
Ouput	20 mA/A	10 mA/A	5 mA/A

An electronic voltage limiter protects the output of the clamp, in case of accidental opening of secondary circuit.



■ Electrical specifications

Current range :
1 A...300 A AC
1 A...600 A AC
1 A...1200 A AC

Current transformation ratios :
250:5
500:5
1000:5

Output signal :
20 mA AC/A AC (5 A at 250 A)
10 mA AC/A AC (5 A at 500 A)
5 mA AC/A AC (5 A at 1000 A)

Accuracy and phase shift *(1)* **:**

■ 250 A range

Primary current	1...5 A	5 A	12.5 A (2)	50 A(2)	250 A (2)	300 A (2)
% Accuracy of output signal	≤ 10% + 2 mA	≤ 10%	≤ 5%	≤ 2.5%	≤ 2%	≤ 2%
Phase shift	not specified	not specified	≤ 10°	≤ 10°	≤ 10°	≤ 10°

■ 500 A range

Primary current	1...10 A	10 A	25 A (3)	100 A(3)	500 A (3)	600 A (3)
% Accuracy of output signal	≤ 6% + 1 mA	≤ 6%	≤ 3%	≤ 2%	≤ 1%	≤ 1%
Phase shift	not specified	≤ 6°	≤ 4°	≤ 3°	≤ 2.5°	≤ 2.5°

■ 1000 A range

Primary current	1...20 A	20 A	50 A (4)	200 A(4)	1000 A (4)	1200 A (4)
% Accuracy of output signal	≤ 6% + 0.5 mA	≤ 5%	≤ 3%	≤ 1.5%	≤ 1%	≤ 1%
Phase shift	not specified	≤ 5°	≤ 3°	≤ 1.5°	≤ 1°	≤ 1°

Bandwidth :
48 Hz...1 kHz

Crest factor :
■ 250 A range :
≤ 6 with current ≤ 750 A peak
■ 500 A range :
≤ 6 with current ≤ 1500 A peak
■ 1000 A range :
≤ 6 with current ≤ 3000 A peak

Max. currents :
1200 A for frequencies ≤ 1 kHz for 30 min max. (pause between measurements > 15 min)

Load impedance :
■ 250 A range : ≤ 0.2 Ω
■ 500 A range : ≤ 0.4 Ω
■ 1000 A range : ≤ 0.4 Ω

Connection leads impedance :
≤ 40 mΩ

Max. output voltage (secondary open) :
Electronic limiter 30 V peak max.

Working voltage :
600 V rms

Common mode voltage :
600 V category III and pollution level 2

Influence of adjacent conductor :
■ 250 A range : ≤ 15 mA/A to 50 Hz
■ 500 A range : ≤ 10 mA/A to 50 Hz
■ 1000 A range : ≤ 1 mA/A to 50 Hz

Influence of conductor position in the jaws :
For frequencies ≤ 400 Hz
■ 250 A range : ≤ 0.6% of output signal
■ 500 A range : ≤ 0.4% of output signal
■ 1000 A range : ≤ 0.2% of output signal

Load influence :
■ 250 A range : from 25 mΩ to 0.2 Ω
< 2% on measurement
< 4° on phase
■ 500 A range : from 50 mΩ to 0.4 Ω
< 1% on measurement
< 2° on phase
■ 1000 A range : from 50 mΩ to 0.4 Ω
< 0.5% on measurement
< 0.5° on phase

Frequency influence *(5)* **:**
■ 250 A range :
< 1% of output signal 65 Hz...100 Hz
< 5% of output signal 100 Hz...1 kHz
■ 500 A range :
< 1% of output signal 65 Hz...1 kHz
■ 1000 A range :
< 0.5% of output signal 65 Hz...100 Hz
< 1% of output signal 100 Hz...1 kHz

Crest factor influence :
< 1% of output signal for a crest factor ≤ 6 with current :
≤ 750 A peak (250 A range)
≤ 1500 A peak (500 A range)
≤ 3000 A peak (1000 A range)

Influence of DC current superposed on nominal current :
< 1% of output signal for a current ≤ 30 A DC

Mechanical specifications

Operating temperature :
-10° to +50 °C

Storage temperature :
-40° to +70 °C

Influence of temperature :
≤ 0.15% of output signal per 10 K

Operating humidity :
From 0 to 85 % of RH with linear decrease beyond 35°C

Influence of humidity :
from 10% to 85% of RH

- 250 A range :
< 0.6 % of output signal and < 2° on phase
- 500 A range :
< 0.4 % of output signal and < 0.6° on phase
- 1000 A range :
< 0.2 % of output signal and < 0.2° on phase

Operating altitude :
0 to 2000 m

Max. jaws opening :
53 mm
Patented progressive opening system

Max. conductor size :
- Cable : ∅ max 52 mm
- Busbar : 1 busbar of 50 x 5 mm / 4 busbars of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm
25/55 Hz 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws

Output :
Safety jack (4 mm)

Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600V category III, pollution level 2
- 300V category IV, pollution level 2

Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample, load impedance :- Range 250 A : 0.1 Ω (2,5 VA)
- Range 500 A : 0.2 Ω (5 VA)
- Range 1000 A : 0.2 Ω (5 VA)

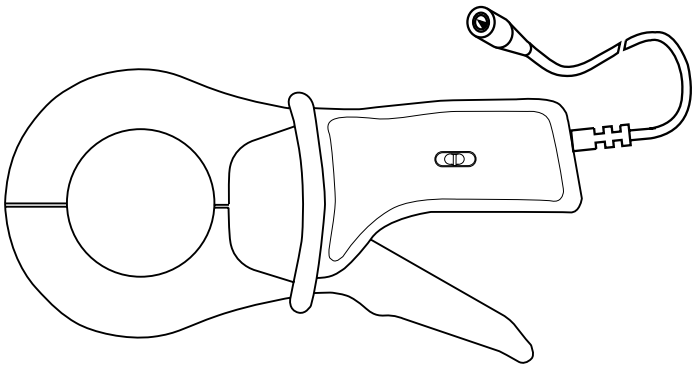
(2) Accuracy class according to IEC 185 : 2.5 VA - class 3 - 48-65 Hz
(3) Accuracy class according to IEC 185 : 5 VA - class 3 - 48-65 Hz
(4) Accuracy class according to IEC 185 : 5 VA - class 1 - 48-65 Hz
(5) Out of reference field

Ordering information	Reference
AC current clamp model **C148** with user's manual	P01.**1203.07**

Current clamp for AC currents
Model C160 (insulated current probe)

Current	30 A peak	300 A peak	2000 A peak
Ouput	100 mV/A	10 mV/A	1 mV/A

This 1000 A AC clamp enables easy visualisation and measurement of " current " curves.
It fits any oscilloscope since it has a coaxial lead with BNC plug.
It produces a mV signal directly proportional to current.
It offers 3 different sensitivities.



■ Electrical specifications

Current range :
0.1 A...30 A peak
1 A...300 A peak
1 A...2000 A peak

Ouput signal :
100 mV AC/A AC (1 V at 10 A)
10 mV AC/A AC (1 V at 100 A)
1 mA AC/A AC (1 V at 1000 A)

Accuracy and phase shift *(1)* **:**

■ 10 A range

Primary current	0.1...0.5 A	0.5...2 A	2...10 A	10...12 A
% Accuracy of output signal	≤ 3% + 10 mV	≤ 3% + 10 mV	≤ 3% + 10 mV	≤ 3% + 10 mV
Phase shift	not specified	not specified	≤ 15°	≤ 15°

■ 100 A range

Primary current	0.1...5 A	5...20 A	20...100 A	100...120 A
% Accuracy of output signal	≤ 2% + 5 mV	≤ 2% + 5 mV	≤ 2% + 5 mV	≤ 2% + 5 mV
Phase shift	not specified	≤ 15°	≤ 10°	≤ 5°

■ 1000 A range

Primary current	1...50 A	50...200 A	200...1000 A	1000...1200 A
% Accuracy of output signal	≤ 1% + 1 mV	≤ 1% + 1 mV	≤ 1% + 1 mV	≤ 1% + 1 mV
Phase shift	not specified	≤ 3°	≤ 2°	≤ 1°

Bandwidth :
10 Hz...100 kHz (-3 dB)

dI/dt max. :
10 A/µs

Max. currents :
1000 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse of frequency beyond)
1200 A for 40 min max. (pause between measurement > 20 min)

Load impedance :
≥1 MΩ and ≤ 47 pF

Output impedance 1 kHz :
515 Ω ± 10%

Insertion impedance (at 50/60 Hz)
10 A range : < 10 mΩ
100 A range : < 10 mΩ
1000 A range : < 100 mΩ

Ampere second product :
1 A.s

Rise / Fall time :
≤ 40 µs

Working voltage :
600 V rms

Common mode voltage :
600 V for category III and pollution level 2

Adjacent conductor influence :
≤ 1mA/A to 50 Hz

Influence of conductor influence in the jaws :
≤ 0.1% of output signal for frequencies ≤ 400 Hz

Frequency influence *(2)* **:**
■ 10 A Range :
< 10% of output signal 10 Hz...1 kHz
< 5% of output signal 1 kHz...10 kHz
< 20% of output signal 10 kHz...50 kHz
< 3 dB 50 kHz...100 kHz

■ 100 A Range :
< 5% of output signal 10 Hz...1 kHz
< 3% of output signal 1 kHz...10 kHz
< 20% of output signal 10 kHz...50 kHz
< 3 dB 50 kHz...100 kHz

■ 1000 A Range :
< 1% of output signal 10 Hz...1 kHz
< 2% of output signal 1 kHz...10 kHz
< 10% of output signal 10 kHz...50 kHz
< 3 dB 50 kHz...100 kHz

Influence of crest factor :
< 1% of output signal for a crest factor ≤ 6 with current
10 A range : ≤ 30 A peak (5 A rms)
100 A range : ≤ 300 A peak (50 A rms)
1000 A range : ≤ 2000 A peak (500 A rms)

Influence of DC current superposed on nominal current :
< 1% of output signal for a current ≤ 30 A DC

■ Mechanical specifications

Operating temperature :
-10° to +50°C

Storage temperature:
-40° to +70°C

Influence of temperature:
≤ 0.15% of output signal per 10 K

Operating humidity :
From 0 to 85% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.1% of output signal 10% to 85% of RH

Operating altitude :
0 to 2000 m

Model C160 (cont.)

Max. jaws opening :
53 mm
Patented assisted opening system

Max. conductor size :
- Cable : ∅ max. 52 mm
- Busbar : 1 busbar of 50 x 5 mm / 4 busbars of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm
25/55 Hz 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case and jaws : UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws

Output :
2 m Coaxial lead with insulated BNC plug.

Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample, load impedance: ≥ 1 MΩ and ≤ 47 pF

(2) Out of reference field

Ordering information	Reference
AC current probe model **C160** for oscilloscope including user's manual	P01.**1203.08**

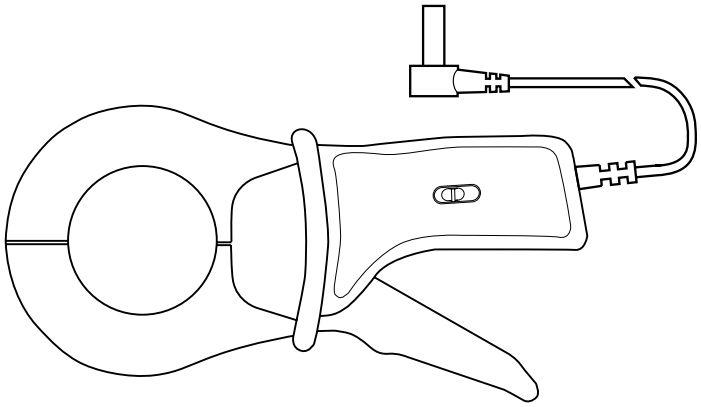
Current clamp for AC currents
Model C173

Current	1 A	10 A	100 A	1000 A
Ouput	1 V/A	100 mV/A	10 mV/A	1 mV/A

Clamp C173 measures leakage or differential currents from mA, it can also be used with multimeters equipped with a range in mV AC.

clamp C173 measures current flow in ground loops and leakage currents. It also locates defaults on ground circuits of single and three-phase networks.

For ungrounded three-phase systems, use the optional Artificial Neutral.



Electrical specifications

Current range :
0.001 A...1.2 A AC
0.01 A...12 A AC
0.1 A...120 A AC
1 A...1200 A AC

Output signal :
1 V AC/A AC (1 V at 1 A)
100 mV AC/A AC (1 V at 10 A)
10 mV AC/A AC (1 V at 100 A)
1 mV AC/A AC (1 V at 1000 A)

Accuracy and phase shift *(1)* **:**

■ 1 A range :

Primary current	0.001...0.01 A	0.01...0.1 A	0.1...1 A	1...1.2 A
% Accuracy of output signal	≤ 3% + 1 mV	≤ 3% + 1 mV	≤ 0.7% + 1 mV	≤ 0.7% + 1 mV
Phase shift	not specified	not specified	≤ 10°	≤ 10°

■ 10 A range :

Primary current	0.01...0.1 A	0.1...1 A	1...10 A	10...12 A
% Accuracy of output signal	≤ 1% + 0.2mV	≤ 0.5% + 0.2mV	≤ 0.5%	≤ 0.5%
Phase shift	not specified	≤ 5°	≤ 2°	≤ 2°

■ 100 A range :

Primary current	0.1...1 A	1...10 A	10...100 A	100...120 A
% Accuracy of output signal	≤ 1% + 0.2mV	≤ 0.5% + 0.2mV	≤ 0.3%	≤ 0.2%
Phase shift	not specified	≤ 2°	≤ 1°	≤ 1°

■ 1000 A range :

Primary current	1...10 A	10...100 A	100...1000 A	1000...1200 A
% Accuracy of output signal	≤ 1% + 0.2 mV	≤ 0.5% + 0.2 mV	≤ 0.2%	≤ 0.2%
Phase shift	not specified	≤ 2°	≤ 1°	≤ 1°

Bandwidth :
10 Hz...3 kHz

Crest factor :
1 A range : ≤ 3 for I ≤ 3 A peak (1 A rms)
10 A range : ≤ 3 for I ≤ 30 A peak (10 A rms)
100 A range : ≤ 3 for I ≤ 300 A peak (100 A rms)
1000 A range : ≤ 3 for I ≤ 1700 A peak (500 A rms)

Max. currents :
1000 A continuous for a frequency ≤ 500 Hz (limitation proportional to the inverse of 1/2 of frequency beyond)

Load impedance :
≥ 10 MΩ and ≤ 47 pF

Output impedance :
1 A range : 10 kΩ ± 10%
10 A range : 1 kΩ ± 10%
100 A range : 100 Ω ± 10%
1000 A range : 100 Ω ± 10%

Working voltage :
600 V rms

Common mode voltage :
600 V category III and pollution level 2

Adjacent conductor influence :
≤ 1 mA/A to 50 Hz

Influence of conductor influence in the jaws :
≤ 0.3% of output signal for frequencies ≤ 400 Hz

Influence of frequency *(2)* **:**
■ 1 A range :
< 2% of output signal 30 Hz...48 Hz and 65 Hz...1kHz
< 10% of output signal 1 kHz...3 kHz
■ 10 A range :
< 2% of output signal 10 Hz...48 Hz and from 65 Hz to 3 kHz
■ 100 A range :
< 1.5% of output signal 10 Hz...48 Hz and from 65 Hz...3 kHz
■ 1000 A range :
< 1% of output signal 10...48 Hz and from 65 Hz...1 kHz

Influence of crest factor :
≤ 0.5% for a peak factor limited to 3

Influence of DC current superposed on nominal current :
≤ 10% to 1000 A for a DC current of 10 A

Mechanical specifications

Operating temperature :
-10°...+50°C

Storage temperature:
-40°...+70°C

Influence of temperature :
≤ 0.15% of output signal per 10 K of -10°C...+40°C
≤ 0.2% of output signal per 10 K of +40°C...+50°C

Operating humidity :
from 0...85 % of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.1 % of output signal 10...85% of RH

Operating altitude :
0 to 2000 m

Max. jaws opening :
53 mm
Patented assisted opening system

Max. conductor size :
Cable : ∅ max. 52 mm
Busbar : 1 busbar of 50 x 5 mm or 4 busbars of 30 x 5 mm

Casing protection :
IP 40 (IEC 529)

Drop test :
1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration resistance :
5/15 Hz 1.5 mm - 15/25 Hz 1 mm
25/55 Hz 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
UL94 V0

Dimensions :
216 x 111 x 45 mm

Weight :
550 g

Colours :
Dark grey case with red jaws.

Output :
1.5 m insulated lead with 2 elbowed safety plugs (4mm)

Safety specifications

Electrical :
Instrument with double insulation or reinforced insulation between primary, secondary and outer case parts to be handled CEI 1010-1 & CEI 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic compatibility (CE Mark.) :
EN 50081-1 : Class B
EN 50082-2 :
- Electrostatic discharge : IEC 1000-4-2
- Radiated field : IEC 1000-4-3
- Fast transients : IEC 1000-4-4
- Magnetic fields 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 3°K, 20 to 75 % RH, sinusoidal signal, frequency of 48 Hz to 65 Hz, distortion factor < 1%, no DC component, external magnetic field < 40 A/m, no AC magnetic field, centered tested sample, load impedance: ≥ 10 MΩ and ≤ 47 pF

(2) Out of reference field

Ordering information	Reference
AC current clamp model **C173** including user's manual	P01.**1203.09**
Accessories :	
Artificial neutral box **AN1**	P01.**1972.01**
Bag **n°11**	P01.**1001.20**

D SERIES

The D Series comprises a range of high performance clamp-on AC current probes designed for high current measurement.

Their excellent current transformation ratios and low phase shift, combined with broad frequency response makes for highly accurate current and power measurements.

High quality magnetic cores and windings give high precision current measurement up to 3000 A (AC). The rectangular jaws can be used to clamp large diameter cables or busbars.

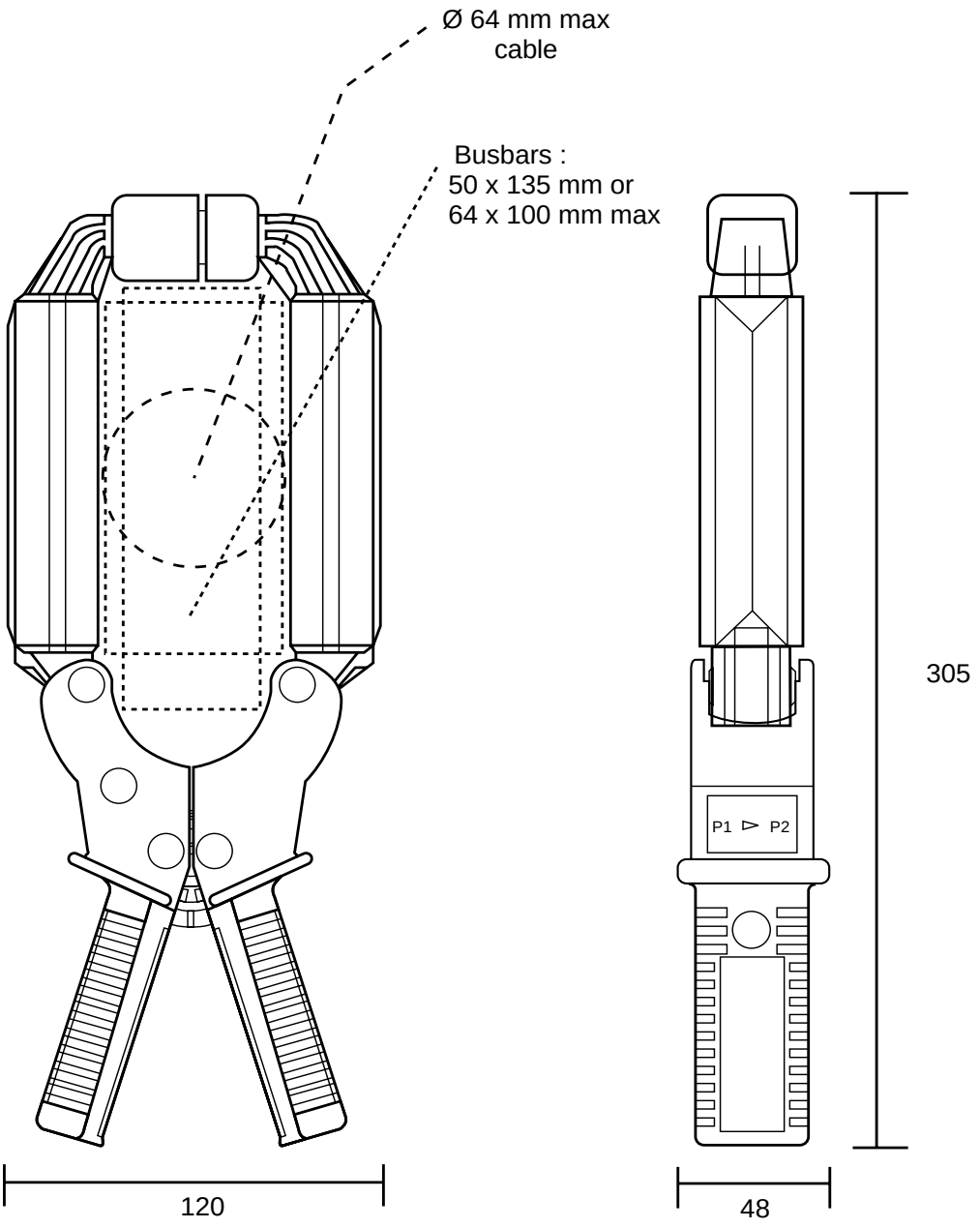
The D series clamps give true RMS measurement values and faithful signal reproduction.

There are two different kinds of model available in the D series, the first acts as a traditional current transformer with a current output (mA) and has a wide range of voltage ratios.

These clamps may also be used with multimeters, harmonic and power measurement equipment, logging apparatus or other instruments taking AC current input.

The second type of model gives a voltage output in precise proportion to the measured current (1mV/A, 10 mV/A or 100 mV/A) so you can display and log currents on instruments without current inputs.

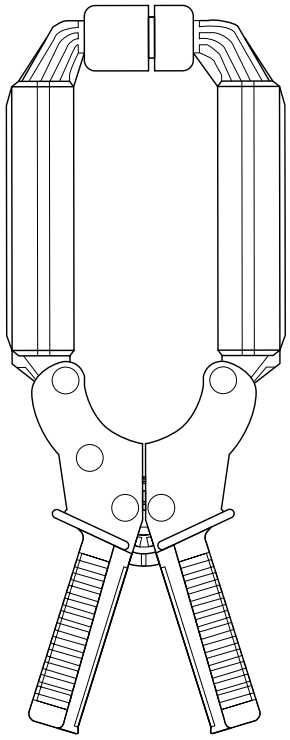
Model D38N has been specifically designed for use with oscilloscopes, or other instruments with a BNC input.



Title : D series clamp-on current probes	
Drawing N°	Drawn by :
Manufactured by: CHAUVIN ARNOUX	

Clamp-on AC current probe
Models D30N and D30CN

Current	2400 A AC
Ratio	3000:1
Ouput	0.333 mA/A



Electrical Specification

Current range:
1...2400 A AC (3000 A for temperature < 35°C)

Current transformation ratio:
3000:1

Output signal:
0.333 mA/A AC (1 A to 3000 A)

Accuracy and Phase shift *(1)***:**

Primary current	150 A	600 A	3000 A
% Accuracy Of output signal	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

Overload:
3600 A for 5 min's

Max. tension at output: (Secondary circuit open):
Electronic protection limiting the tension to 42 V peak max.

Accuracy:
Following IEC 185-26-27, 5 VA, class 0.5 from 48 to 1000 Hz

Bandwidth :
30 Hz to 5 kHz (In continuous use above 1 kHz, the max. measurement current is limited)

Amps.Seconds product:
90 A.s

Load impedance:
< 5 Ω

Operating voltage:
600 V AC

Common mode voltage:
600 V AC

Influence of adjacent conductor:
0.005 A/A AC

Influence of conductor position in the jaws:
1% ± 0.1 A

Mechanical Specification

Operating Temperature:
-10° to +50°C

Storage Temperature:
-25° to +80°C

Temperature Influence:
< 0.1% for every 10°K

Max. jaw opening:
90 mm

Max. jaw insertion capacity:
- Cable: 64 mm
- group of wires: 50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 following IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical shock:
100 g, following IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm test following IEC 68-2-6

Self-extinguishing ability:
Casing: UL94 V0
Jaws**:** UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour :
Dark grey casing with red jaws

Output:
■ D30N: Two 4mm safety sockets
■ D30CN: Double wound 1.5 m cable with reinforced insulation or double insulation ending with 2 elbowed 4 mm male safety plugs.

Safety Specification

Electrical
Double insulation or reinforced insulation between the primary and the secondary circuits and the outside casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

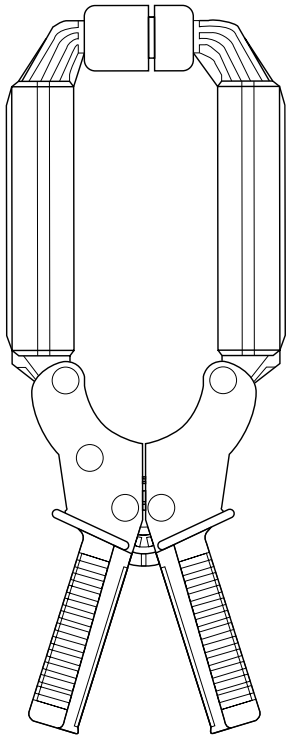
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no external current carrying conductor, centred test sample, load impedance 5 Ω.

To Order	Reference
Clamp-on AC current probe model **D30N** with user's manual	P01.**1200.49A**
Clamp-on AC current probe model **D30CN** with user's manual	P01.**1200.64**

Clamp-on AC current probe
Model D31N

Current	500 A AC	1000 A AC	1500 A AC
Ratio	500:1	1000:1	1500:1
Ouput	2 mA/A	1 mA/A	0.66 mA/A



Electrical Characteristics

Current Range:
1...500 A AC
1...1000 A AC
1...1500 A AC

Current transformation ratio:
500:1, 1000:1, 1500:1

Output Signal:
2 mA/A AC (1 A to 500 A)
1 mA/A AC (1 A to 1000 A)
0.66 mA/A AC (1 A to 1500 A)

Accuracy and phase shift *(1)***:**

■ 500 A range

Primary current	25 A	100 A	500 A
Accuracy as % of output signal	4%	3%	3%
Phase shift	4°	3.5°	2°

- Load impedance: 5 Ω
- Overload: 700 A for 10 mn
- Amps.Seconds product: 6 A.s
- Accuracy: in accordance with IEC 185-26-27, 5 VA, class 3 from 48 to 1000 Hz

■ 1000 A range:

Primary current	50 A	200 A	1000 A
% Accuracy of output signal	3%	1.5%	1%
Phase shift	3°	1.5°	1°

- Load impedance: 5 Ω
- Overload: 1400 A for 10 mn
- Amps.Seconds product: 30 A.s
- Accuracy: in accordance with IEC 185-26-27, 5 VA, class 1 from 48 to 1000 Hz

■ 1500 A range:

Primary current	75 A	300 A	1500 A
% Accuracy of output signal	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

- Load impedance: 5 Ω
- Overload: 1800 A for 10 mn
- Amps.Seconds product: 65 A.s
- Accuracy: following IEC 185-26-27, 5 VA class 0.5 from 48 to 1000 Hz

Bandwidth :
30 Hz to 1500 Hz (In continuous use above 1 kHz the max. measurement current is limited)

Load impedance:
< 5 Ω

Working voltage:
600 V AC

Common mode voltage:
600 V AC

Max. tension at output (Secondary circuit open):
Electronic protection limiting the tension to 42 V peak max.

Influence of adjacent conductor:
0.005 A/A AC

Influence of conductor positioning in the jaws:
1.5% ± 0.2 A on the 500:1 ratio
1% ± 0.2 A on the 1000:1 ratio
1% ± 0.2 A on the 1500:1 ratio

Mechanical Specification

Operating temperature:
-10° to +50°C

Storage temperature:
-25° to +80°C

Temperature influence:
< 0.1% for every 10°K

Max. jaw opening:
90 mm

Max. jaw insertion capacity:
- Cable: 64 mm
-Group of wires:
50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Self-extinguishing ability:
Casing: UL94 V0
Jaws**:** UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour:
Dark grey casing and red jaws

Output:
Two 4 mm security sockets

Safety Specifications

Electrical
Double insulation or reinforced insulation between the primary and the secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

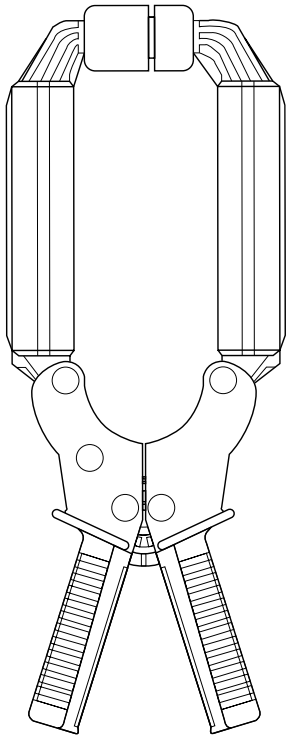
Electromagnetic Compatibility (EC Stamp) :
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field up to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no current carrying conductor close by, centred test sample

To Order	Reference
Clamp-on AC current probe model **D31N** with user's manual	P01.**1200.50A**

Clamp-on AC current probe
Model D32N

Current	1000 A AC	2000 A AC	2400 A AC
Ratio	1000:1	2000:1	3000:1
Ouput	1 mA/A	0.5 mA/A	0.333 mA/A



Electrical Specification

Current range:
1...1000 A AC
1...2000 A AC
1...2400 A AC

Current transformation ratio:
1000:1, 2000:1, 3000:1

Output signal:
1 mA/A AC (1 A to 1000 A)
0.5 mA/A AC (1 A to 2000 A)
0.333 mA/A AC (1 A to 3000 A)

Accuracy and Phase shift *(1)***:**

■ 1000 A range

Primary current	50 A	200 A	1000 A
% Accuracy of Output signal	3%	1.5%	1%
Phase shift	3°	1.5°	1°

- Load impedance: 2.5 Ω
- Overload: 1400 A for 10 mn
- Amps.Seconds product: 25 A.s
- Accuracy: in accordance with IEC 185-26-27, 2.5 VA, class 1 from 48 to 1000 Hz

■ 2000 A range :

Primary range	100 A	400 A	2000 A
% Accuracy of Output signal	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

- Load impedance: 5 Ω
- Overload: 2400 A for 10 min's
- Amps.Seconds product: 60 A.s
- Accuracy: in accordance with IEC 185-26-27, 5 VA, class 0.5 from 48 to 1000 Hz

■ 3000 A range :

Primary current	150 A	600 A	3000 A
% Accuracy of Output signal	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

- Load impedance: 10 Ω
- Overload: 3400 A for 10 min's
- Amps. Seconds product: 90 A.s
- Accuracy: in accordance with IEC 185-26-27, 10 VA class 0.5 from 48 to 1000 Hz

Bandwidth:
30 Hz to 1000 Hz (In continuous use above 600 kHz, the max. measurement current is limited)

Load impedance:
< 10 Ω max

Work voltage:
600 V AC

Common mode voltage:
600 V AC

maximum tension at output (Secondary circuit open):
Electronic protection limiting the tension to 42 V peak max.

Influence of adjacent conductor:
0.005 A/A AC

Influence of conductor positioning in jaws:
1.5% ± 0.2 A on the 1000:1 ratio
1% ± 0.2 A on the 2000:1 ratio
1% ± 0.2 A on the 3000:1 ratio

Mechanical Specification

Operating Temperature:
-10° to +50°C

Storage Temperature:
-25° to +80°C

Temperature influence:
< 0.1% for every 10°K

Max. jaw opening:
90 mm

Clamp insertion capacity:
- Cable : 64 mm
- group of wires: 50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Self-extinguishing ability:
Casing: UL94 V0
Jaws: UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour:
Dark grey casing with red jaws

Output:

Via two 4mm safety sockets

Safety Specification

Electrical
Double insulation or reinforced insulation between the primary and secondary circuits and outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

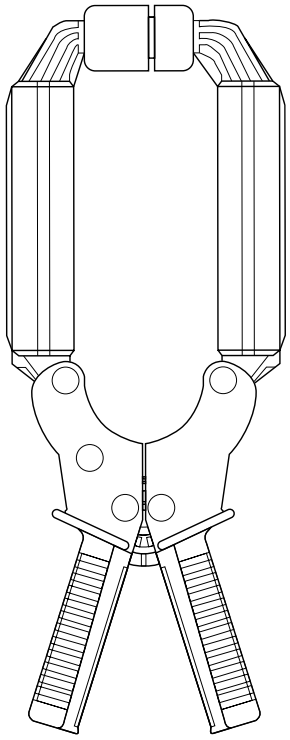
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component , no current carrying conductor close by, centred test sample.

To Order	Reference
Clamp-on AC current probe model **D32N** with user's manual	P01.**1200.51A**

Clamp-on AC current probe
Model D33N

Current	2400 A AC
Ratio	3000:5
Ouput	1.666 mA/A



Electrical Specification

Current Range:
1...2400 A AC (3000 A if the temp. < 35°C)

Current transformation ratio:
3000:5

Output signal:
1.666 mA/A AC (5 A to 3000 A)

Accuracy and phase shift *(1)*:

Primary current	150 A	600 A	3000 A
% Accuracy of Output signal	3%	1.5%	1%
Phase shift	3°	1.5°	1°

Overload:
3600 A for10 mn

Accuracy :
In accordance with IEC 185-26-27, 5 VA class 1, from 48 to 1000 Hz

Bandwidth:
30 Hz to 5 kHz (In continuous use above 1 kHz, the max. measurement current is limited)

Amps.Seconds product:
90 A.s

Load impedance:
< 1 Ω

Working voltage:
600 V AC

Common mode voltage:
600 V AC

Influence of adjacent conductor:
0.005 A/A AC

Influence of conductor positioning in jaws:
1% ± 0.1 A

Mechanical Specification

Operating Temperature:
-10° to +50°C

Storage temperature:
-25° to +80°C

Temperature Influence:
< 0.1% for every 10°K

Max. jaw opening:
90 mm

Clamp insertion capacity:
- Cable: 64 mm
- group of wires: 50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
Test in accordance with IEC 68-2-6

Self-extinguishing ability:
Casing: UL94 V0
Jaws: UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour:
Dark grey casing with red jaws

Output:
Via two 4 mm safety sockets

Safety Specification

Electrical
Double insulation or reinforced insulation between the primary and the secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

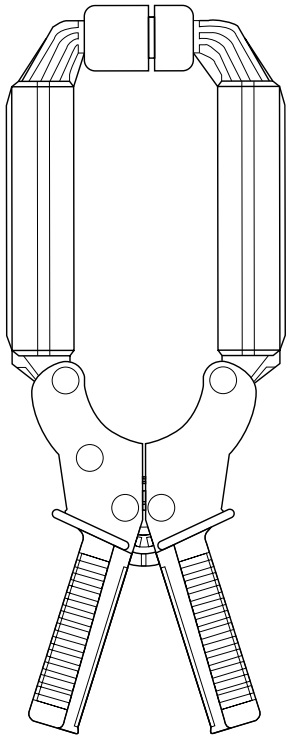
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component , no current carrying conductor close by, centred conductor , load impedance 0.2 Ω.

To Order	Reference
Clamp-on AC current probe model **D33N** with user's manual	P01.**1200.52A**

Clamp-on AC current probe
Model D34N

Current	500 A AC	1000 A AC	1500 A AC
Ratio	500:5	1000:5	1500:5
Ouput	10 mA/A	5 mA/A	3.33 mA/A



Electrical Specification

Current range:
1...500 A AC
1...1000 A AC
1...1500 A AC

Current transformation ratio:
500:5, 1000:5, 1500:5

Output signal:
10 mA/A AC (5 A to 500 A)
5 mA/A AC (5 A to 1000 A)
3.33 mA/A AC (5 A to 1500 A)

Accuracy and Phase shift *(1)***:**

■ 500 A Range

Primary current	25 A	100 A	500 A
% Accuracy of Output signal	5%	3%	3%
Phase shift	6°	4°	4°

- Load impedance: 0,2 Ω
- Overload: 700 A for 10 min's
- Amps.Seconds product: 3.5 A.s
- Accuracy : in accordance with IEC 185-26-27, 5 VA class 3 from 48 to 1000 Hz

■ 1000 A range

Primary current	50 A	200 A	1000 A
% Accuracy of Output signal	3%	1.5%	1%
Phase shift	3°	1.5°	1°

- Load impedance: 0.1 Ω
- Overload: 1400 A for 10 min's
- Amps.Seconds product: 18 A.s
- Accuracy: according to IEC 185-26-27, 2.5 VA class 1 from 48 to 1000 Hz

■ 1500 A range :

Primary current	75 A	300 A	1500 A
% Accuracy of Output signal	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

- Load impedance: 0.1 Ω
- Overload: 1800 A for 10 min's
- Amps.Seconds product: 40 A.s
- Accuracy: in accordance with IEC 185-26-27, 2.5 VA class 0.5 from 48 to1000 Hz

Bandwidth :
30 Hz to 1500 Hz (In continuous use above 1.5 kHz the max. measurement current is limited)

Load impedance:
< 1 Ω max

Working voltage:
600 V AC

Common mode voltage:
600 V AC

Max. tension at the output (Secondary circuit open):
Electronic protection limiting the tension to 42 V peak max.

Influence of adjacent conductor :
0.005 A/A AC

Influence of conductor positioning in the jaws:
1.5% ± 0.2 A on the 500:5 ratio
1% ± 0.2 A on the 1000:5 ratio
1% ± 0.2 A on the 1500:5 ratio

Mechanical specification

Operating Temperature:
-10° to +50°C

Storage Temperature:
-25° to 80°C

Temperature Influence:
< 0.1% for every 10°K

Max. jaw opening:
90 mm

Clamp insertion capacity:
- Cable: 64 mm
- Group of wires:
50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Self-extinguishing ability:
Casing : UL94 V0
Jaws**:** UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour:
Dark grey casing with red jaws

Output:
Via two 4 mm safety sockets

Safety Specification

Electrical
Double insulation or reinforced insulation between the primary and secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

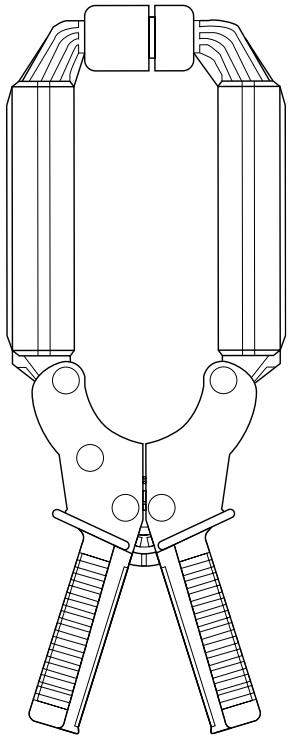
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC current , no current carrying conductor close by, centred test sample.

To Order	Reference
Clamp-on AC current probe model **D34N** with user's manual	P01.**1200.53A**

Clamp-on AC current probe
Model D35N

Current	1000 A AC	2000 A AC	2400 A AC
Ratio	1000:5	2000:5	3000:5
Ouput	5 mA/A	2.5 mA/A	1.666 mA/A



Electrical Specification

Current Range:
1...1000 A AC
1...2000 A AC
1...2400 A AC
(3000 A if the temperature < 35°C)

Current transformation ratio:
1000:5, 2000:5, 3000:5

Output Signal:
5 mA/A AC (5 A to 1000 A)
2.5 mA/A AC (5 A to 2000 A)
1.666 mA/A AC (5 A to 3000 A)

Accuracy and phase shift *(1)*:

■ 1000 A Range

Primary current	50 A	200 A	1000 A
% Accuracy of Output signal	3%	1.5%	1%
Phase shift	3°	1.5°	1°

- Load impedance: 0,1 Ω
- Overload: 1200 A for 10 mn
- Amps.Seconds product: 15 A.s
- Accuracy: in accordance to IEC 185-26-27, 2,5 VA, class 1 from 48 to 1000 Hz

■ 2000 A range

Primary current	100 A	400 A	2000 A
% Accuracy of Output signal	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

- Load impedance: 0.2 Ω
- Overload: 2400 A for 10 min's
- Amps.Seconds product: 50 A.s
- Accuracy: in accordance with IEC 185-26-27, 5 VA, class 0.5 from 48 to 1000 Hz

■ 3000 A range

Primary current	150 A	600 A	3000 A
% Accuracy of Output signal	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

- Load impedance: 0.4 Ω
- Overload: 2400 A for 10 min's
- Amps.Seconds product: 80 A.s
- Accuracy: in accordance with IEC 185-26-27, 10 VA class 0.5 from 48 to 1000 Hz

Bandwidth:
30 Hz to 1500 Hz (In continuous use above 1.5 kHz, the max. measurement current is limited)

Load impedance:
< 2 Ω max

Working voltage:
600 V AC

Common mode voltage:
600 V AC

Influence of adjacent conductor:
0.005 A/A AC

Influence of conductor positioning in jaws:
1.5% ± 0.2 A on the 1000:5 ratio
1% ± 0.2 A on the 2000:5 ratio
1% ± 0.2 A on the 3000:5 ratio

Mechanical Specification

Operating temperature:
-10° to +50°C

Storage Temperature:
-25° to +80°C

Temperature Influence:
< 0.1% for every 10°K

Max. Jaw Opening:
90 mm

Clamp Insertion Capacity:
- Cable: 64 mm
-Group of wires: 50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical Test:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance IEC 68-2-6

Self-extinguishing ability:
Casing : UL94 V0
Jaws **:** UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour :
Dark grey casing with red jaws

Output:
Via 4mm safety sockets

Safety Specification

Electrical
Double insulation or reinforced insulation between the primary and the secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

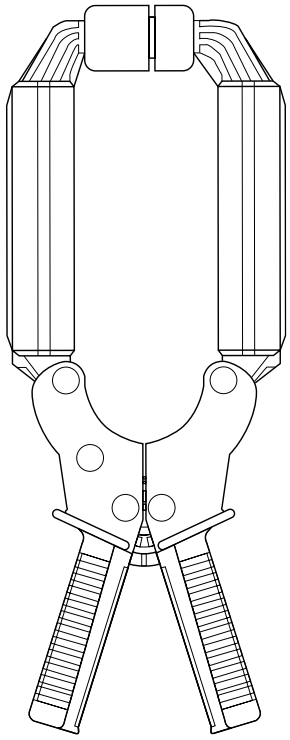
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component , No adjacent current carrying conductor ,centred test sample.

To Order	Reference
Clamp-on AC current probe model **D35N** with user's manual	P01.**1200.54A**

Clamp-on AC current probe
Model D36N

Current	3000 A AC
Ratio	3000:3
Ouput	1 mA/A



Electrical Specification

Current Range:
1...2400 A AC

Current transformation ratio:
3000:3

Output signal:
1 mA/A AC (3 A to 3000 A)

Accuracy and phase shift *(1)***:**

Primary current	150 A	600 A	3000 A
% Accuracy of Output signal	0.5%	0.75%	0.5%
Phase Shift	1.5°	0.75°	0.5°

Accuracy:
In accordance with IEC 185-26-27, 5 VA, class 0.5 from 48 to 1000 Hz

Bandwidth:
30 Hz to 5 kHz
(beyond 400 Hz the output is limited in inverse proportion to the frequency)

Overload:
3600 A for 5 min's

Max. tension at output (Secondary circuit open):
Electronic protection limiting the tension to 42 V peak max.

Load impedance:
< 0.6 Ω

Working voltage:
600 V AC

Common mode tension:
600 V AC

Influence of adjacent conductor:
0.005 A/A AC

Influence of positioning of conductor in jaws:
1% ± 0.1 A

Mechanical Specification

Operating Temperature:
-10° to +50°C

Storage Temperature:
-25° to +80°C

Temperature Influence:
< 0.1% for every 10°K

Max. Jaw opening:
90 mm

Clamp insertion capacity:
- Cable: 64 mm
- Group of wires: 50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical Shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Self-extinguishing ability:
Casing : UL94 V0
Jaws **:** UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour:
Dark grey casing with red jaws

Output:
Via 4 mm safety sockets

Safety Specification

Electrical
Double insulated or reinforced insulation between the primary and the secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

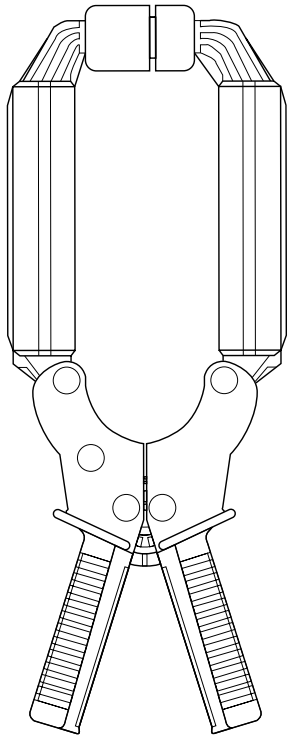
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component , no current carrying conductor close by, centred test sample, load impedance 0.55 Ω.

To Order	Reference
Clamp-on AC current probe model **D36N** with user's manual	P01.**1200.55A**

Clamp-on AC current probe
Model D37N

Current	30 A AC	300 A AC	3000 A AC
Ouput	100 mV/A	10 mV/A	1 mV/A



Electrical Specification

Current Range:
10 mA...30 A AC
1...300 A AC
1...2000 A AC
(2800 A if the temperature < 35°C)

Output Signal:
100 mV/A AC (3 V to 30 A) 90 A peak
10 mV/A AC (3 V to 300 A) 900 A peak
1.666 mV/A AC (3 V to 3000 A) 9000 A peak

Accuracy and phase shift *(1)***:**

■ 30 A range

Primary current	1.5 A	6 A	30 A
% Accuracy of Output signal	2% ± 10 mV		
Phase shift	15°	7°	5°

■ 300 A range

Primary current	15 A	60 A	300 A
% Accuracy of Output signal	2% ± 2 mV		
Phase shift	3°	1.5°	1°

■ 3000 A range

Primary current	150 A	600 A	3000 A
% Accuracy of Output signal	2% ± 0.5 mV		
Phase shift	1.5°	1°	0.5°

Overload:
3200 A for 5 min's

Amps.Seconds product:
100 A.s

dV/dt:
■ 100 mV AC/A AC :
■ 10 mV AC/A AC :
■ 1 mV AC/A AC :

Bandwidth:
30 Hz to 5 kHz (on the 3000 A range the max. measurement current is limited above 200 Hz)

Load impedance:
≥ 1 MΩ

Working voltage:
600 V AC

Common mode voltage:
600 V AC

Secondary voltage in open circuit:
10 V max

Influence of adjacent conductor:
0.005 A/A AC

Influence of positioning of conductor in jaws:
1.5% of the reading

Frequency influence:
From 30 Hz to 5 kHz: ± 6% on all ranges

Influence of DC current:
0.05% per A (DC)

Mechanical Specification

Operating Temperature:
-10° to +50°C

Storage Temperature:
-25° to +80°C

Temperature Influence:
< 0.1% for every 10°K

Max. opening of jaws:
90 mm

Clamp Insertion capacity:
- Cable: 64 mm
- Group of wires: 50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical sock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Self-extinguishing ability:
Casing: UL94 V0
Jaws: UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour:
Dark grey casing with red jaws

Output:
Via 4 mm safety sockets

Safety Specification

Electrical
Double insulation or reinforced insulation between the primary and secondary circuits and the outer casing on accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

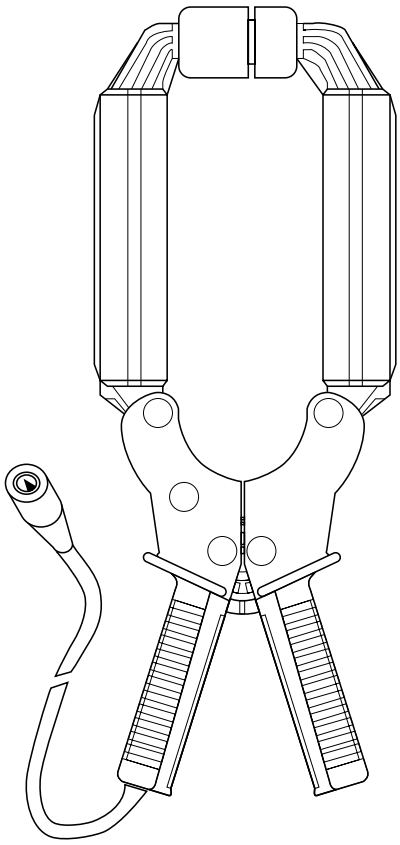
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditons: 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no current carrying conductor close by, centred test sample.

To Order	Reference
Clamp-on AC current probe model **D37N** with user's manual	P01.**1200.56A**

Clamp-on AC current probe
Model D38N (Insulated current probe)

Current	90 A peak	900 A peak	9000 A peak
Ouput	10 mV/A	1 mV/A	0.1 mV/A



Model D38N is a highly accurate clamp-on AC current probe with a voltage output in mV for direct measurement reading on an oscilloscope.
There is a 3-way switch on the handle for range selection.
The clamp's wide jaw opening enables measurements to be made on both cables and small bus bars.

Electrical Specification

Current Range :
1...30 A AC (90 Acc)
1...300 A AC (900 Acc)
1...2400 A AC (9000 Acc)
(3000 A if the temperature < 35°C)

Output signal :
10 mV/A AC (0.3 V to 30 A)
1 mV/A AC (0.3 V to 300 A)
0.1 mV/A AC (0.3 V to 3000 A)

Accuracy and phase change *(1)*:

■ 30 A range

primary current	1.5 A	6 A	30 A
% Accuracy of Output signal	2% ± 1 mV		
Phase shift	20°	10°	5°

■ 300 A range

Primary current	15 A	60 A	300 A
% Accuracy of Output signal	2% ± 0.5 mV		
Phase shift	3°	1.5°	1°

■ 3000 A range

Primary current	150 A	600 A	3000 A
% Accuracy of Output signal	2% ± 0.2 mV		
Phase shift	3°	1.5°	1°

Amps.Seconds product:
90 A.s

Bandwidth:
10 Hz to 50 kHz (in continual use above 2 kHz, the max. measurement current is limited)

dV/dt
30 A range : 0.3 mV/µs
300 A range : 3 mV/µs
3000 A range : 30 mV/µs

Working voltage :
600 V AC

Load resistance:
≥ 1 MΩ et ≤ 47 h

Common mode voltage:
600 V AC

Influence of adjacent conductor:
0.005 A/A AC

Influence of conductor positioning in jaws:
1% of reading ± 0.1 A

Frequency influence:
From 10 Hz to 10 kHz: 1 dB on all the ranges

Mechanical Specification

Operating Temperature:
-10° to +50°C

Storage Temperature:
-25° to +80°C

Temperature:
< 0.1% for every 10°K

Max. jaw opening:
90 mm

Clamp insertion capacity:
- Cable : 64 mm
- Group of wires: 50 x 135 mm - 64 x 100 mm

Casing protection:
IP20 in accordance with IEC529

Drop test:
500 mm (IEC 68-2-32)

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Self-extinguishing ability:
casing : UL94 V0
Jaws **:** UL94 V2

Dimensions:
120 x 315 x 48 mm

Weight:
1200 g

Colour:
Dark grey casing with red jaws

Output:
2m Coaxial lead with insulated BNC plug (600 Vrms)

safety Specification

Electrical
Double insulation or reinforced insulation between the primary and secondary circuits and the outer casing in accordance with IEC 1010-2-032.
- 600 V category III, pollution: 2
- 300 V category IV, pollution: 2

Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 23°C ± 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component , no current carrying conductor close by, centred test sample.

To Order	Reference
Clamp-on AC current probe model **D38N** for oscilloscope use , with user's manual.	P01.**1200.57A**

B SERIES

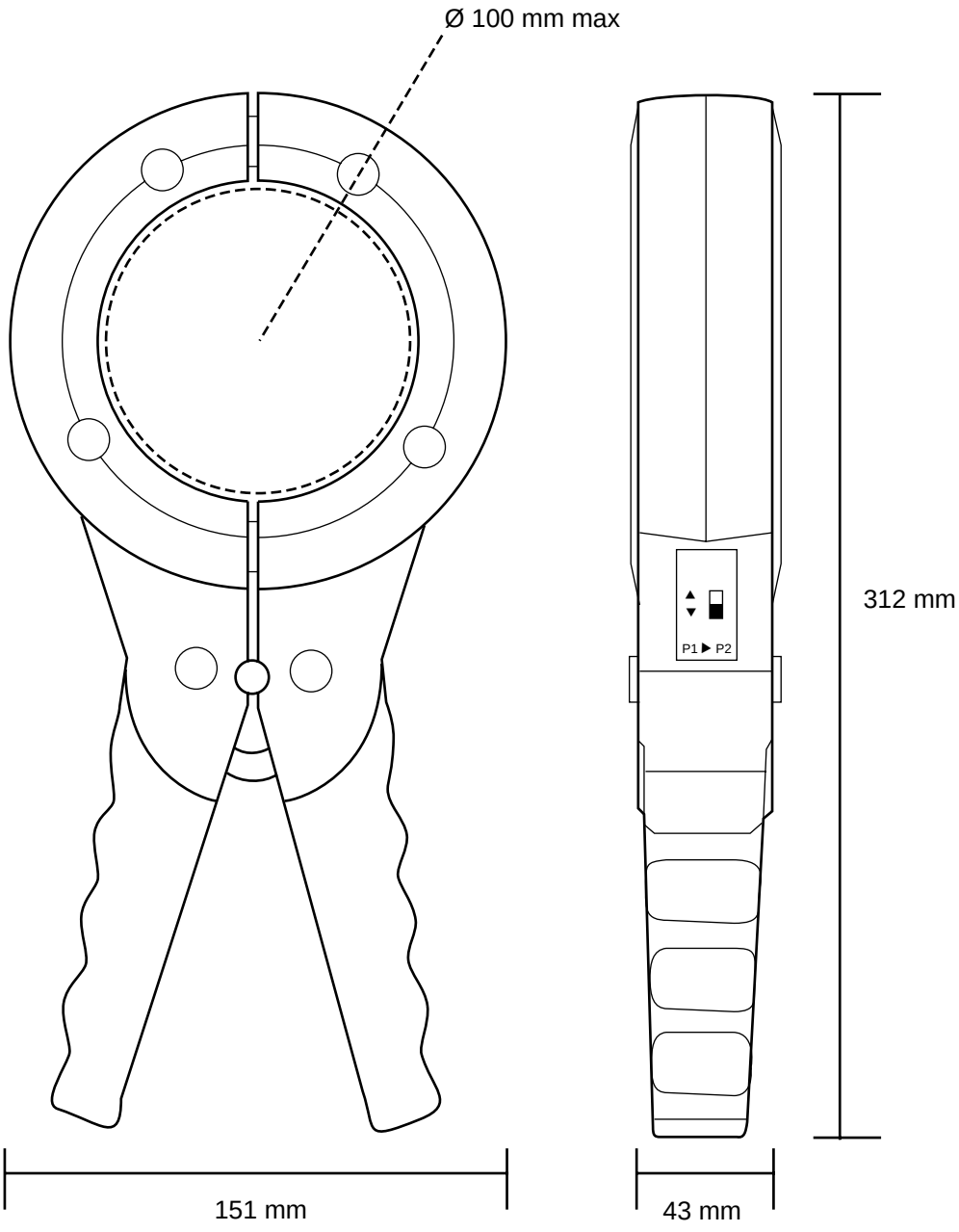
The only model in the B series, the B2 is designed for the measurement of ground leakage currents that arise as a result of insulation faults. It enables the fault to be located and diagnosed before failure occurs thus avoiding installation shutdown.

It is designed specifically for locating low current faults on high current circuits.

The B2 measures differential or leakage current from 500 µA upwards and may be used to measure currents up to 200 A in continuous use (400 A max.). The B2 has two measurement ranges, 1 mV/mA AC or 1 mV/A AC.

As a leakage current detector the B2 can be used on single or multiphase systems whether the currents are in or out of phase, balanced or unbalanced.
The B2 may be used simply as a high precision clamp-on current probe.

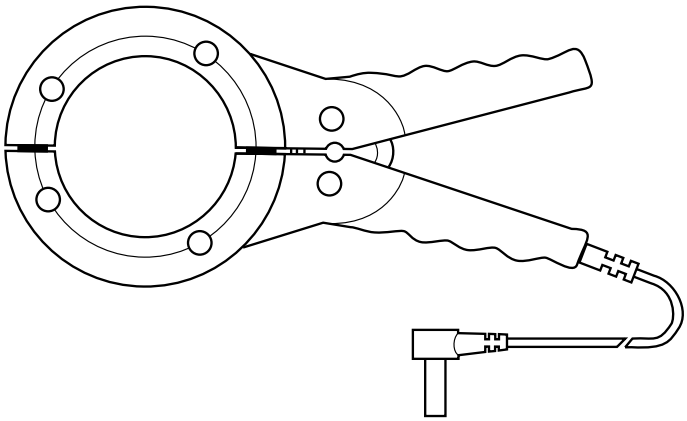
With its 100 mm jaw opening and dynamic measurement range from 500 µA to 200 A, the B2 is a versatile instrument, highly useful in the analysis of out of balance circuits, leakage currents and ground loop currents.
When used in conjunction with an artificial neutral the B2 can equally be used to measure fault currents on 3 phase circuits with no neutral.



Title : Clamp-on AC current probe, model B	
Drawing N°	Drawn :
Manufactured by: CHAUVIN ARNOUX	

Clamp-on AC current probe
Model B2

Current	4 A AC	200 A AC
Ouput	1 mV/mA	1 mV/A



Model B2 measures leakage or differential currents as low as 500 µA and can be used in conjunction with multimeters with AC mV input.
The B2 clamp measures ground loop currents, leakage currents and can be used to detect faults on earthed mono-phase or three-phase networks.
When working on three-phase systems, use the artificial neutral available.

Electrical Specification

4 A Range

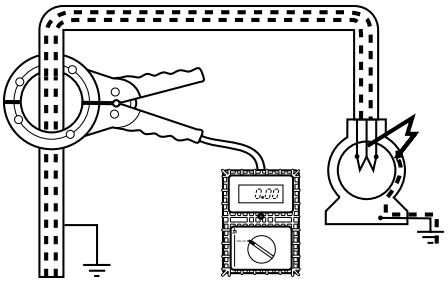
■ Current Range:
500 µA...4 A AC

■ Output Signal:
1 mV/mA (4 V max)

■ Accuracy *(1)*:

Primary current	≤ 10 mA	100 mA	4 A
% Accuracy of output signal	≤ 3% + 1 mA	≤ 0.5% + 0.5 mV	≤ 0.5% + 0.5 mV
Phase shift	non specified	≤ 15°	≤ 10°

■ Load impedance:
1 MΩ min



200 A Range

■ Current range:
500 mA...200 A AC

■ Output signal:
1 mV/A (400 mV max)

■ Accuracy *(1)*:

Primary current	≤ 10 A	200 A	400 A
Accuracy as % of output signal	≤ 0.5% + 0.5 mA	≤ 0.35% + 0.5 mV	≤ 0.35% + 1 mV
Phase shift	non specified	≤ 1°	≤ 0,7°

Load impedance:
≥ 10 MΩ et ≤ 100 pF

Frequency range:
30 Hz...1 kHz limited frequency for currents from 100 A at 1 kHz

Overload:
Between 200 A and 400 A, the max. measurement time is 5 min's with 20 minutes rest, at 25°C max

Mechanical Specifications

Jaw opening:
100 mm

Insertion capacity:
100 mm

Casing protection:
IP 20 (IEC 529)

Mechanical shock:
100 g (IEC 68-2-6-27)

Vibration:
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Self-extinguishing ability:
Casing: UL94 V0
Jaws: UL94 V2

Dimensions:
31.1 x 15 x 4.1 cm

Weight:
2 Kg

Output:
Via 1.5 m double insulated lead with male safety plugs.

Safety specifications

Dielectric test:
2 kV AC

- Double insulated device or extra insulation between the primary and secondary circuits and outer casing, in accordance with IEC 1010-1 et CEI 1010-2-032
- 30 V category III, pollution degree 2

⚠ For conductors exceeding 30 V in relation to the earth, only use the clamp if the conductors are insulated.

(1) Reference Conditions : 23°C ± 3°K, 20 to 75% RH, 48 to 65 Hz, measurement apparatus impedance> 10 MΩ/100 pF, no DC current in the conductor sample, test sample centred in clamp's jaws.

To Order	Reference
AC Clamp-on current probe model **B2** with user's manual	P01.**1200.33**
Accessories:	
Artificial neutral **AN1**	P01.**1972.01**
Shoulder bag **n°11**	P01.**1001.20**

AmpFLEX™ Series

These flexible current probes are as equally at home measuring low AC currents of a few hundred mA's as they are measuring high currents of several tens of kA's.

Their main point of interest is their flexibility and the ease with which electrical conductors of all shapes and sizes (cables, bus bars) and degrees of accessibility can be gripped.

They have a number of other strong points; they are light weight (having no magnetic circuit), they do not suffer from the saturation effect and their high level of accuracy combined with minimal phase shift make them perfect for power measurement applications.

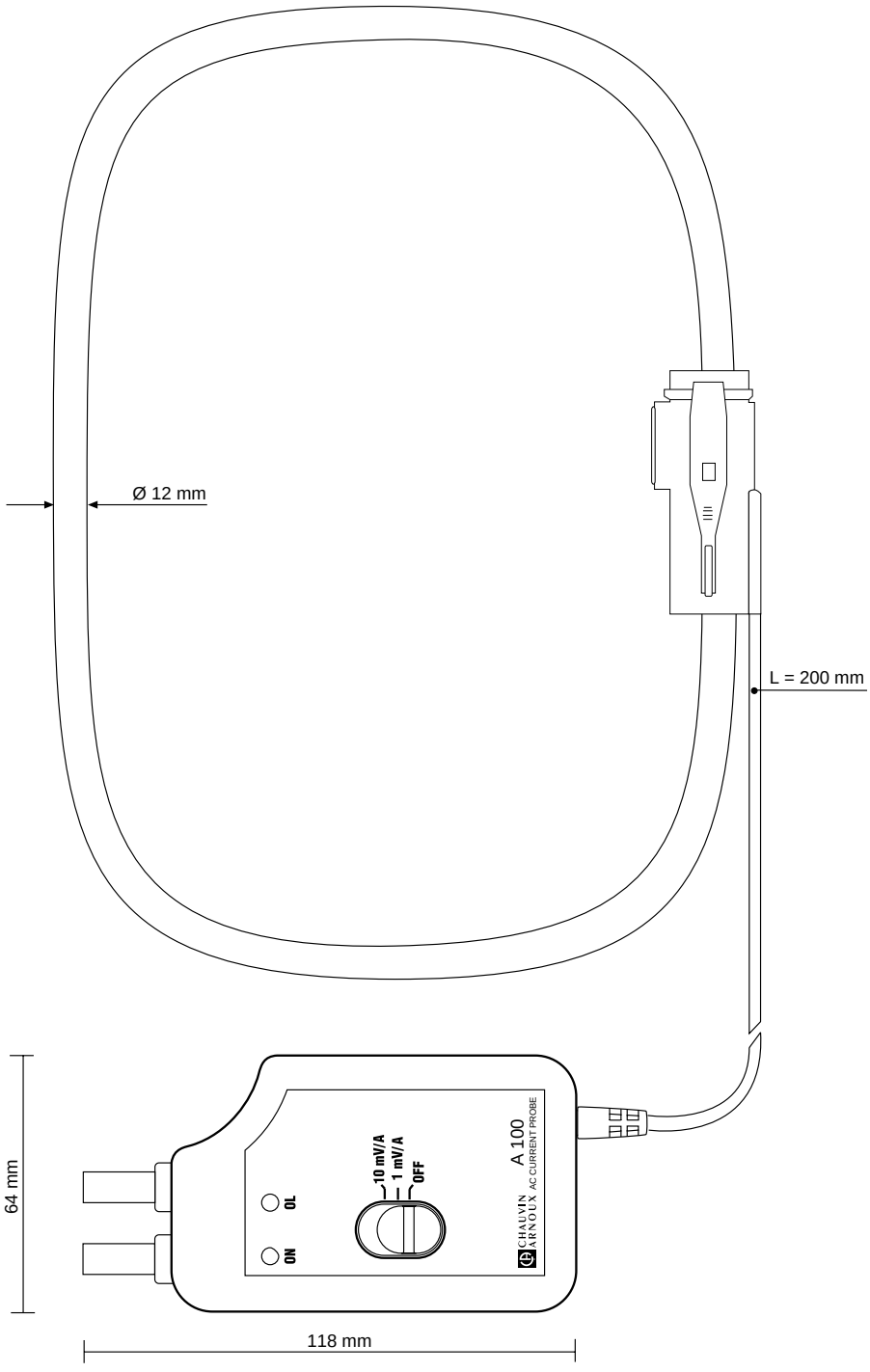
Amp*FLEX* A100 :

- The A100 (pictured above) has a flexible toroid which connects, via a screened lead, to a small unit containing all the processing electronics and a standard 9 V battery.

  The unit can be connected directly to any multimeter, wattmeter or recording device. With either one or two ranges, the A100's give an AC voltage output of 0.1 – 1 – 10 or 100 mV/A. As well as the standard models (48, 80, or 120 cm's), there are also models available on request where you can choose the sensor length and sensitivity.

Amp*FLEX* A101 :

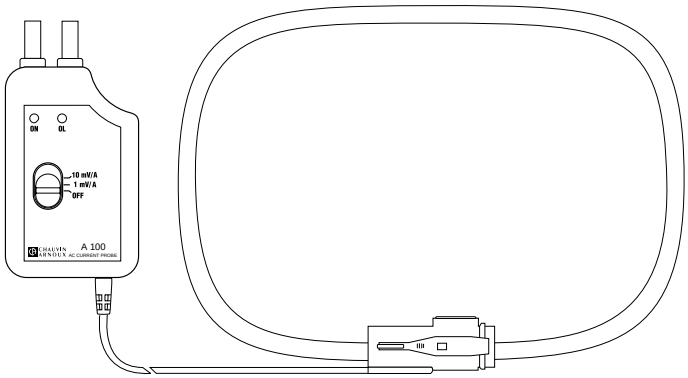
- The A101 has exactly the same specification as the A100's but comes without the electronic unit. These sensors are thus used by other manufacturers and integrated into their own test and measurement products.



Title : Amp*FLEX*™ **Series**	
Drawing N°	Drawn by :
Manufactured by : CHAUVIN ARNOUX	

Flexible AC current probe
Model A100 20-200/2

Current	20 A AC	200 A AC
Ouput	100 mV/A	10 mV/A



Electrical specifications

Current range :
0.5...20 A AC
0.5...200 A AC

Output signal :
100 mV AC/A AC (2 V at 20 A)
10 mV AC/A AC (2 V at 200 A)

Accuracy *(1)* **:**

Range	20 A		200 A	
Primary current	0.5...5 A	5...20 A	0.5...5 A	0.5...200 A
% accuracy of output signal	not specified	≤ 1%	not specified	≤ 1%
Phase shift	≤ 1.3°	≤ 1.3°	≤ 1.3°	≤ 1.3°

Bandwidth :
10 Hz...20 kHz

Crest factor :
2.25 at nominal current

Max. current / Max. output voltage :
No current limit, however maximum output is 4.5 V peak.

Load impedance : ≥ 1 MΩ

Influence of Z load impedance :
≤ 0.1%/Z, (Z in MΩ)

Output impedance :
1 kΩ

DC voltage shift at output :
20 A range : ≤ 50 mV DC
200 A range : ≤ 5 mV DC

Working voltage :
1000 V rms

Influence of adjacent conductor :
≤ 1% interference current at 50 Hz
(≤ 2% near catch)

Influence of conductor position in the loop :
≤ 1% (≤ 4% near catch)

Influence of sensor shape :
≤ 1% for an oblong shape

Supply :
9 V alkaline battery (NEDA 1604A, IEC 6LR61)

Battery life :
≥ 150 hrs continuous
≥ 1000 x 1 min measurements

Low Battery signal :
Green LED : battery is OK
Green LED flashes : battery nearly worn out
No green LED : battery totally worn out

Overload signal : red LED

Mechanical specifications

Working temperature :
-10° to +55°C, (maximum temperature for sensor is 90°C)

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.5% of output signal per 10 K

Operating humidity :
for 0 to 95% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal from 10% to 85% of RH

Operating altitude :
0...2000 m

Casing protection :
Case : IP 40 (IEC 529)
Flexible sensor : IP65 (IEC 529)

Drop test : 1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration :
5/15/5 1.5 mm - 15/25/15 1 mm - 25/55/25 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case, flexible sensor and catch unit : UL94 V0

Dimensions :
Case : 140 x 64 x 28 mm
Connector lead : 2 m (connects sensor to case)
Flexible sensor : Ø 12 mm ±0.5 mm

Weight :
Case : < 200 g
Flexible sensor : approx. 30 g per 10 cm length

Bending radius : ≥ 15 mm

Colours :
Case and connection lead : dark grey, red flexible sensor with dark grey catch unit

Output :
2 safety jacks (4mm) spacing 19 mm

Safety specifications

Electrical :
Double insulation or reinforced insulation between primary, secondary and outer parts of case normally handled, IEC 1010-1-1000V category III, pollution 2

Electromagnetic compatibility (EMC Mark) :

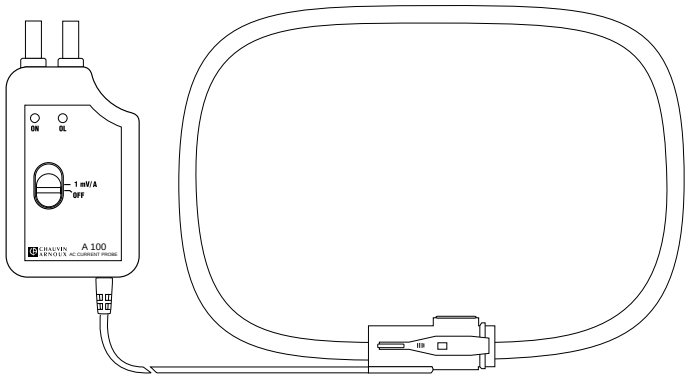
EN 50081-1 : in conformity
EN 50082-2 :
Electrostatic discharge : IEC 1000-4-2
Radiated field : IEC 1000-4-3
Fast transients : IEC 1000-4-4
Electrical shocks : IEC 1000-4-5
Magnetic field at 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 5°K, 20 to 75 % RH, battery voltage : 9 V ± 0.5 V, external magnetic field < 40 A/m, no external magnetic or electrical field, test sample centered sinusoidal signal : 10...100 Hz.

Ordering information	Reference
Amp***FLEX***™ **20-200/2,** length 45 cm including user's manual	P01.**1205.03**

Flexible AC current probe
Model A100 2000/2

Current	2000 A AC
Ouput	1 mV/A



Electrical specifications

Current range :
0.5...2000 A AC

Output signal :
1 mV AC/A AC (2 V at 2000 A)

Accuracy *(1)* **:**

Primary current	0.5...5 A	5...2000 A
% accuracy of output signal	not specified	≤ 1%
Phase shift	≤ 0.7°	≤ 0.7°

Bandwidth range :
10 Hz...20 kHz

Crest factor :
2.25 at nominal current

Max. current / Max. output voltage :
No current limit, however maximum output is 4.5 V peak.

Load impedance : ≥ 1 MΩ

Influence of Z load impedance :
≤ 0.1%/Z, (Z in MΩ)

Output impedance :
1 kΩ

DC voltage shift at output :
≤ 2 mV DC

Working voltage :
1000 V rms

Influence of adjacent conductor :
≤ 1% of interference current at 50 Hz (≤ 2% near catch)

Influence of conductor position in the loop :
≤ 1% (≤ 4% near catch)

Influence of sensor shape :
≤ 1% for an oblong shape

Supply :
9 V alkaline battery (NEDA 1604A, IEC 6LR61)

Battery life :
≥ 150 hrs continuous,
≥ 1000 x 1 min measurements

Low Battery signal :
Green LED : battery is OK
Green LED flashes : battery nearly worn out
No green LED : battery totally worn out

Overload signal : red LED

Mechanical specifications

Working temperature :
-10° to +55°C, (maximum temperature for sensor is 90°C)

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.5% of output signal per 10 K

Operating humidity:
for 0 to 95% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal from 10% to 85% of RH

Operating altitude :
0...2000 m

Casing protection :
Case : IP 40 (IEC 529)
Flexible sensor : IP65 (IEC 529)

Drop test : 1 m (IEC 68-2-32)

Shocks resistance :
100 g (IEC 68-2-27)

Vibrations :
5/15/5 1.5 mm - 15/25/15 1 mm - 25/55/25 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case, flexible sensor and catch unit : UL94 V0

Dimensions :
Case : 140 x 64 x 28 mm
Connector lead : 2 m (connects sensor to case)
Flexible sensor : Ø 12 mm ±0,5 mm

Weight :
Case : < 200 g
Flexible sensor : approx. 30 g per 10 cm length

Bending radius : ≥ 15 mm

Colours :
Case and connection leads : dark grey, red flexible sensor with dark grey catch unit

Output :
2 safety jacks (4mm) spacing 19 mm

Safety specifications

Electrical :
Double insulation or reinforced insulation between primary, secondary and outer parts of case normally handled, IEC 1010-1- 1000V category III, pollution 2

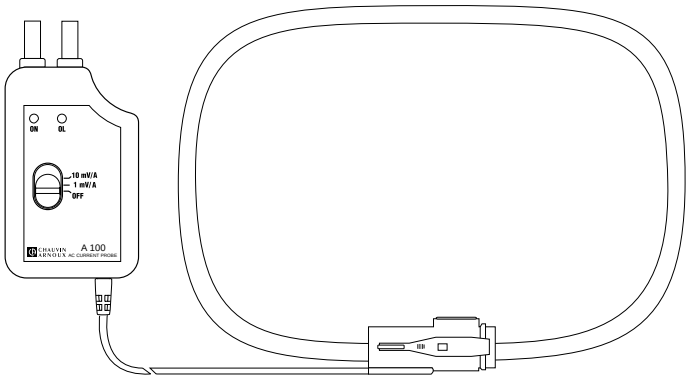
Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : in conformity
EN 50082-2 :
Electrostatic discharge : IEC 1000-4-2
Radiated field : IEC 1000-4-3
Fast transients : IEC 1000-4-4
Electrical shocks : IEC 1000-4-5
Magnetic field at 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 5°K, 20 to 75 % RH, battery voltage : 9 V ± 0.5 V, external magnetic field < 40 A/m, no external magnetic or electrical field, test sample centered sinusoidal signal : 10...100 Hz.

Ordering information	Reference
Amp***FLEX***™ **2000/2,** length 45 cm including user's manual	P01.**1205.01**
Amp***FLEX***™ **2000/2,** length 80 cm including user's manual	P01.**1205.02**

Flexible AC current probe
Model A100 200-2000/2

Current	200 A AC	2000 A AC
Ouput	10 mV/A	1 mV/A



Electrical specifications

Current range :
0.5...200 A AC
0.5...2000 A AC

Output signal :
10 mV AC/A AC (2V at 200 A)
1 mV AC/A AC (2 V at 2000 A)

Accuracy *(1)* **:**

Range	200 A		2000 A	
Primary current	0.5...5 A	5...200 A	0.5...5 A	0.5...2000 A
% accuracy of output signal	not specified	≤ 1%	not specified	≤ 1%
Phase shift	≤ 0.7°	≤ 0.7°	≤ 0.7°	≤ 0.7°

Bandwidth :
10 Hz...20 kHz

Crest factor :
2.25 at nominal current

Max. current / Max. output voltage :
No current limit, however maximum output is 4.5V peak.

Load impedance : ≥ 1 MΩ

Influence of Z load impedance :
≤ 0.1%/Z, (in MΩ)

Output impedance :
1 kΩ

DC voltage shift at output :
200 A range : ≤ 5 mV DC

2000 A range : ≤ 2 mV DC

Working voltage :
1000 V rms

Influence of adjacent conductor :
≤ 1% of interference current at 50 Hz
(≤ 2% near catch)

Influence of conductor position in the loop :
≤ 1% (≤ 4% near catch)

Influence of sensor shape :
≤ 1% for an oblong shape

Supply :
9 V alkaline battery (NEDA 1604A, IEC 6LR61)

Battery life :
≥ 150 hrs continuous,
≥ 1000 x 1 min measurements

Low Battery signal :
Green LED : battery is OK
Green LED flashes : battery nearly worn out
No green LED : battery totally worn out

Overload signal : red LED

Mechanical specifications

Working temperature :
-10° to +55°C (maximum temperature for sensor is 90°C)

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.5% of output signal per 10 K

Operating humidity :
fro 0 to 95% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal from 10% to 85% of RH

Operating altitude :
0...2000 m

Casing protection :
Case : IP 40 (IEC 529)
Flexible sensor : IP65 (IEC 529)

Drop test : 1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration :
5/15/5 1.5 mm - 15/25/15 1 mm - 25/55/25 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case, flexible sensor and catch unit : UL94 V0

Dimensions :
Case : 140 x 64 x 28 mm
Connector lead : 2 m (connects sensor to case)
Flexible sensor : Ø 12 mm ±0,5 mm

Weight :
Case : < 200 g
Flexible sensor : approx. 30 g per 10 cm length

Bending radius : ≥ 15 mm

Colours :
Case and connection leads : dark grey, red flexible sensor with dark grey catch unit

Output :
2 safety jacks (4mm) spacing 19 mm

Safety specifications

Electrical :
Double insulation or reinforced insulation between primary, secondary and outer parts of case normally handled, IEC 1010-1- 1000V category III, pollution 2

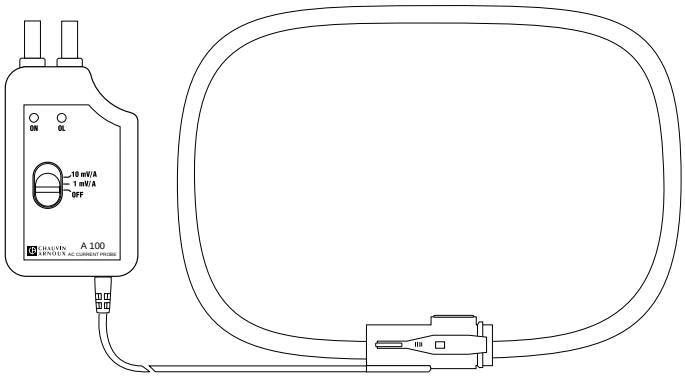
Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : in conformity
EN 50082-2 :
Electrostatic discharge : IEC 1000-4-2
Radiated field : IEC 1000-4-3
Fast transients : IEC 1000-4-4
Electrical shocks : IEC 1000-4-5
Magnetic field at 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 5°K, 20 to 75 % RH, battery voltage : 9 V ± 0.5 V, external magnetic field < 40 A/m, no external magnetic or electrical field, test sample centered sinusoidal signal : 10...100 Hz.

Ordering information	Reference
Amp***FLEX***™ **200-2000/2,** length 45 cm including user's manual	P01.**1205.04**
Amp***FLEX***™ **200-2000/2,** length 80 cm including user's manual	P01.**1205.05**

Flexible AC current probe
Model A100 300-3000/3

Current	300 A AC	3000 A AC
Ouput	10 mV/A	1 mV/A



Electrical specifications

Current range :
0.5...300 A AC
0.5...3000 A AC

Output signal :
10 mV AC/A AC (3 V at 300 A)
1 mV AC/A AC (3 V at 3000 A)

Accuracy *(1)* **:**

Range	300 A		3000 A	
Primary current	0.5...5 A	5...300 A	0.5...5 A	0.5...3000 A
% accuracy of output signal	not specified	≤ 1%	not specified	≤ 1%
Phase shift	≤ 0.7°	≤ 0.7°	≤ 0.7°	≤ 0.7°

Bandwidth :
10 Hz...20 kHz

Crest factor :
1.5 nominal current

Max. current / Max. output voltage :
No current limit, however maximum output is 4.5 V peak.

Load impedance : ≥ 1 MΩ

Influence of Z load impedance :
≤ 0.1%/Z, (Z in MΩ)

Output impedance :
1 kΩ

DC voltage shift at output :
300 A range : ≤ 5 mV DC
3000 A range : ≤ 2 mV DC

Working voltage :
1000 V rms

Common mode voltage :
600 V for category III installations and pollution level 2

Influence of adjacent conductor :
≤ 1% of interference current at 50 Hz (≤ 2% near catch)

Influence of conductor position in the loop :
≤ 1% (≤ 4% near catch)

Influence of sensor shape :
≤ 1% for an oblong shape

Supply :
9 V alkaline battery (NEDA 1604A, IEC 6LR61)

Battery life :
≥ 150 hrs continuous,
≥ 1000 x 1 min measurements

Low Battery signal :
Green LED : battery is OK
Green LED flashes : battery nearly worn out
No green LED : battery totally worn out

Overload signal : red LED

Mechanical specifications

Working temperature :
-10° to +55°C, (maximum temperature for sensor is 90°C)

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.5% of output signal per 10 K

Operating humidity :
from 0 to 95% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal from 10% to 85% of RH

Operating altitude :
0...2000 m

Casing protection :
Case : IP 40 (IEC 529)
Flexible sensor : IP65 (IEC 529)

Drop test : 1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration :
5/15/5 1.5 mm - 15/25/15 1 mm - 25/55/25 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case, flexible sensor and catch unit : UL94 V0

Dimensions :
Case : 140 x 64 x 28 mm
Connector lead : 2 m (connects sensor to case)
Flexible sensor : Ø 12 mm ±0.5 mm

Weight :
Case : < 200 g
Flexible sensor : approx. 30 g per 10 cm length

Bending radius : ≥ 15 mm

Colours :
Case and connection leads : dark grey, red flexible sensor with dark grey catch unit

Output :
2 safety jacks (4mm) spacing 19 mm

Safety specifications

Electrical :
Double insulation or reinforced insulation between primary, secondary and outer parts of case normally handled, IEC 1010-1- 1000V category III, pollution 2

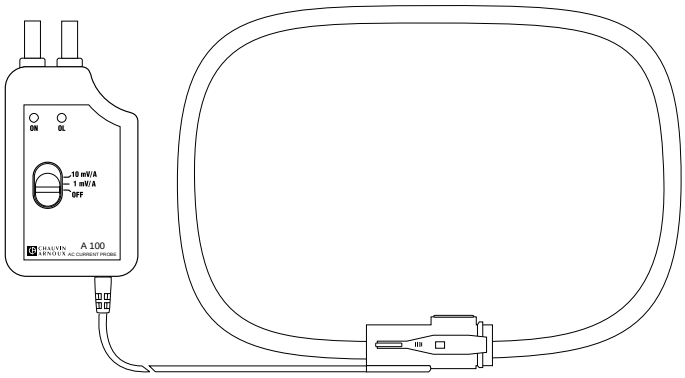
Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : in conformity
EN 50082-2 :
Electrostatic discharge : IEC 1000-4-2
Radiated field : IEC 1000-4-3
Fast transients : IEC 1000-4-4
Electrical shocks : IEC 1000-4-5
Magnetic field at 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 5°K, 20 to 75 % RH, battery voltage : 9 V ± 0.5 V, external magnetic field < 40 A/m, no external magnetic or electrical field, test sample centered sinusoidal signal : 10...100 Hz.

Ordering information	Reference
Amp***FLEX***™ **300-3000/3,** length 45 cm including user's manual	P01.**1205.06**
Amp***FLEX***™ **300-3000/3,** length 80 cm including user's manual	P01.**1205.07**
Amp***FLEX***™ **300-3000/3,** length 120 cm including user's manual	P01.**1205.08**

Flexible AC current probe
Model A100 1000-10000/1

Current	1000 A AC	10000 A AC
Ouput	1 mV/A	0,1 mV/A



Electrical specifications

Current range :
0.5...1000 A AC
0.5...10000 A AC

Output signal :
1 mV AC/A AC (1 V at 1000 A)
0.1 mV AC/A AC (1 V at 10000 A)

Accuracy *(1)* **:**

Range	1000 A		10000 A	
Primary current	0.5...5 A	5...1000 A	0.5...5 A	0.5...10000 A
% accuracy of output signal	not specified	≤ 1%	not specified	≤ 1%
Phase shift	≤ 0.5°	≤ 0.5°	≤ 0.5°	≤ 0.5°

Bandwidth :
10 Hz...[45...65]...20 kHz

Crest factor :
4.5 nominal current

Max. currents / Max. output voltage :
No current limit, however maximum output is 4.5 V peak.

Load impedance : ≥ 1 MΩ

Influence of Z load impedance :
≤ 0.1%/Z, (Z in MΩ)

Output impedance :
1 kΩ

DC voltage gap at output :
1000 A range : ≤ 2 mV DC
10000 A range : ≤ 1 mV DC

Working voltage :
1000 V rms

Influence of adjacent conductor :
≤ 1% of interference current at 50 Hz (≤ 2% near cath)

Influence of conductor position in the loop :
≤ 1% (≤ 4% near catch)

Influence of sensor shape :
≤ 1% for an oblong shape

Supply :
9 V alkaline battery (NEDA 1604A, IEC 6LR61)

Battery life :
≥ 150 hrs continuous operating,
≥ 1000 x 1 min measurements

Low Battery signal :
Green LED : battery is OK
Green LED flashes : battery nearly worn out
No green LED : battery totally worn out

Overload signal : red LED

Mechanical specifications

Working temperature :
-10° to +55°C (maximum temperature for sensor is 90°C)

Storage temperature :
-40° to +70°C

Temperature influence :
≤ 0.5% of output signal per 10 K

Operating humidity :
from 0 to 95% of RH with linear decrease beyond 35°C

Influence of humidity :
< 0.2% of output signal from 10% to 85% of RH

Operating altitude :
0...2000 m

Casing protection :
Case : IP 40 (IEC 529)
Flexible sensor : IP65 (IEC 529)

Drop test : 1 m (IEC 68-2-32)

Shock resistance :
100 g (IEC 68-2-27)

Vibration :
5/15/5 1.5 mm - 15/25/15 1 mm - 25/55/25 0.25 mm (IEC 68-2-6)

Self-extinguishing ability :
Case, flexible sensor and catch unit : UL94 V0

Dimensions :
Case : 140 x 64 x 28 mm
Connector lead : 2 m (connects sensor to case)
Flexible sensor : Ø 12 mm ±0.5 mm

Weight :
Case : < 200 g
Flexible sensor : approx. 30 g per 10 cm length

Bending radius : ≥ 15 mm

Colours :
Case and connection leads : dark grey, red flexible sensor with dark grey catch unit

Output :
2 safety jacks (4mm) spacing 19 mm

Safety specifications

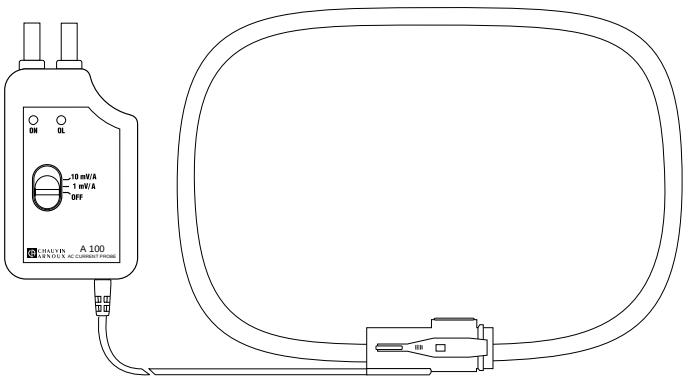
Electrical :
Double insulation or reinforced insulation between primary, secondary and outer parts of case normally handled, IEC 1010-1- 1000V category III, pollution 2

Electromagnetic compatibility (EMC Mark) :
EN 50081-1 : in conformity
EN 50082-2 :
Electrostatic discharge : IEC 1000-4-2
Radiated field : IEC 1000-4-3
Fast transients : IEC 1000-4-4
Electrical shocks : IEC 1000-4-5
Magnetic field at 50/60 Hz : IEC 1000-4-8

(1) Reference conditions : 23 °C ± 5°K, 20 to 75 % RH, battery voltage : 9 V ± 0.5 V, external magnetic field < 40 A/m, no external magnetic or electrical field, test sample centered sinusoidal signal : 10...100 Hz.

Ordering information	Reference
Amp***FLEX***™ **1000-10000/1,** length 120 cm including user's manual	P01.**1205.09**

Flexible AC current probe
Model A100 on request



To complete the whole range of standard models presented in the preceding pages, CHAUVIN ARNOUX also offers to make special models to meet your particular needs.

To do so, it is necessary to give a reference as follows :

A 1 0 0	A	B B B	C C C	D D D

with :
A : Number of ranges
BBB : Max. range value, in Amperes
CCC : Max. range sensitivity in mV/A
DDD : Length of flexible sensor in cm (min X 40 = 40 cm, max = 990 cm) for a section of 10 cm

Currently available values :

Model	A 1 0 0	A	B B B	C C C	D D D
20-200 A/2 V	A 1 0 0	2	2 0 0	X 1 0	
2000 A/2 V	A 1 0 0	1	2 K 0	X X 1	
200-2000 A/2 V	A 1 0 0	2	2 K 0	X X 1	
300-3000 A/3 V	A 1 0 0	2	3 K 0	X X 1	
1000-10000 A/1 V	A 1 0 0	2	1 0 K	0 . 1	

Example 1 :
A flexible sensor AmpFLEX A100, with 2 ranges 200-2000A **and length 5 m** would be represented by :

A 1 0 0	2	2 K 0	X X 1	5 0 0

- 2 : 2 ranges
- 2 K 0 : Max. range 2000 (second range is 10 times smaller)
- X X 1 : Sensitivity 1mV/A (sensitivity of second range is 10 times bigger)
- 5 0 0 : Length of sensor in cm = 500

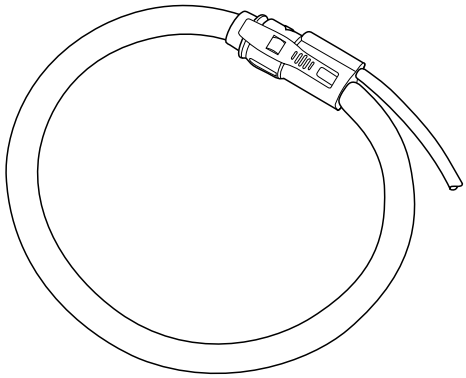
Example 2 :
A flexible sensor AmpFLEX, range 2000 A **length 90 cm** would be represented by :

A 1 0 0	1	2 K 0	X X 1	x 9 0

- 1 : 1 range
- 2 K 0 : Max. range 2000
- X X 1 : Sensitivity 1mV/A
- x 9 0 : Length of sensor in cm = x 90

As Chauvin Arnoux is always wishing to improve its products, do not hesitate to contact us for other configurations.

Flexible AC current probe
Model A101



The AmpFLEX offers perfect linearity, low phase shift, a wide range of measurements (up to several kA) together with unrivalled ease of use.

The A101 series is Chauvin Arnoux's response to all the measurement instrument manufacturers wishing to integrate AmpFLEX solutions into their product lines.

Description

The A101 AmpFLEX sensor is composed of an active element (Rogowski coil) and a connection lead.

It is necessary to add on an electronic processing system (not included), in order to complete this measurement device.

Chauvin Arnoux has added an extra step to the manufacturing process of the A101 probe which guarantees their interchangeability. This is essential in applications such as three-phase measurements where several identical probes are used.

Electrical specifications

Voltage at sensor terminals :
46 µV/A (- 15%...+ 10%) at 50 Hz

Linearity * : < 0.3%

Phase shift * : ≤ 0.5° at 50 Hz

Error of interchangeability :
≤ 0.5% (maximum error between 2 sensors for the same measurement point).

Frequency range
Depends on the electronics with which it is used.

Working voltage : 1000 Vrms or DC

Mechanical specifications

Operating temperature :
- 20°C to + 60°C

Storage temperature :
- 40°C to + 80°C

Max temperature of measured cable :
≤ 90°C

Operating altitude :
0...2000 m

Maximum conductor size :
Depending on sensor length.

Casing protection :
IP65 EN 60529

Self-extinguishing ability :
External cover, catch unit, connection lead : UL94 V0

Dimensions :
Sensor Ø : 12 mm

Weight :
Approx. 30 g per 10 cm length

Colours :
Sensor : Red
Catch unit : dark grey

Output :
According to configuration (refer to § Connections)

Connections :
According to configuration (refer to § Connections)

Security specifications

Electrical :
Double insulation or reinforced insulation between primary, secondary and outer parts of case normally handled, IEC 1010-1 & IEC 1010-2-032, 1000 V category III, pollution 2

Electromagnetic compatibility (EMC Mark) :

EN 50081-1 : in conformity
EN 50082-2 :
Electrostatic discharge : IEC 61000-4-2
Radiated field : IEC 61000-4-3
Fast transients : IEC 61000-4-4
Magnetic field at 50/60 Hz : IEC 61000-4-8

* Reference conditions : 23 °C ± 6 K, 20 to 75 % RH, frequency 10Hz to 100Hz, sinusoidal signal, no external AC magnetic field, external magnetic field < 40 A/m (earth field) tested sample centered.

■ Configurations

Level 1

A	1	0	1										

■ **Category** (fixed field)

■ **Lead length in decimetres**
Min value : **05** (50 cm)
Max value : **99** (9.9 m)
Increment per 1 dm section (10 cm)

■ **Length of connection lead in decimetres**
Min value : **05** (50 cm)
Max value : **99** (9,9 m)
Increment per section of 1 dm (10 cm)

■ **Measurement range** *(refer to additional information)*
1 : electronic diagram CA1
2 : electronic diagram CA2
3 : electronic diagram CA3
4 : diagram suited for C.A 8310

■ **Connections**
X : lead without connection unit
C : specific lead

■ **Calibration for interchangeability** *(refer to additional information)*
N : without
O : with

■ **Special feature**
X1 : plain sensor without CHAUVIN ARNOUX logo, with norms and Amp***FLEX***™ inscriptions, plain packing with instruction manual.
X2 : plain sensor without CHAUVIN ARNOUX logo, with norms and Amp***FLEX***™ inscriptions, plastic bag packing, instruction manual stapled on the plastic bag.
C1 : same as CHAUVIN ARNOUX sensor
plain packing box with instruction manual
C2 : same as CHAUVIN ARNOUX sensor
plastic bag packing, instruction manual stapled on the plastic bag.

Level 2

■ **Connections** *(refer to additional information)*
XXX1 : circular lead 2 conductors + bare and tinned
BNC1 : coaxial lead + insulated coaxial plug
FRB1 : circular lead 2 conductors + screening with FRB connector D01 model, type 1 (male pins)
FRB2 : circular lead 2 conductors + screening with FRB connector D01 model, type 2 (sockets)

■ **Colour of connector** *(refer to additional information)*
XX : no connector
BK : black
RD : red
BU : blue
GN : green
WH : white
YE : yellow

■ **+ connection point**
1, 2 or 3 : contact N° connected to +
X : no connector

■ **- connection point**
1, 2 or 3 : contact N° connected to -
X : no connector

■ **connected protection**
1, 2 or 3 : contact N° connected to screening
X : not connected or no connector

■ **Interchangeability resistors** *(refer to additional information)*
I : included in sensor
F : resistors supplied
D : values are indicated in the manual included with Amp***FLEX*** (resistors not supplied)
X : no calibration for interchangeability

■ Specific configuration of sensors for C.A 8310 *Power & Harmonics Analyser*

To complete the range of standard sensors for this product, A190 sensors of different lengths can be used (A190 is an A101 special feature).

Select :

Level 1	**A**	**1**	**0**	**1**					**4**	**C**	**O**	**C**	**1**
Level 2	**F**	**R**	**B**	**1**					**1**	**3**	**X**	**I**	

Blank spaces are refer to :
- level 1 : sensor lengths and connection lead to be chosen
- level 2 : colour of connector

■ Additional information

■ Measurement range (electronic diagram)

Choosing the measurement range depends on sensitivity required and on electronic supply voltages.

Example : *For a supply voltage of ± 5 V, electronic output voltage will be limited to ± 4.5 V peak to peak, that is to say approximately 3 V RMS (4.5 V / √2) if measured signal is sinusoidal.*

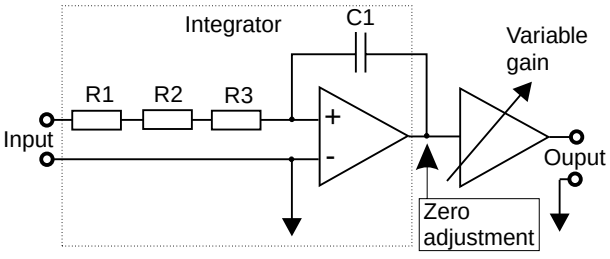
The different diagrams refer to sensitivity ranges according to the following chart :

Diagram	CA1	CA2	CA3
Sensitivity	0.1 mV/A...1 mV/A	1 mV/A...10 mV/A	10 mV/A...100 mV/A
Max. measurement range for a ± 5 V supply	3000 A...30000 A	300 A...3000 A	30 A...300 A
Max. measurement range for a ± 15 V supply	9 000 A...90000 A	900 A...9000 A	90 A...900 A

■ Interchangeability calibration

For applications that require the use of several sensors, it is necessary to ensure that all the sensors used on a single measuring instrument have identical output specifications.
Calibration is carried out for a standard electronic circuit (refer to following chart) at input level (integrator).

Combined electronic
Is the standard diagrams of input level, referring to the different measurement ranges required.

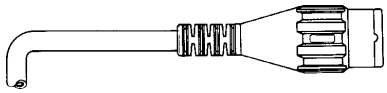
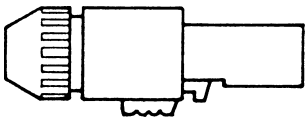


Resistors and integrator condenser value according to sensitivity

Diagram	CA1	CA2	CA3
Sensitivity	0.1 mV/A to 1 mV/A	1 mV/A to 10 mV/A	10 mV/A to 100 mV/A
C1	100 nF	10 nF	1 nF
R1 = R2 = R3		4.12 kΩ	

C1 preferably in polycarbonate (tolerance 5%).
R1, R2 and R3 metallic coating, tolerance 1%, power 1/8 W temperature 50 ppm.
Standard technology or CMS.

■ Connections

Connector	Connections selection	Colour of the connector
BNC1 Coaxial leads + insulated coaxial plug 		BK : black RD : red (1) BU : blue (1)
FRB1 : FRB D01 model Contact : male **FRB2 :** FRB D01 model Contact : female 		BK : black RD : red BU : blue GN : green (1) WH: white YE :yellow (1)

(1) colour not in stock

■ Interchangeability resistors

In order to enable interchangeability of sensors, the calibration process consists of : defining a value of a resistor which will be put in the measurement circuit.
In fact, this (or these) resistors can be integrated into connectors FRB1 or FRB2.
Contact us for details of other types of connectors.

Ordering information	Reference
A101 Amp***FLEX*** without electronic unit	**Contact us**
Accessories :	
“Green” catches (set of 10)	P01.**1019.21**
“Red” catches (set of 10)	P01.**1019.22**
“Purple” catches (set of 10)	P01.**1019.23**
“Black” catches (set of 10)	P01.**1019.24**
“Blue” catches (set of 10)	P01.**1019.25**
“Yellow” catches (set of 10)	P01.**1019.26**
“Brown” catches (set of 10)	P01.**1019.27**
“White” catches (set of 10)	P01.**1019.28**
“Grey” catches (set of 10)	P01.**1019.29**
9 assorted colours (9 sets of 2)	P01.**1019.30**
Coloured catches C.A 8310 (“blue”, “red”, “black” set of 2)	P01.**1019.31**

K Series

The K series is a new product range possessing exceptional measurement capabilities.

Extremely compact in design, these "micro-probes" are designed for highly accurate measurement of very low currents.

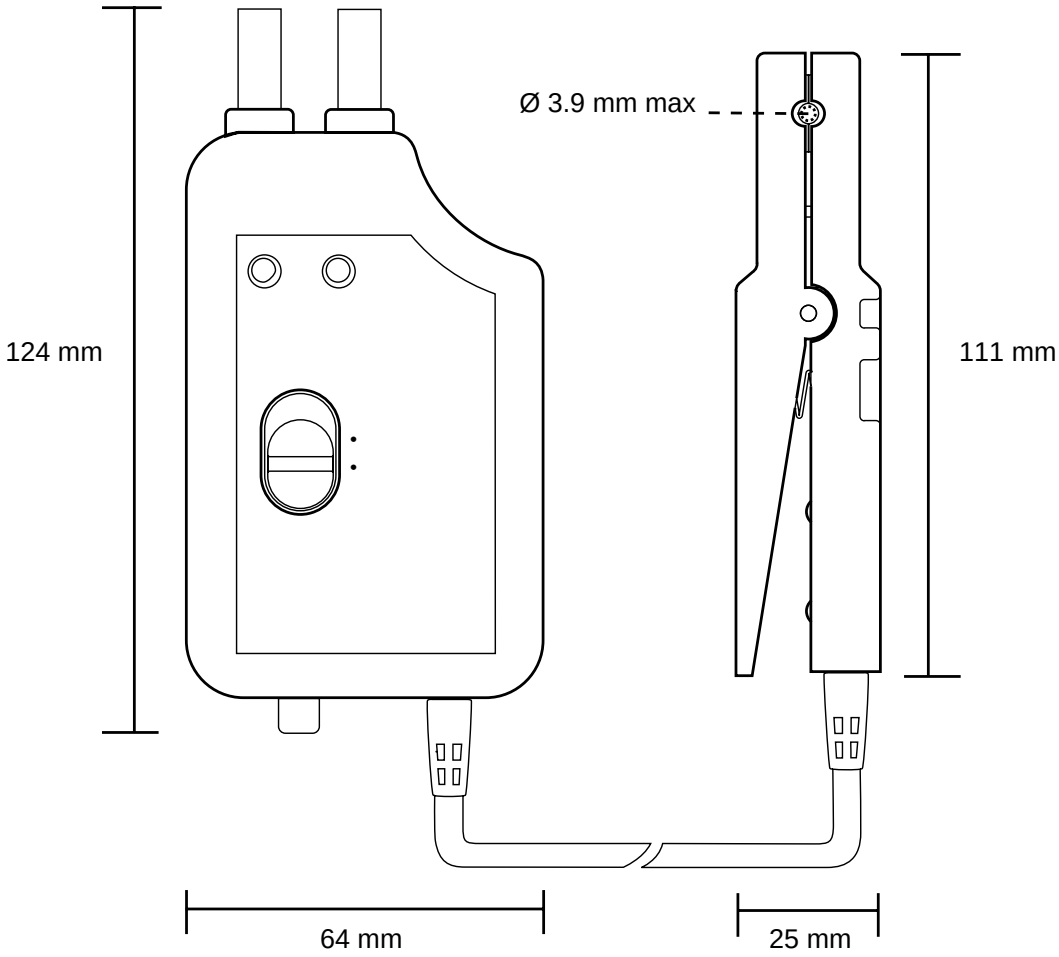
Their small dimensions and shape make them ideal for probing into tight spaces where access is limited, as is the case on most switchboards, 4-20 A process loops or vehicle wiring looms for example.

These "K" series current probes make excellent work companions for multimeters and any other instrument able to make use of their high sensitivity, dynamic range and ability to indicate the shapes of signals and waveforms. They give an AC+DC output signal that is proportional to the measured current, without needing to change the range or filter the signal. RMS measurements are possible with DC+AC components.

There are two different types of K series current probes available.

Model K1 gives a 1 mV/mA output and lends itself to a variety of different applications, biased towards low current measurement.

Model K2 has a greater level of sensitivity with its 10 mV/mA output.

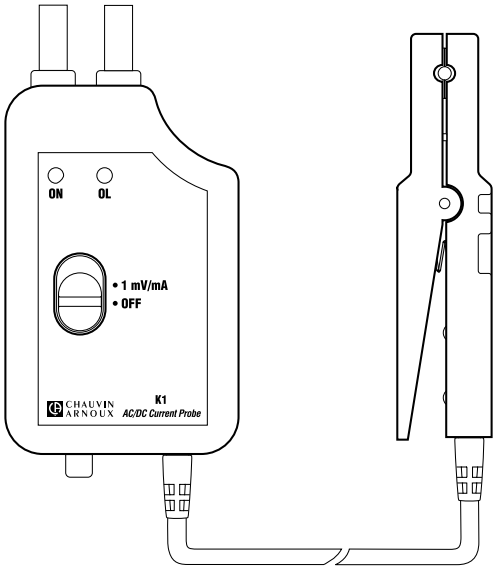


Title: K Series - Current probe	
Drawing N°	Drawn:
Manufactured by: CHAUVIN ARNOUX	

AC/DC current probes
K1 Model

Current	4500 mA DC 3000 mA AC
Ouput	1 mV/mA

The K1 model measures currents as low as 100 µA AC or DC.
The clamp provides a proportional output signal enabling direct readings on multimeters.



■ Electrical specifications

Current range:
1 mA...± 4.5 A DC
1 mA...3 A rms (sinusoidal)
1 mA...4.5 A peak, square and steps

Output (output voltage):
1 mV/mA

Resolution:
DC: 50 µA typical
AC: 100 µA typical

Accuracy *(1)***:**

■ DC current

Primary current	1...10 mA	10...120 mA	120...4500 mA
% accuracy of output signal	2% ±0.2 mV	2% ±0.1 mV	1%

■ AC current from 45 to 65 Hz

Primary current	1...10 mA	10...120 mA	120...3000 mA
% accuracy of output signal	3% ±0.3 mV	3% ±0.1 mV	1%

Frequency response:
DC to 2 kHz (at -3 dB)

Load impedance:
≥ 1 MΩ and ≤ 100 pF

Output noise:
< 100 µV, DC to 3 kHz

Output impedance:
220 Ω

Inductance of clamp:
< 1 µH

Rise time:
< 200 µs, 10% to 90%

Fall time:
< 200 µs, 90% to 10%

Influence of adjacent conductors:
(50 Hz at 23 mm from the clamp): < 100 µA/A

Influence of earth field:
< 120 µA

Batteries:
9V alkaline, NEDA 1604, 6LR61
or IEC 6 LF22

Battery level indication:
Green LED when battery voltage > 6.5 V

Battery charge life:
Approximately 20 hours

Overload indication:
Red LED indicating momentary or continuous overload.

■ Mechanical specifications

Operating temperature:
-10°C to +55°C

Storage temperature:
-40°C to +80 °C

Influence of temperature:
< 1000 ppm/°K or 1%/10°C

Humidity:
< 95% for < 35°C, 75% at +55°C

Operating altitude :
0 to 2000 m

Adjustment of DC zero:
approximately ±25 mA by turning the button on the bottom of the housing

Clamping capacity:
Ø 3.9 mm

Protection casing:
Housing: IP 40 as per IEC 529

Drop test:
1.0 m as per IEC 68-2-32

Impacts:
100 g as per IEC 68-2-27

Vibration:
As per IEC 68-2-6

Frequencies:
5 to 15 Hz, amplitude: 1.5 mm
15 to 25 Hz: amplitude: 1 mm
25 to 55 Hz: amplitude: 0.25 mm

Dimensions (electronic module):
124 x 64 x 28 mm

Dimensions (probe):
111 x 15 x 25 mm

Cable length:
1.5 m

Weight:
250 g

Colour:
Dark grey

Output:
Two 4 mm safety terminals 19 mm apart.

■ Safety specifications

Operating voltage:
300 V as per IEC 1010-1 cat. II

Electromagnetic compatibility:

■ Immunity (EN 50082-1):
Class A
DC: 15 mV for 0
AC (60 Hz): 2 dB from 10 mA...4.5 A

■ Emissivity (as per EN 50081-1): negligible

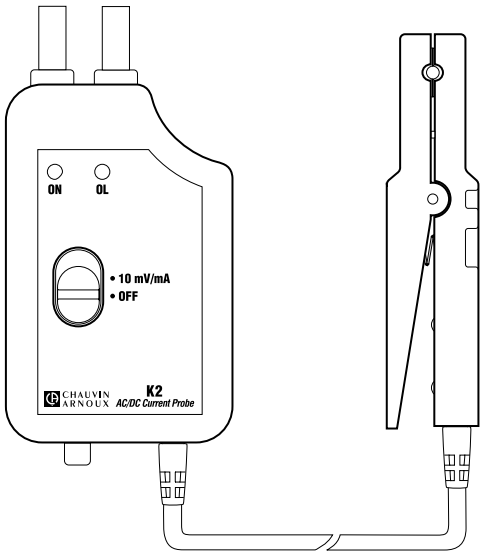
(1) Reference conditions: 23°C ±3°C, 20 to 75% RH, batteries 9 V ±0,1 V, earth's magnetic field < 40 A/m, no AC field, DC or sinusoidal current from 45 to 65 Hz

To order	Reference
K1 model AC/DC ammeter clamp in carrying case with battery and user's manual	P01.**1200.67A**

AC/DC current probes
K2 Model

Current	450 mA DC 300 mA AC
Ouput	10 mV/mA

The K2 model measures currents as low as 100 µA AC or DC.
The probe has a proportional output for direct readings on multimeters.



■ Electrical specifications

Current range:
0.1...±450 mA DC
0.1...300 mA rms (sinusoidal)
0.1...450 mA peak, square signal and steps

Output (output voltage):
10 mV/mA

Resolution:
DC: 50 µA typical
AC: 100 µA typical

Accuracy *(1)***:**

■ DC current

Primary current	0.1...1 mA	1...12 mA	12...450 mA
% accuracy of output signal	3% ±2 mV	2% ±2 mV	1%

■ AC current from 45 to 65 Hz

Primary current	0.1...1 mA	1...12 mA	12...300 mA
% accuracy of output signal	3% ±0.5 mV	2% ±0.5 mV	1%

Frequency response:
DC to 1.5 kHz (at -3 dB)

Load impedance:
≥ 1 MΩ and ≤ 100 pF

Output noise: < 100 µV, DC to 1,5 kHz

Output impedance: 200 Ω

Inductance of clamp: < 1 µH

Rise time:
< 200 µs, 10% to 90%

Fall time:
< 200 µs, 90% to 10%

Influence of adjacent conductors:
(50 Hz at 23 mm from the clamp):
< 100 µA /A

Influence of earth field:
< 120 µA, 0...max.

Max. current
100 A AC rms or DC with current limitation according to frequency, above 400 Hz

Batteries:
9V alkaline, NEDA 1604, 6LR61
or IEC 6 LF22

Indication of battery level:
Green LED when battery voltage > 6.5 V

Battery charge life :
Approximately 20 hours

Overload indication:
Red LED indicating momentary or continuous overload.

■ Mechanical specifications

Operating temperature:
-10°C to +55°C

Storage temperature:
-40 °C to +80 °C

Influence of temperature:
< 500 ppm/°K or 0.5% / 10°C

Humidity:
< 95% at < 35°C, 75% at 55°C

Operating altitude :
0 to 2000 m

Adjustment of DC zero:
approximately ±25 mA by turning the button on the bottom of the housing (10 turns)

Clamping capacity:
Ø 3.9 mm

Protection level:
IP 40 as per IEC 529

Drop test:
1.0 m as per IEC 68-2-32

Impacts:
100 g as per IEC 68-2-27

Vibration:
As per IEC 68-2-6

Frequency range:
5...15 Hz, amplitude: 1.5 mm
15...25 Hz: amplitude: 1 mm
25 ...55 Hz: amplitude: 0.25 mm

Dimensions (electronic module):
124 x 64 x 28 mm

Dimension (clamp):
111 x 15 x 25 mm

Cable length:
1.5 m

Weight :
250 g

Colour:
Dark grey

Output:
Two 4 mm safety terminals 19 mm apart (standard).

■ Safety specifications

Operating voltage:
300 V as per IEC 1010-1 cat. II

Electromagnetic compatibility:

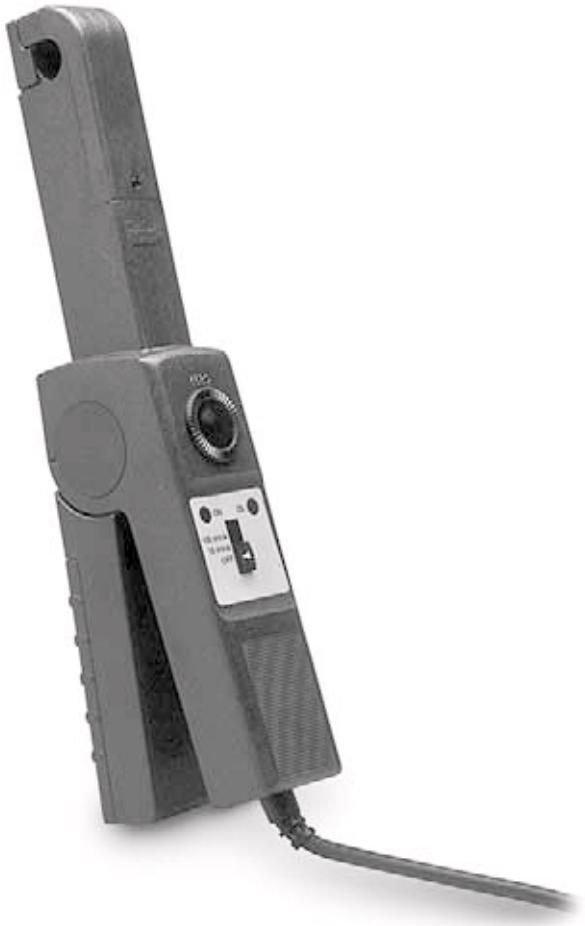
■ Immunity (EN 50082-1):
Class A
DC: 15 mV for 0
AC (60 Hz): 2 dB from 10 mA...4.5 A

■ Emissivity (as per EN 50081-1): negligible

(1) Reference conditions: 23°C ±3°C, 20 to 75% RH, batteries 9 V ±0,1 V, earth's magnetic field < 40 A/m, no AC field, DC or sinusoidal current from 45 to 65 Hz

To order	Reference
K2 model AC/DC ammeter clamp in carrying case with battery and user's manual	P01.**1200.74A**

Clamp-on AC/DC current probes



E Series

The E series clamps use Hall effect technology for the measurement of AC and DC currents from several milliamps to over 100 A.

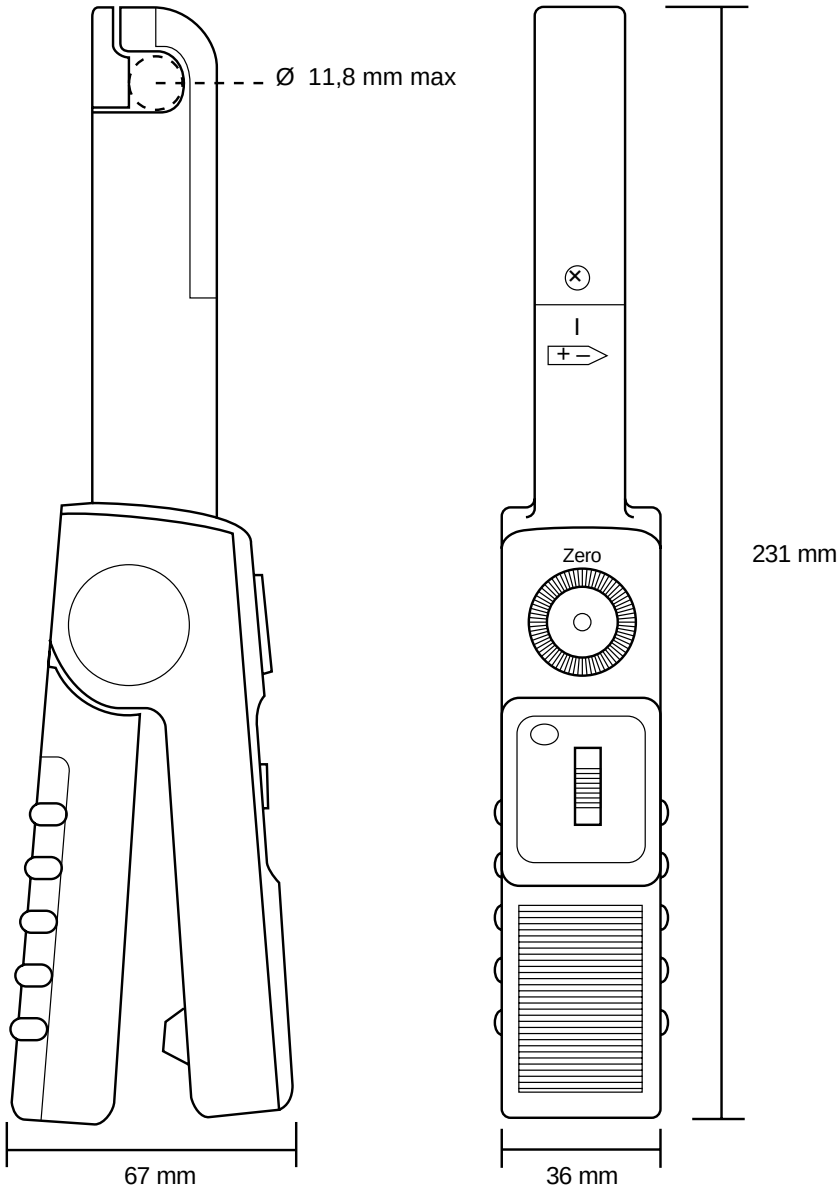
The elongated, narrow design of these clamps makes it possible to probe into tight spaces which comes into it's own when carrying out measurements in cable bundles or in other restrictive areas like circuit boards, motor controls or motor vehicle electric's.

Their inherent low phase shifting also goes to ensure reliable and accurate power measurements.

These clamps have a voltage output (mv) and their ability to measure AC and DC signals is useful for true RMS measurements.

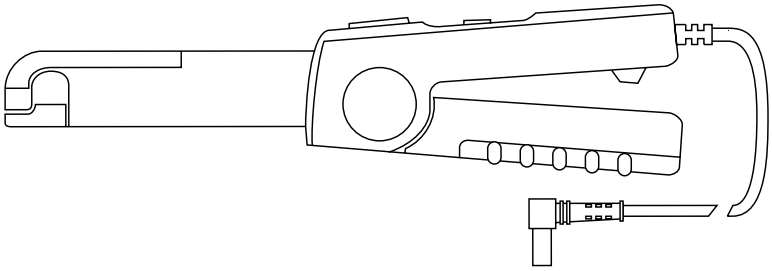
Model E6N is the most sensitive and hence the most suited to low current measurement.

The E Series clamps all make excellent work mates for multimeters, recorders and logging equipment etc. Model E3N can be used directly linked up to an oscilloscope.



Title : E series	
Drawing N°	Drawn:
Manufactured by: CHAUVIN ARNOUX	

Clamp-on AC/DC current probe
Model E1N



Current	2 A AC/DC	150 A AC/DC
Ouput	1 mV/mA	1 mV/A

Electrical Specification

Current Range:
50 mA...150 A AC/DC on two ranges

Output signal:
1 mV/mA and 1 mV/A AC or DC

Accuracy and phase shift *(1)*:

Range	1 mV/mA (1 V/A)	1 mV/A
Current range	50 mA...2 A DC 50 mA...1.5 A AC	500 mA...150 A
% Accuracy of output signal	2% ±20 mV	▪ 500 mA...100 A AC/DC : 1.5% ±30 µV ▪ 100...150 A DC : 3% ▪ 100...120 A AC : 3%
Frequency range	DC...2 kHz	DC...8 kHz
Phase shift	DC...65 Hz : 3°	DC...65 Hz : 1°
Min. load impedance	≥ 10 kΩ	≥ 2 kΩ
Noise	DC...1 Hz : 3 mV 1 Hz...10 kHz : 10 mV 10...100 kHz : 18 mV	DC...1 Hz : 3 µV 1 Hz...10 kHz : 10 µV 10...100 kHz : 18 µV

Working voltage:
600 Vrms max

Common mode voltage:
600 Vrms max

Battery:
9 V Alkaline (NEDA 1604A, IEC 6LR61)

Battery life:
70 Hrs approx.

Typical consumption:
6 mA

Battery level indicator:
Green LED when > 6.5 V

Mechanical Specification

Operating temperature:
0° to +50°C

Storage temperature:
-30° to +80°C

Temperature influence:
< 0.2% per °C

Operating relative humidity:
+10° to +30°C : 85 ±5% RH (without condensation)
+40° to +50°C : 45 ±5% RH (without condensation)

Operating altitude:
0 to 2000 m

Max. jaw insertion capacity:
11.8 mm

Zero adjustment:
20 turn potentiometer (± 1.5 A min)

Drop test:
1 m on a 38 mm container of oak on concrete, test in accordance with IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Casing protection:
IP20 in accordance with IEC 529

Self-extinguishing ability:
Casing : UL94 V2

Dimensions:
231 x 36 x 67 mm

Weight:
330 g with batteries

Colour:
Dark grey

Output:
Via 1.5 m double-wound cable with reinforced or double insulation, ended with two elbowed 4mm male safety plugs.

Safety Specification

Electrical:
600 V category III, pollution: 2
300 V category IV, pollution: 2

Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

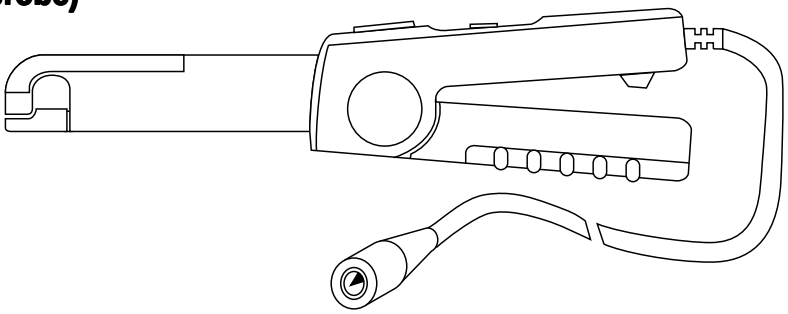
(1) Reference Conditions : 23°C ±5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no current carrying conductor nearby, centred test sample, load impedance 1 MΩ

To order	Reference
Clamp on AC/DC current probe model **E1N** with battery and user's manual	P01.**1200.30A**

Clamp-on AC/DC current probe for oscilloscope use

Model E3N (Insulated current probe)

Current	10 A peak	100 A peak
Ouput	100 mV/A	10 mV/A



Electrical Specification

Output signal:
In mV (1000 mV peak max)

Accuracy and phase shift *(1)*:

Range	100 mV/A	10 mV/A
Current range	50 mA...10 A peak	1 A...100 A peak
% Accuracy of Output signal	3% ±5 mV	▪ 500 mA...40 A peak: 4% ±500 µV ▪ 40...100 A peak : 15% max at 100 A
Frequency Range	DC...100 kHz (-3 dB)	
Phase shift	DC...65 Hz: < 1.5°	DC...65 Hz: < 1°
	≥ 1 MΩ and ≤ 100 pF	
Insertion Impedance	0.01 Ω	
Noise	6 mV	600 µV
Slew Rate	0.3 V/µs	20 mV/µs
Rise/Fall Time	3 µs	4 µs

Working voltage:
600 Vrms max

Common mode voltage:
600 Vrms max

Influence of adjacent conductor:
< 0.2 mA/A AC

Influence of conductor positioning in the clamp's jaws:
0.5% of the reading at 1 kHz

Battery:
9 V Alkaline (NEDA 1604A, IEC 6LR61)

Battery life:
55 Hrs approx.

Typical consumption:
8.6 mA

Battery level indicator:
Green LED when > 6.5 V

Overload indicator :
Red LED indicates the measured current is too high for the selected range.

Mechanical Specification

Operating temperature:
0° to +50°C

Storage temperature:
-30° to +80°C

Temperature Influence:
< 0.2% per °C

Operating Relative Humidity:
- +10° to +30°C: 85 ±5% RH (without condensation)
- +40° to +50°C: 45 ±5% RH (without condensation)

Operating altitude:
0 to 2000 m

Max. jaw insertion capacity:
11.8 mm Ø

Zero adjustment:
20 turn potentiometer

Drop test:
1 m on a 38 mm container of oak on concrete, test in accordance with IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Casing protection:
IP20 in accordance with IEC 529

Self-extinguishing ability:
Casing : UL94 V2

Dimensions:
231 x 36 x 67 mm

Weight:
330 g with battery

Colour:
Dark grey

Output:
Via 2 m coaxial cable ended with BNC insulated plug.

Safety Specification

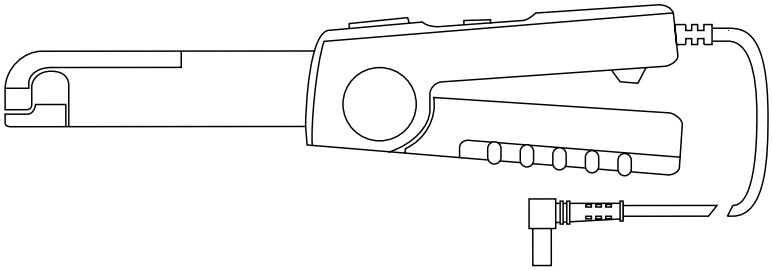
Electrical:
600 V category III, pollution: 2
300 V category IV, pollution: 2

Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 100-4-3
- Rapid transients IEC 1000-4-4
- Magnetic Field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions: 23°C ±5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no current carrying conductor nearby, centred test sample, load impedance 1 MΩ

To order	Reference
Clamp-on AC/DC current probe model **E3N** for oscilloscope use, with battery and user's manual	P01.**1200.43A**

Clamp-on AC/DC current probe
Model E6N



Current	2 A AC/DC	80 A AC/DC
Ouput	1 mV/mA	10 mV/A

Electrical Specification

Current range:
5 mA...80 A AC/DC on two ranges

Output signal:
1 mV/mA and 10 mV/A AC or DC

Accuracy and Phase shift *(1)***:**

Range	1 mV/mA (1 V/A)	10 mV/A
Current range	5 mA...2 A DC 5 mA...1.5 A AC	20 mA...80 A DC 20 mA...80 A AC
% Accuracy of output signal	2% ±5 mV	▪ 20 mA...50 A DC: 4% ±200 µV ▪ 50 to 80 A DC: 12% ▪ 20 mA...40 A AC: 4% ±200 µV ▪ 40 to 60 A AC: 12%
Frequency range	DC...2 kHz	DC...8 kHz
Phase shift	DC...65 Hz: 1°	DC...65 Hz: 1°
Min. load impedance	> 10 kΩ	> 2 kΩ
Noise	DC...1 Hz: 2 mV 1 Hz...10 kHz: 10 mV 10...100 kHz: 10 mV	DC...1 Hz: 20 µV 1 Hz...10 kHz: 100 µV 10...100 kHz: 100 µV

Overload:
120 A continuous

Working voltage:
600 Vrms max

Common mode voltage:
600 Vrms max

Battery:
9 V Alkaline (NEDA 1604A, IEC 6LR61)

Battery life:
70 Hrs approx.

Typical consumption:
6 mA

Battery level indicator:
Green LED when > 6.5 V

Mechanical Specification

Operating temperature:
0° to +50°C

Storage temperature:
-30° to +80°C

Temperature influence:
< 0.2% par °C

Operating Relative Humidity:
+10° to +30°C: 85 ±5% RH
(without condensation)
+40° to +50°C: 45 ±5% RH
(without condensation)

Operating Altitude:
0 to 2000 m

Max. jaw insertion capacity:
11.8 mm

Zero adjustment:
20 turn potentiometer (± 1.5 A min)

Drop test:
1 m on 38 mm of oak on concrete, test in accordance with IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
10/55/10 Hz, 0.15 mm
test in accordance with IEC 68-2-6

Casing protection:
IP20 in accordance with IEC529

Self-extinguishing ability:
Casing: UL94 V2

Dimensions:
231 x 36 x 67 mm

Weight:
330 g with battery

Colour:
Dark grey

Output:
Via 1.5 m double wound cable with reinforced or double insulation, ended with two elbowed 4 mm male safety plugs.

Safety Specification

Electrical:
600 V category III, pollution: 2
300 V category IV, pollution: 2

Electromagnetic Compatibility (EC stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial field IEC 100-4-3
- Rapid transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference conditions : 23°C ±5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no current carrying wire nearby, centred test sample, load impedance 1 MΩ

To order	Reference
Clamp-on AC/DC current probe model **E6N** with battery and user's manual	P01.**1200.40A**

Clamp-on AC/DC current probes

PAC Series

The PAC series is a range of professional AC/DC clamp-on current probes designed to meet the very latest in safety and performance standards.

There are two different jaw designs available for the clamping of cables and small busbars.

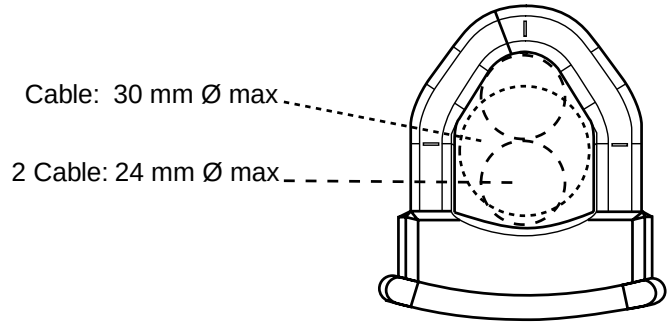
The PAC series clamps operate on the Hall effect principle, giving current measurement up to 1500 A DC and 1000 A AC. The electronics and the battery are all located in the clamp handles. There are two sensitivity levels available: 1mV/A and 10 mV/A.

A push button operates the automatic DC zeroing on models PAC 11, 12, 21 and 22.

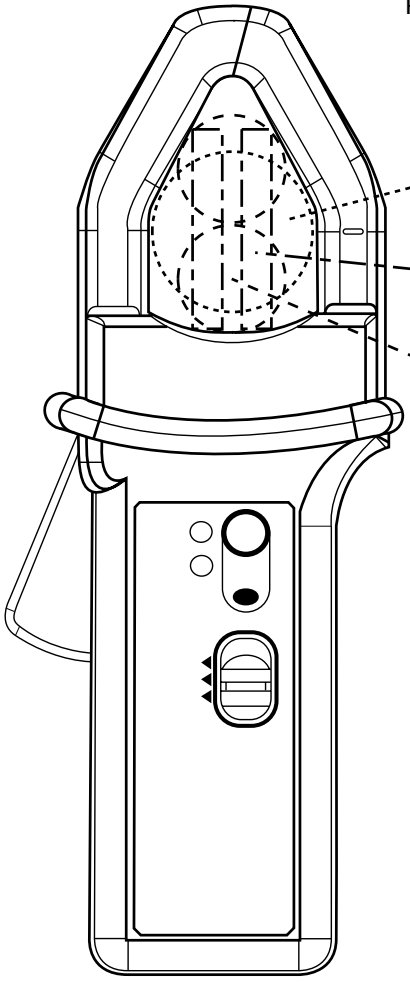
Models PAC 10 and PAC 20 have potentiometer operated zero adjustment.

True RMS measurement is even possible on inputs containing DC components. Phase shifting poses no problem either, hence the PAC series is very well adapted to power measurement applications.

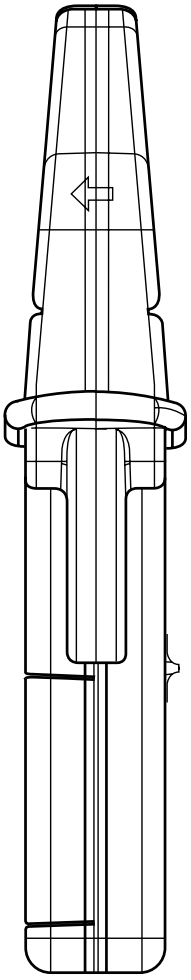
Models PAC 12 and PAC 22 are designed for use with oscilloscopes and other BNC input instruments.



Clamp Jaws
PAC 10, 11, and 12



PAC 20, 21, 22



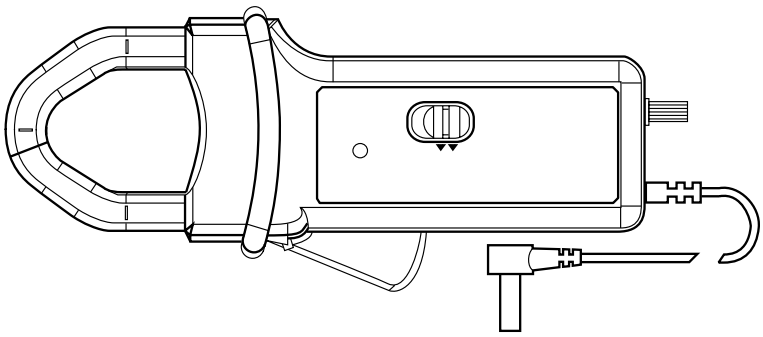
97 mm

44 mm

Title : PAC Series	
Drawing N°	Drawn :
Manufactured by: CHAUVIN ARNOUX	

Clamp-on AC/DC current probe
Model PAC10

Current	400 A AC 600 A DC
Ouput	1 mV/A



Model PAC10 operates using the Hall effect, for precise measurement of AC or DC currents.
It has a mV output so that a direct reading may be made on a multimeter or logging equipment etc.

Electrical Specification

Current range:
0.5 to 400 A AC (600 A peak)
0.5 to 600 A DC

Output signal:
1 mV/A

Accuracy *(1)***:**

Current range	1...100 A	100...400 A
% Accuracy of output signal	1.5% ±1 mV	2% 400...600 A DC : 2.5%

Phase shift *(1)***:**

Current range	10...200 A	200...400 A
Phase shift from 45 to 65 Hz	< 2.5°	< 2°

Overload:
2000 A DC and 1000 A AC up to 1 kHz

Bandwidth:
DC up to 5 kHz

Noise:
DC up to 1 kHz: < 1 mV
DC up to 5 kHz: < 1.5 mV
0.1 Hz to 5 kHz: < 500 µV

Load impedance:
≥ 1 MΩ and ≤ 100 pF

Insertion impedance:
0.39 mΩ at 50 Hz, 58 mΩ at 1000 Hz

Rise/Fall time:
< 100 µs to go from 10 to 90% of Vout

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent conductor:
< 10 mA/A at 50 Hz

Influence of conductor positioning in clamp's jaws:
0.5% of reading

Battery:
9V Alkaline (NEDA 1604 A, IEC 6LR61)

Battery level indicator:
Green LED when battery voltage > 6.5 V

Battery life:
120 Hrs with alkaline battery.

Mechanical characteristics

Operating temperature:
-10° to +55°C

Storage temperature:
-40° to 80°C

Operating Relative Humidity:
+10° to +35°C : 90 ±5% RH (without condensation)
+40 to +55 °C : 70 ±5% RH (without condensation)

Temperature influence:
< 300 ppm/°K or 0.3%/10°K
< 0.3 A/°K

Humidity influence:
10 to 90% RH at reference temperature: < 0.1%

Operating altitude:
0 to 2000 m

DC zero adjustment:
±12 A (10 turns of switch on the casing)

Max. jaw insertion capacity:
1 cable: 30 mm Ø or 2 cables: 24 mm Ø

Case Protection:
IP30 in accordance with IEC529

Drop test:
1 m on a 38 mm container of oak on concrete, test in accordance with IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
Test in accordance with IEC 68-2-6
■ Frequency range:
5 to 15 Hz: amplitude: 1.5 mm
15 to 25 Hz: amplitude: 1 mm
25 to 55 Hz: amplitude: 0.25 mm

Self-extinguishing ability:
Casing and jaws: UL 94 V0

Dimensions:
224 x 97 x 44 mm

Weight:
440 g

Colour:
Dark grey casing with red jaws

Output:
Via 1.5 m double insulated cable with 4mm male safety plug

Safety Specification

Electrical:
Double or reinforced insulation between the primary, the secondary and the outer casing in accordance with IEC 1010-1-2 (indoor use).
600 V category III, pollution: 2
300 V category IV, pollution: 2

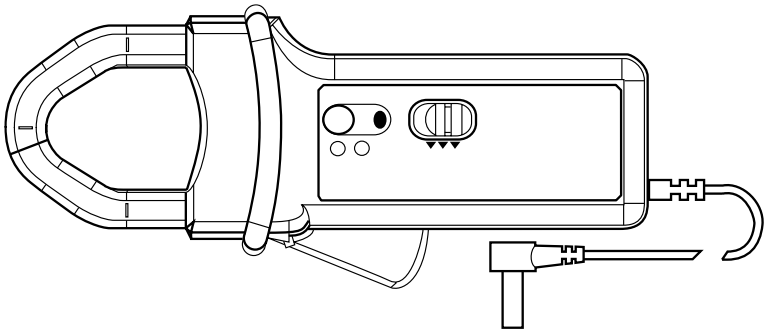
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial field IEC 1000-4-3
- Rapid transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference conditions : 18° to 28°C, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no current carrying conductor nearby, centred test sample, load ≥ 1 MΩ and ≤ 100 pF, reset to zero before measurement (DC only), DC to 65 Hz, Battery: 9 V ±0,1 V

To order	Reference
Clamp-on AC/DC current probe model **PAC10** with battery and user's manual	P01.**1200.70**
Clamp-on AC/DC current probe model **PAC10** with carrying case, battery and user's manual	P01.**1200.70D**

Clamp-on AC/DC current probe
Model PAC11

Current	40 A AC 60 A DC	400 A AC 600 A DC
Ouput	10 mV/A	1 mV/A



Model PAC11 is a high precision clamp-on current meter that operates using Hall effect technology for the measurement of AC and DC currents. There is a mV output for direct measurement reading on a multimeter, and an automatic DC zeroing system.

■ Electrical Specification

Range	60 A	600 A
Current Range	0.2...40 A (60 A peak) 0.4...60 A DC	0.5...400 A (600 A peak) 0.5...600 A DC
Output signal	10 mV/A	1 mV/A
% accuracy of Output signal *(1)*	0.5...40 A: 1.5% ±5 mV 40...60 A DC: 1.5%	0.5...100 A: 1.5% ±1 mV 100...400 A DC: 2% 400...600 A DC: 2.5%
Phase shift (45...65 Hz) *(1)*	10...20 A: < 3° 20...40 A: < 2°	10...100 A: < 2° 100...400 A: < 1.5°
Noise	DC...1 kHz: < 8 mV DC...5 kHz: < 12 mV 0.1 Hz...5 kHz: < 2 mV	DC...1 kHz: < 1 mV DC...5 kHz: < 1.5 mV 0.1 Hz...5 kHz: < 500 µV
Rise/fall time	≤ 100 µs to go from 10 to 90% V_{out}	≤ 70 µs to go from 10 to 90% V_{out}

Overload:
2000 A DC and 1000 A AC up to 1 kHz

Bandwidth:
DC...10 kHz at -3 dB

Load impedance:
≥ 1 MΩ and ≤ 100 pF

Insertion impedance:
0.39 mΩ at 50 Hz, 58 mΩ at 1000 Hz

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent conductor:
< 10 mA/A at 50 Hz

Influence of conductor positioning in the clamp's jaws:
0.5% of the reading

Battery:
9V Alkaline (NEDA 1604 A, IEC 6LR61)

Battery level indicator:
Green LED when the battery voltage > 6.5 V

Battery life:
50Hrs with Alkaline battery .

Overload indicator:
Red LED

Auto switch-off:
After 10 min's

■ Mechanical Specification

Operating temperature:
-10° to +55°C

Storage temperature:
-40° to +80°C

Operating relative humidity:
+10° to +35°C : 90 ±5% RH (without condensation)
+40° to +55 °C : 70 ±5% RH (without condensation)

Temperature influence:
< 300 ppm/°K or 0.3%/10°K
< 0.3 A/°K

Humidity influence:
10 to 90% RH at reference temperature: < 0.1%

Operating altitude:
0 to 2000 m

DC zero adjustment:
Automatically operated by button (± 10 A)

Max. jaw insertion capacity:
1 cable: 30 mm Ø or 2 cables : 24 mm Ø or 2 x 31.5 x 10 mm busbars

Case Protection:
IP30 in accordance with IEC529

Drop test:
1 m on a 38 mm container of oak on concrete, test in accordance with IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration :
Test in accordance with IEC 68-2-6
■ Frequency range:
5 to 15 Hz: amplitude: 1.5 mm
15 to 25 Hz: amplitude: 1 mm
25 to 55 Hz: amplitude: 0.25 mm

Self-extinguishing ability:
Casing and jaws: UL 94 V0

Dimensions:
224 x 97 x 44 mm

Weight:
440 g

Colour:
Dark grey casing with red jaws

Output:
Via 1.5 m double insulated cable with 4 mm male safety plug

■ Safety Specification

Electrical:
Double or reinforced insulation between the primary, the secondary and the outer casing in accordance with IEC 1010-1-2 (indoor use).
600 V category III, pollution: 2
300 V category IV, pollution: 2

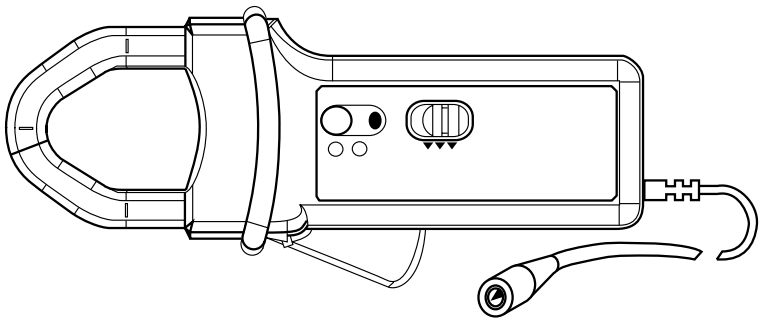
Electromagnetic Compatibility (EC stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial field IEC 1000-4-3
- Rapid transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 18° to 28°C, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no current carrying conductor nearby, centred test sample, load ≥ 1 MΩ and ≤ 100 pF, reset to zero before measurement (DC only) DC to 65 Hz, Battery 9V ±0.1 V

To order	Reference
Clamp-on AC/DC current probe model **PAC11** with battery and user's manual	P01.**1200.68**
Clamp-on AC/DC current probe model **PAC11**with carrying case, battery and user's manual	P01.**1200.68D**

Clamp-on AC/DC current probe for oscilloscope use
Model PAC12

Current	40 A AC 60 A DC	400 A AC 600 A DC
Ouput	10 mV/A	1 mV/mA



Model PAC12 is a high precision clamp-on current probe that operates using Hall effect technology for the measurement of AC and DC currents. It has a mV BNC output so the reading can be directly displayed on an oscilloscope and comes with an automatic DC zeroing system.

Electrical Specification

Range	60 A	600 A
Current range	0.2...40 A (60 A peak) 0.4...60 A DC	0.5...400 A (600 A peak) 0.5...600 A DC
Output signal	10 mV/A	1 mV/A
% Accuracy of output signal *(1)*	0.5...40 A: 1.5% R ±5 mV 40...60 A DC: 1.5%	0.5...100 A: 1.5% R ±1 mV 100...400 A DC: 2% 400...600 A DC: 2.5%
Phase shift (45...65 Hz) *(1)*	10...20 A: < 3° 20...40 A: < 2°	10...100 A: < 2° 100...400 A: < 1.5°
Noise	DC...1 kHz: < 8 mV DC...5 kHz: < 12 mV 0.1 Hz...5 kHz: < 2 mV	DC...1 kHz: < 1 mV DC...5 kHz: < 1.5 mV 0.1 Hz...5 kHz: < 500 µV
Rise/fall time	≤ 100 µs to go from 10 to 90% of V_{out}	≤ 70 µs to go from 10 to 90% of V_{out}

Overload:
2000 A DC and 1000 A AC up to 1 kHz

Bandwidth:
DC up to 10 kHz at -3 dB

Load impedance:
≥ 1 MΩ and ≤ 100 pF

Insertion impedance:
0.39 mΩ at 50 Hz, 58 mΩ at 1000 Hz

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent conductor:
< 10 mA/A at 50 Hz

Influence of conductor positioning in the clamp's jaws:
0.5% of the reading

Battery:
9V Alkaline (NEDA 1604 A, IEC 6LR61)

Battery level indicator:
Green LED battery voltage > 6.5 V

Battery life:
50 Hrs with alkaline battery

Overload indicator:
Red LED

Automatic shut-off:
10 min

Mechanical Specification

Operating temperature:
-10° to 55°C

Storage temperature:
-40° to 80°C

Operating relative humidity:
+10° to +35°C: 90 ±5% RH
(without condensation)
+40° to +55 °C: 70 ±5% RH
(without condensation)

Temperature influence:
< 300 ppm/°K or 0.3%/10°K
< 0.3 A/°K

Humidity influence:
10 to 90% RH at reference temperature:
< 0.1%

Operating altitude:
0 to 2000 m

DC zero setting:
Automatic, push button operation
(± 10 A)

Max. jaw insertion capacity:
1 cable: 30 mm Ø or 2 cables: 24 mm Ø or 2 x 31.5 x 10 mm busbars

Casing protection:
IP30 in accordance with IEC529

Drop test:
1 m onto a 38 mm container of oak and concrete, test in accordance with IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
Test in accordance with IEC 68-2-6
■ Frequency range:
5 to 15 Hz: amplitude: 1.5 mm
15 to 25 Hz: amplitude: 1 mm
25 to 55 Hz: amplitude: 0.25 mm

Self-extinguishing ability:
Casing and clamp jaws: UL 94 V0

Dimensions:
224 x 97 x 44 mm

Weight:
440 g

Colour:
Dark grey with red clap jaws

Output:
Via 2 m coaxial cable with insulated BNC plug

Safety Specification

Electrical:
Double or reinforced insulation between primary, secondary and outer casing in accordance with 1010-1-2 (indoor use).
600 V category II, pollution: 2
300 V category IV, pollution: 2

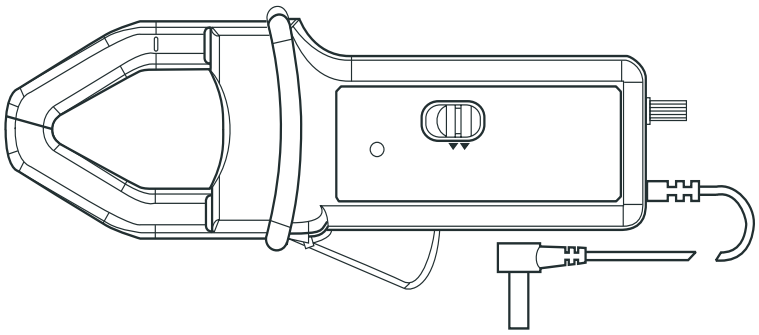
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial Field IEC 1000-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 18° to 28°C, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no current carrying conductor nearby, centred test sample, load ≥ 1 MΩ and ≤ 100 pF, reset to zero before measurement (DC only) DC to 65 Hz, Battery 9V ±0.1 V

To order	Reference
Clamp-on AC/DC current probe model **PAC12** for oscilloscope use, with battery and user's manual	P01.**1200.72**

Clamp-on AC/DC current probe
Model PAC20

Current	1000 A AC 1400 A DC
Ouput	1 mV/A



Model PAC20 is a high precision clamp-on current probe that operates using Hall effect technology for the measurement of AC and DC currents.
It has a mV output so that direct readings may be made with a multimeter or logging equipment etc.

Electrical Specification

Current Range:
0.5...1000 A AC (1400 A peak)
0.5...1400 A DC

Output signal:
1 mV/A

Accuracy *(1)*:

Current range	1...100 A	100...800 A	800...1000 A
% accuracy of output signal	1.5% ±1 mV	2.5%	4% 1000...1400 A DC : 4%

Phase shift *(1)*:

Current range	10...200 A	200...1000 A
Phase shift from 45 to 65 Hz	< 2.5°	< 2°

Overload:
3000 A DC and 2000 A AC up to 1 kHz

Bandwidth:
DC...5 kHz

Noise:
DC...1 kHz: < 1 mV
DC...5 kHz: < 1.5 mV
0.1 Hz...5 kHz: < 500 µV

Load impedance:
> 100 kΩ at 100 pF

Insertion impedance:
0.39 mΩ at 50 Hz, 58 mΩ at 1000 Hz

Rise/fall time:
■ Rise:
< 100 µs from 10 to 90% of the voltage value
■ Fall:
< 100 µs from 10 to 90%of the voltage value

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent conductor:
< 10 mA/A to 50 Hz

Influence of conductor positioning in clamp's jaws:
0.5% of the reading

Battery:
9V Alkaline (NEDA 1604 A, IEC 6LR61)

Battery level indicator:
Green LED when the battery voltage > 6.5 V

Battery life:
120 Hrs with alkaline battery

Mechanical Specification

Operating temperature:
-10° to +55°C

Storage temperature:
-40° to +80°C

Operating Relative Humidity:
+10° to +35°C: 90 ±5% RH
(without condensation)
+40 to +55 °C: 70 ±5% RH
(without condensation)

Temperature influence:
< 300 ppm/°K or 0.3%/10°K
< 0.3 A/°K

Humidity influence:
10...90% RH at reference temperature : < 0.1%

Operating altitude:
0 to 2000 m

Zero Adjustment:
±12 A (10 turn potentiometer)

Max. jaw insertion capacity:
1 cable: 42 mm Ø, 2 cables: 25.4 mm Ø or 2 busbars: 50 x 5 mm

Case Protection:
IP30 in accordance with IEC529

Drop Test:
1 m onto 38 mm container of oak on concrete, test in accordance with IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
Test in accordance with IEC 68-2-6
■ Frequency range:
5 to 15 Hz: amplitude: 1.5 mm
15 to 25 Hz: amplitude: 1 mm
25 to 55 Hz: amplitude: 0.25 mm

Self-extinguishing ability:
Casing and clamp jaws : UL 94 V0

Dimensions:
236,5 x 97 x 44 mm

Weight:
520 g

Colour:
Dark grey with red jaws

Output:
Via 1.5 m double insulated cable with 4 mm male safety plug

Safety Specification

Electrical:
Double or reinforced insulation between primary, secondary and outer casing in accordance with IEC 1010-1-2 (indoor use).
600 V category III, pollution: 2
300 V category IV, pollution: 2

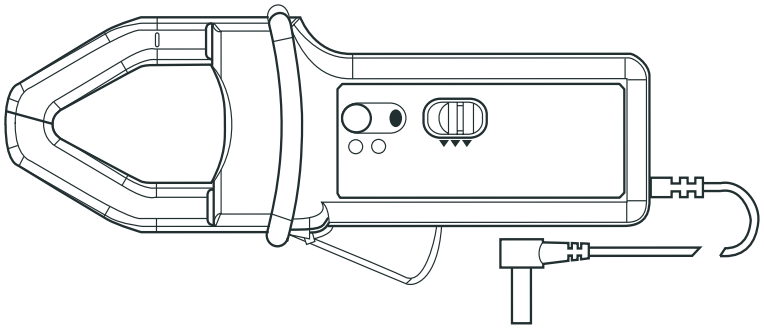
Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial Field IEC 1000-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference Conditions : 18° to 28°C, 20 to 75% HR, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no current carrying conductor nearby, centred test sample, load ≥ 1 MΩ and ≤ 100 pF, reset to zero before measurement (DC only) DC to 65 Hz, battery 9V ±0.1 V

To order	Reference
Clamp-on AC/DC current probe model **PAC20** with battery and user's manual	P01.**1200.71**
Clamp on AC/DC current probe model **PAC20** with carrying case, battery and user's manual	P01.**1200.71D**

Clamp-on AC/DC current probe
Model PAC21

Current	100 A AC 150 A DC	1000 A AC 1400 A DC
Ouput	10 mV/A	1 mV/A



Model PAC21 is a high precision clamp-on current probe that operates using Hall effect technology for the measurement of AC and DC currents.
It has a mV output so that direct readings may be made with a multimeter, and comes with an automatic DC zeroing facility.

Electrical Specification

Range	150 A	1400 A
Current Range	0.2...100 A AC (150 A peak) 0.4...150 A DC	0.5...1000 A AC (1400 A peak) 0.5...1400 A DC
Output signal	10 mV/A	1 mV/A
% Accuracy of output signal *(1)*	0.5...20 A: 1.5% ±5 mV 20...100 A: 1.5% 100...150 A DC: 2.5%	0.5...100 A: 1.5% ±1 mV 100...800 A: 2.5% 800...1000 A: 4% 1000...1400 A DC: 4%
Phase shift (45...65 Hz) *(1)*	10...20 A: < 3° 20...100 A: < 2°	10...200 A: < 2° 200...1000 A: < 1.5°
Noise	DC...1 kHz: < 8 mV DC...5 kHz: < 12 mV 0.1 Hz...5 kHz: < 2 mV	DC...1 kHz: < 1 mV DC...5 kHz: < 1.5 mV 0.1 Hz...5 kHz: < 500 µV
Rise/fall time	≤ 100 µs from 10 to 90% of V_{out}	≤ 70 µs from 10 to 90% of V_{out}

Overload:
3000 A DC and 2000 A AC up to 1 kHz

Bandwidth:
DC...10 kHz at -3 dB

Load impedance:
≥ 1 MΩ and ≤ 100 pF

Insertion impedance:
0.39 mΩ at 50 Hz, 58 mΩ at 1000 Hz

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent conductor:
< 10 mA/A at 50 Hz

Influence of conductor positioning in the clamp's jaws:
0.5% of the reading

Battery:
9V Alkaline (NEDA 1604 A, IEC 6LR61)

Battery level indicator:
Green LED when the battery voltage > 6.5 V

Battery life:
50 Hrs with alkaline battery

Overload indicator:
Red LED

Auto switch-off:
10 min

Mechanical Specification

Operating temperature:
-10° to +55°C

Storage temperature:
-40° to +80°C

Operating relative humidity:
+10° to +35°C : 90 ±5% RH (without condensation)
+40° to +55 °C : 70 ±5% RH (without condensation)

Temperature Influence:
< 300 ppm/°K or 0.3%/10°K
< 0.3 A/°K

Humidity influence:
10 to 90% RH for a reference temperature: < 0.1%

Operating altitude:
0 to 2000 m

Zero adjustment:
±10 A adjustment via push button

Max. jaw Insertion capacity
1 cable: 42 mm Ø, 2 cables: 25.4 mm Ø or 2 busbars: 50 x 5 mm

Casing protection:
IP30 in accordance with IEC529

Drop test:
1 m onto a 38 mm container of oak on concrete, test in accordance with IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
test in accordance with IEC 68-2-6

Frequency range:
5 to 15 Hz: amplitude: 1.5 mm
15 to 25 Hz: amplitude: 1 mm
25 to 55 Hz: amplitude: 0.25 mm

Self-extinguishing ability:
Casing and jaws: UL 94 V0

Dimensions:
236,5 x 97 x 44 mm

Weight:
520 g

Colour:
Dark grey with red clamp jaws

Output:
Via 1.5 m double insulated cable with 4 mm male safety plug

Safety Specification

Electrical:
Double or reinforced insulation between the primary, secondary and outer casing in accordance with IEC 1010-1-2 (indoor use).
600 V category III, pollution: 2
300 V category IV, pollution: 2

Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical discharge IEC 1000-4-2
- Radial Field IEC 1000-4-3
- Rapid transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

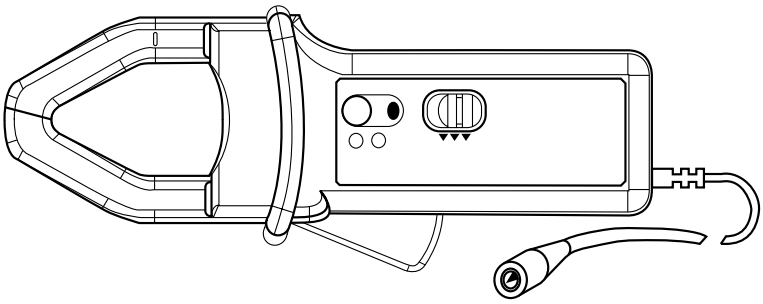
(1) Reference Conditions: 18° to 28°C, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no current carrying conductor nearby, centred test sample, load ≥ 1 MΩ and ≤ 100 pF, zero adjustment before measurement (DC only) DC to 65 Hz, battery: 9V ±0.1 V

To order	Reference
Clamp-on AC/DC current probe model **PAC21** with battery and user's manual	P01.**1200.69**
Clamp-on AC/DC current probe model **PAC21** with carrying case, battery and user's manual	P01.**1200.69D**

Clamp-on AC/DC current probe for oscilloscope use
Model PAC22 (Insulated current probe)

Current	100 A AC 150 A DC	1000 A AC 1400 A DC
Ouput	10 mV/A	1 mV/A

Model PAC22 is a high precision clamp-on current probe that operates using Hall effect technology for the measurement of AC and DC currents.
It has a mV output via a BNC connector for use with oscilloscopes, and comes with an automatic DC zeroing facility.



Electrical Specification

Range	150 A	1400 A
Current range	0.2...100 A AC (150 A peak) 0.4...150 A DC	0.5...1000 A AC (1400 A peak) 0.5...1400 A DC
Output signal	10 mV/A	1 mV/A
% Accuracy of output signal *(1)*	0.5...20 A: 1.5% ±5 mV 20...100 A: 1.5% 100...150 A DC: 2.5%	0.5...100 A: 1.5% ±1 mV 100...800 A: 2.5% 800...1000 A: 4% 1000...1400 A DC: 4%
Phase Shift 45...65 Hz) *(1)*	10...20 A: < 3° 20...100 A: < 2°	10...200 A: < 2° 200...1000 A: < 1.5°
Noise	DC...1 kHz: < 8 mV DC...5 kHz: < 12 mV 0.1 Hz...5 kHz: < 2 mV	DC...1 kHz: < 1 mV DC...5 kHz: < 1.5 mV 0.1 Hz...5 kHz: < 500 µV
Rise/fall time	≤ 100 µs go to from 10 to 90% of V_{out}	≤ 70 µs to go from 10 to 90% of V_{out}

Overload:
3000 A DC and 2000 A AC up to 1 kHz

Bandwidth:
DC...10 kHz at -3 dB

Load impedance:
≥ 1 MΩ and ≤ 100 pF

Insertion impedance:
0.39 mΩ at 50 Hz, 58 mΩ at 1000 Hz

Working voltage:
600 Vrms

Common mode voltage:
600 Vrms

Influence of adjacent conductor:
< 10 mA/A at 50 Hz

Influence of conductor positioning in the clamp's jaws:
0.5% of reading

Battery:
9V Alkaline (NEDA 1604 A, IEC 6LR61)

Battery level indicator:
Green LED when battery voltage > 6.5 V

Battery life:
50 Hrs with Alkaline battery .

Overload indicator:
Red LED

Auto shut-off:
After 10 min

Mechanical Specification

Operating temperature:
-10° to +55°C

Storage temperature:
-40° à +80°C

Operating Relative Humidity:
+10° to +35°C : 90 ±5% RH (without condensation)
+40° to +55 °C : 70 ±5% RH (without condensation)

Temperature Influence:
< 300 ppm/°K or 0.3%/10°K
< 0.3 A/°K

Humidity Influence:
10 to 90% RH for temperature reference: < 0.1%

Operating temperature:
0 to 2000 m

Zero adjustment:
±10 A adjustment via push button

Max. Jaw insertion capacity:
1 cable: 42 mm Ø, 2 cables: 25.4 mm Ø, or 2 busbars: 50 x 5 mm

Casing protection:
IP30 in accordance with IEC529

Drop test:
1 m onto a 38 mm container of oak on concrete, test according to IEC 1010

Mechanical shock:
100 g, in accordance with IEC 68-2-27

Vibration:
test in accordance with IEC 68-2-6

Frequency range:
5 to 15 Hz: amplitude: 1.5 mm
15 to 25 Hz: amplitude: 1 mm
25 to 55 Hz: amplitude: 0.25 mm

Self-extinguishing ability:
Casing and clamp jaws: UL 94 V0

Dimensions:
236,5 x 97 x 44 mm

Weight:
520 g

Colour:
Dark grey with red clamp jaws

Output:
Via 2 m coaxial cable with insulated BNC connector

Safety Specification

Electrical:
Double or reinforced insulation between the primary, secondary and the outer casing in accordance with IEC 1010-1-2 (indoor use).
600 V category III, pollution: 2
300 V category IV, pollution: 2

Electromagnetic Compatibility (EC Stamp):
EN 50081-1: class B
EN 50082-2:
- Electrical Discharge IEC 1000-4-2
- Radial field IEC 1000-4-3
- Rapid Transients IEC 1000-4-4
- Magnetic field to 50/60 Hz IEC 1000-4-8

(1) Reference conditions: 18° to 28°C, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no DC component, no current carrying conductor nearby, centred test sample, load ≥ 1 MΩ and ≤ 100 pF, zero adjustment before measurement (DC only) DC to 65 Hz, Battery 9V ±0.1 V

To order	Reference
Clamp-on AC/DC current probe model **PAC22** for oscilloscope use, with battery and user's manual	P01.**1200.73**

Clamp Accessories

Having made test, control and measurement instruments for over a century now, Chauvin Arnoux products are the result of years of experience in the field. A knowledge of measurement techniques and daily experience in safety practices has brought about an entire range of practical and safety conscious test accessories. Throughout the range, from the artificial neutral to the BNC/ female safety socket, moving on to silicon lead banana plugs (straight or elbowed), the IEC 1010 standard (assigned voltage 1000 V, category III installation) is the benchmark by which all products are judged.

However, even a device that complies with this norm does not guarantee complete safety, ensure that you are equipped with suitable accessories with which you can verify that your equipment meets the most demanding in safety standards.

Current clamp accessories

Straight/elbowed lead Ø 4 mm

2 lengths available: 1.5 or 3 m
6 colours available: red, black, green, blue, yellow and white
IEC 1010-2-031, 1000 V, Cat III

Straight/straight lead Ø 4 mm

2 lengths available: 1.5 or 3 m
6 colours available: red, black, green, blue, yellow and white
IEC 1010-2-031, 1000 V, Cat III

Test probe lead/ elbowed Ø 4 mm

Length: 1.2 m
Colours: red and black
IEC 1010-2-031, 1000 V, Cat III

Male BNC lead / male security plugs Ø 4 mm

Impedance : 50 Ω
Length : 1 or 2 m
IEC 1010-2-031, 500 V, Cat I

BNC extension piece (1) – BNC T (2)

1) female BNC / BNC female
2) male BNC / BNC female - BNC female
IEC 1010-2-031, 500 V, Cat I

BNC adapter Ø 4 mm

1) male BNC / female sockets
2) male BNC / male plugs
IEC 1010-2-031, 500 V, Cat I

To Order	Reference
Straight/elbowed silicon lead Ø 4 mm (red / black 1.5 m)	P01.**2950.88**
Straight/straight silicon lead Ø 4 mm (red / black 1.5 m)	P01.**2950.91**
Silicon test probe lead/elbowed Ø 4 mm (red/black 1.2 m)	P01.**2950.84**
Male BNC lead / Male security plugs Ø 4 mm (2 m)	P01.**2950.66A**
Set of 3 extension pieces female BNC / female BNC	P01.**1019.00A**
Set of 3 branch terminals male BNC / female BNC - female BNC	P01.**1018.99A**
Set of 2 adapters male BNC / female sockets	P01.**1018.46**
Set of 2 adapters male / male plugs	P01.**1018.47**

Current clamp accessories (continued)

Differential probe DP25

IEC 1010-1, 600 V, Cat III-2
Display, with an oscilloscope, high differential voltages up to 1300 V_{p-p}
Attenuation: 1/20, 1/50 or 1/200
Bandwidth: 25 Mhz

❶ Shoulder bag for clamp
Dimensions : 280 x 140 x 55 mm

❷ Shoulder bag for clamp, multimeter and safety leads.
Comes with adjustable strap (70 ...120 mm) to facilitate transport by hand or shoulder.
Inside dimensions:
- Width: 60 mm
- Length: 220 mm
- Depth when closed: 240 mm

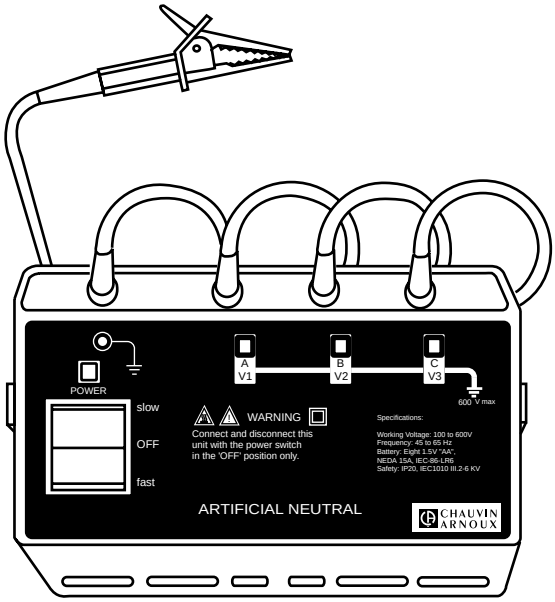
Lead housing: 60 mm

Complete range of multimeters
(consult us)

Complete range of oscilloscopes
(consult us)

To Order	Reference
Differential Probe **DP25**	P01.**1789.02**
Shoulder bag for clamp	P01.**1017.96**
Shoulder bag for clamp and multimeter	P01.**2980.33**

Artificial Neutral Model AN1



This instrument is designed to be used with the current leakage detecting clamps C37C, C173, B2 and allows the measurement of fault current on 3 phase circuits without a neutral conductor.
A switch makes it possible to select the test rate and allows the use of clamps C37, C173 and B2 with a digital or analogue multimeter.
An internal buzzer signals the connection of the artificial neutral to ground. Three LED's indicate the voltage power on each of the 3 phases during measurement.

Electrical Specifications

Operating voltage:
30 to 600 V

Frequency range:
45 to 65 Hz

Phase resistance:
3.9 kΩ ±5%

Work/rest period:
Slow position: 0.5 s
Fast position: 2.3 s

Supply:

12 V DC, 8 × 1.5 V " AA " batteries

Consumption:
180 mA

Battery Life:
40 hours

Mechanical specification

Reference temperature:
23°C ±3°C

Operating temperature:
0°C to +50°C, between 10 and 90% RH

Storage temperature:
-40°C to +70 °C, between 10 and 90% RH

Self-extinguishing ability:
UL94 V0

Colour:
Yellow

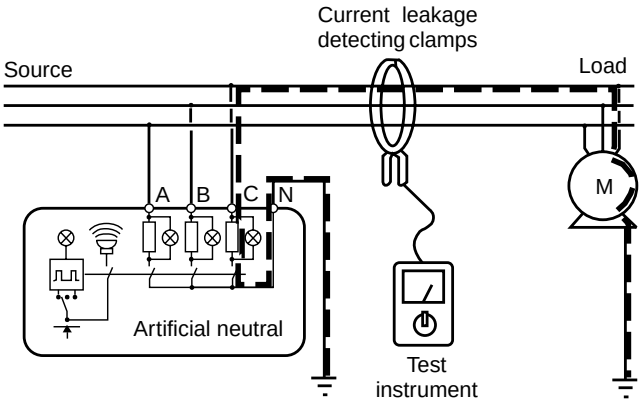
Dimensions:
220 x 136 x 150 mm

Weight:
1.3 Kg

Safety Specifications

Dielectric test:
6 kV between the lead and the unit

Working voltage:
600 Vrms



To Order	Reference
Artificial Neutral model **AN1** with shoulder bag, batteries, set of leads, croc-clips and user's manual	P01.**1972.01**
Accessories:	
Spare shoulder bag **n°2**	P01.**2980.05**

Digital AC current clamps

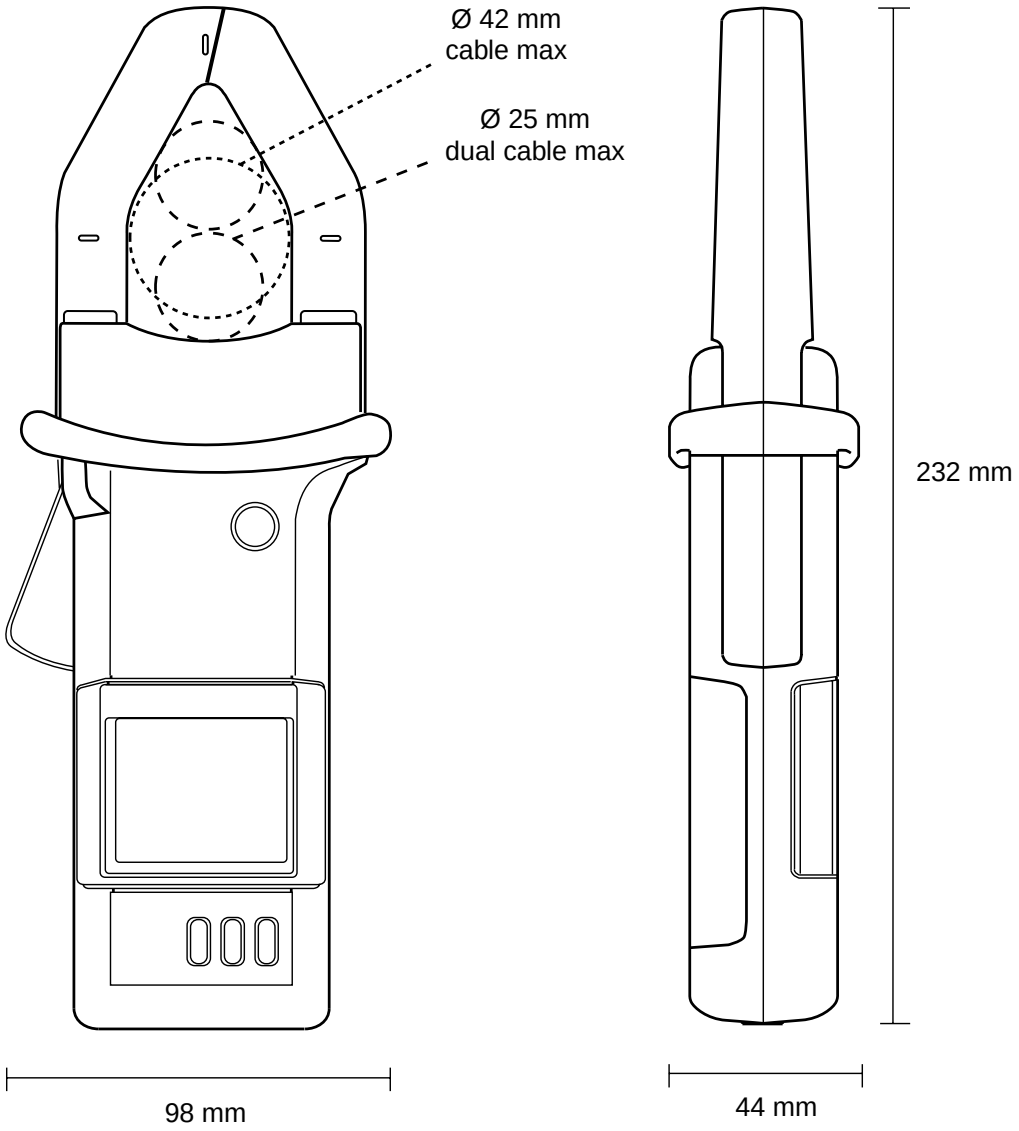
F1N / F2N / F3N Series

The F1N, F2N and F3N digital current clamps go to make up a range of highly effective clamp-on tools that enable the user to measure all kinds of AC currents, distorted or otherwise.

The 400 A RMS clamps have a 2.5 peak factor, making it possible to carry out measurements on highly distorted signals.

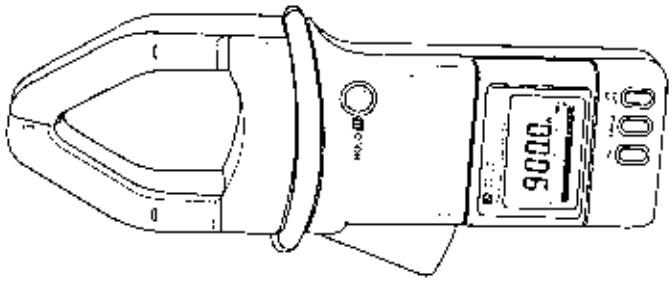
These clamps offer high performance whilst remaining both easy and safe to use. They come equipped with an alphanumeric display and bar graph with advanced features like the hold function for freezing displayed values. Other features include the memorisation of min, max and average current intensity and frequency values, the peak current intensity value over 2 ms and the smoothed current intensity and frequency value over 3 s. Measurement is carried out by simply gripping the conductor in question and the clamp gives the true RMS measurement value.

These clamps come into their own during the diagnosis of distorted current intensities and frequencies that are found in the field of power electronics; on devices such as inverters, variable speed drives, solid-state power blocks, switched power supplies, regulators etc.



Title : Digital AC current clamp	
Drawing N°	Drawn :
Manufactured by : CHAUVIN ARNOUX	

Digital AC current clamps
Model F1N



Electrical specifications

Bandwidth:
0.5 Hz...10 kHz

Measuring range :
2 automatic or manual ranges:
0.5...1000 A AC

Accuracy in AC current measurement *(1)*

■ 40 A range

Measurement range	0.05...0.3 A	0.3...40 A	40...100 A *(2)*
Resolution	10 mA	10 mA	10 mA
% accuracy of reading	Not specified	≤ 2% ±20 cts	≤ 2% ±20 cts

■ 400 A range

Measurement range	0.1...100 A	100...400 A	400...700 A *(2)*	700...1000 A *(2)*
Resolution	0.1 A	0.1 A	0.1 A	0.1 A
% accuracy of reading	Not specified	≤ 2% ±2 cts	≤ 5% ±2 cts	Not specified

Accuracy in frequency measurement *(1)*

■ 1 kHz range

Measurement range	0.5...5 Hz	5... 999.9 Hz
Resolution	0.1 Hz	0.1 Hz
% accuracy of reading	≤ 0.1% ±1 ct	≤ 0.2% ±2 cts

■ 10 kHz range

Measurement range	1000...1500 Hz	1500...2100 Hz	2100...9999 Hz
Resolution	1 Hz	1 Hz	1 Hz
% accuracy of reading	≤ 0.2% ±2 cts	≤ 0.5% ±5 cts	≤ 0.2% ±1 ct

Power supply:
9 V alkaline battery (NEDA 1604A, IEC 6LR61)

Battery charge life:
≥ 80 hrs in continuous operation
Automatic battery level test
Automatic shutdown of the clamp after 10 minutes without use. This function can be deactivated when the instrument is started up.

Functions

RANGE function:
In A, this function can be used to set a measuring range (40 A or 400 A).
In this case, the clamp enables the range to be extended for current measurement up to 100 A (40 A range) or 1000 A (400 A range).
In Hz, this function can be used to change the trigger threshold for frequency measurement.

HOLD function:
Holds the measurement.

Mechanical specifications

Dimensions:
232 x 98 x 44 mm

Weight:
500 g

Display:
10,000-count LCD display and 40-segment bargraph
Digit size: 11 mm

Temperature:
Operation: -10° to +55 °C
Storage: -40° to +70 °C

Relative humidity:
Operation: 0 to 90 % RH up to 40°C (75%RH at 55°C)
Storage: 0 to 95 % RH (70%RH at 70°C)

Casing protection:
IP 30 (IEC 529)

Self-extinguishing ability:
Housing: UL94 V2
Jaws: UL94 V0
Display screen: UL94 V1

Drop test: 1 m (IEC 68-2-32)

Protection against impacts:
100 g (IEC 68-2-27)

Resistance to vibrations:
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Clamping capacity:
Cables: 1 x ∅ 42 mm / 2 x ∅ 25 mm
Bars: 2 bars of 50 x 5 mm

Colours:
Dark grey casing with red jaws

Safety specifications

Compliance with standards:
UL, GS, CSA

Electrical:
Instrument with dual insulation as per IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

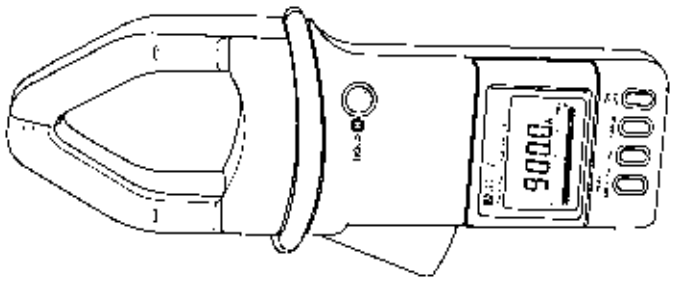
Electromagnetic Compatibility (E.M.C.):
EN 50081-1: Class B
EN 50082-2:
Electrostatic discharge: IEC 801-2
Rapid transients: IEC 801-4
Electric shocks: IEC 801-5

(1) Reference Conditions: 23 °C ±5°K, 45 to 75 % RH, battery voltage: 9V ± 0.1V, centred measured conductor, direct external magnetic field < 40 A/m, no alternating external magnetic current, no DC components; no external components containing a current, sinusoidal signal from 45 to 65 Hz

(2) Extension of resolution (RANGE function)

To order	Reference
F1N current clamp with carrying case, battery and user's manual	P01.**1207.01A**

Digital AC current clamps
Model F2N



Electrical specifications

Bandwidth:
0.5 Hz...10 kHz

Measuring range :
2 automatic or manual calibres:
0.5...1000 A AC

Accuracy in AC current measurement *(1)*
Standard operating mode *(1) (3)*:

■ 40 A range

Measurement range	0.05...0.3 A	0.3...40 A	40...100 A *(2)*
Resolution	10 mA	10 mA	10 mA
% accuracy of reading	Not specified	≤ 2% ±20 cts	≤ 2% ±20 cts

■ 400 A range

Measurement range	0.1…100 A	100...400 A	400...700 A *(2)*	700...1000 A *(2)*
Resolution	0.1 A	0.1 A	0.1 A	0.1 A
% accuracy of reading	Not specified	≤ 2% ±2 cts	≤ 5% ±2 cts	Not specified

Accuracy in frequency measurement *(1)*

■ 1 kHz range

Measurement range	0.5...5 Hz	5... 999.9 Hz
Resolution	0.1 Hz	0.1 Hz
% accuracy of reading	≤ 0.1% ±1 ct	≤ 0.2% ±2 cts

■ 10 kHz range

Measurement range	1000...1500 Hz	1500...2100 Hz	2100...9999 Hz
Resolution	1 Hz	1 Hz	1 Hz
% accuracy of reading	≤ 0.2% ±2 cts	≤ 0.5% ±5 cts	≤ 0.2% ±1 ct

Power supply:
9 V alkaline battery (NEDA 1604A, IEC 6LR61)

Battery charge life:
≥ 80 hrs in continuous operation
Automatic battery level test
Automatic shutdown of the clamp after 10 minutes without use. This function can be deactivated when the instrument is started up.

Functions

RANGE function:
In A, this function can be used to set a measurement range (40 A or 400 A).
In this case, the clamp enables the range to be extended for current measurement up to 100 A (40 A range) or 1000 A (400 A range).
In Hz, this function can be used to change the trigger threshold for frequency measurement.

SMOOTH function:
For unstable currents, this function provides average measurements over 3 s.

PEAK function:
This function provides the peak value of the current.

HOLD function:
Holds the measurement.

Mechanical specifications

Dimensions : 232 x 98 x 44 mm
Weight: 500 g

Display:
10,000-count LCD display and 40-segment bar graph
Digit size: 11 mm

Temperature:
Operation: -10° to +55 °C
Storage: -40° to +70 °C

Relative humidity:
Operation: 0 to 90 % RH up to 40°C (75%RH at 55°C)
Storage: 0 to 95 % RH (70%RH at 70°C)

Casing protection:
IP 30 (IEC 529)

Self-extinguishing ability:
Housing: UL94 V2
Jaws: UL94 V0
Display screen: UL94 V1

Drop test:
1 m (IEC 68-2-32)

Protection against impacts:
100 g (IEC 68-2-27)

Resistance to vibrations:
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Clamping capacity:
Cables: 1 x ∅ 42 mm / 2 x ∅ 25 mm
Bars: 2 bars of 50 x 5 mm

Colours:
Dark grey housing with red jaws

Safety specifications

Compliance with standards:
UL, GS, CSA

Electrical:
Instrument with dual insulation as per IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic Compatibility (E.M.C.) :
EN 50081-1: Class B
EN 50082-2:
Electrostatic discharge: IEC 801-2
Rapid transients: IEC 801-4
Electric shocks: IEC 801-5

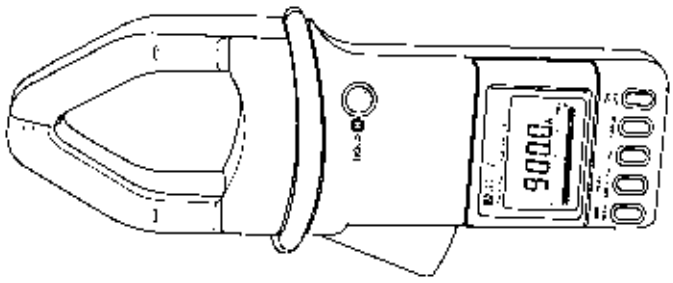
(1) Reference Conditions: 23°C ±5°K, 45 to 75 % RH, battery voltage: 9V ± 0.1V, measured conductor centred, direct external magnetic field < 40 A/m, no alternating external magnetic current, no DC components; no external components containing a current, sinusoidal signal from 45 to 65 Hz

(2) Extension of resolution (RANGE function)

(3) In certain cases, use of the processing functions (PEAK) may slightly modify the accuracy.

To order	Reference
F2N current clamp with carrying case, battery and user's manual	P01.**1207.02A**

Digital AC current clamps
Model F3N



Electrical specifications

Bandwidth:
0.5 Hz...10 kHz

Measuring range :
2 automatic or manual ranges:
0.5...1000 A AC

Accuracy in AC current measurement *(1)*
standard operating mode *(1) (3)*:

■ 40 A range

Measurement range	0.05...0.3 A	0.3...40 A	40...100 A*(2)*
Resolution	10 mA	10 mA	10 mA
% accuracy of reading	Not specified	≤ 2% ±20 cts	≤ 2% ±20 cts

■ 400 A range

Measurement range	0.1…100 A	100...400 A	400...700 A*(2)*	700...1000 A*(2)*
Resolution	0.1 A	0.1 A	0.1 A	0.1 A
% accuracy of reading	Not specified	≤ 2% ±2 cts	≤ 5% ±2 cts	Not specified

Accuracy in frequency measurement *(1)*

■ 1 kHz range

Measurement range	0.5...5 Hz	5... 999.9 Hz
Resolution	0.1 Hz	0.1 Hz
% accuracy of reading	≤ 0.1% ±1 ct	≤ 0.2% ±2 cts

■ 10 kHz range

Measurement range	1000...1500 Hz	1500...2100 Hz	2100...9999 Hz
Resolution	1 Hz	1 Hz	1 Hz
% accuracy of reading	≤ 0.2% ±2 cts	≤ 0.5% ±5 cts	≤ 0.2% ±1 ct

Power supply:
9 V alkaline battery (NEDA 1604A, IEC 6LR61)

Battery charge life:
≥ 80 hrs in continuous operation
Automatic battery level test
Automatic shutdown of the clamp after 10 minutes without use. This function can be deactivated when the instrument is started up.

Functions

RANGE function:
In A, this function can be used to set a measuring range (40 A or 400 A).
In this case, the clamp enables the range to be extended for current measurement up to 100 A (40 A range) or 1000 A (400 A range).
In Hz, this function can be used to change the trigger threshold for frequency measurement.

SMOOTH function:
For unstable currents, this function provides average measurements over 3 s.

PEAK function:
This function provides the peak value of the current.

MIN / MAX function:
This function triggers an acquisition mode enabling:
- calculation of the average TRMS value (AVG) since activation of the function
- capture of extreme values (MIN, MAX) with a response time ≤ 100ms
- capture of the absolute peak value with a response time ≤ 2ms, associated with the PEAK function

HOLD function:
Holds the measurement.

Mechanical specifications

Dimensions: 232 x 98 x 44 mm
Weight: 500 g
Display:
10,000-count LCD display and 40-segment bargraph
Digit size: 11 mm
Temperature:
Operation: -10° to +55 °C
Storage: -40° to +70 °C
Relative humidity:
Operation: 0 to 90 % RH up to 40°C (75%RH at 55°C)
Storage: 0 to 95 % RH (70%RH at 70°C)
Casing protection:
IP 30 (IEC 529)
Self-extinguishing ability:
Housing: UL94 V2
Jaws: UL94 V0
Display screen: UL94 V1
Drop test: 1 m (IEC 68-2-32)
Protection against impacts:
100 g (IEC 68-2-27)
Resistance to vibrations:
10/55/10 Hz, 0.15 mm (IEC 68-2-6)
Clamping capacity:
Cables: 1 x ∅ 42 mm / 2 x ∅ 25 mm
Bars: 2 bars of 50 x 5 mm
Colours:
Dark grey housing with red jaws

Safety specifications

Compliance with standards:
UL, GS, CSA
Electrical:
Instrument with dual insulation as per IEC 1010-1 & IEC 1010-2-032
- 600 V category III, pollution level 2
- 300 V category IV, pollution level 2

Electromagnetic Compatibility (E.M.C.):
EN 50081-1: Class B
EN 50082-2:
Electrostatic discharge: IEC 801-2
Rapid transients: IEC 801-4
Electric shocks: IEC 801-5

(1) Reference Conditions: 23°C ±5°K, 45 to 75 % RH, battery voltage: 9V ± 0.1V, measured conductor centred, direct external magnetic field < 40 A/m, no alternating external magnetic current, no DC components; no external components containing a current, sinusoidal signal from 45 to 65 Hz
(2) Extension of resolution (RANGE function)
(3) In certain cases, use of the processing functions (PEAK, RECORD, etc.) may slightly modify the accuracy.

To order	Reference
F3N current clamp with carrying case, battery and user's manual	P01.**1207.03A**

F11N / F13N / F15 Series

This range of clamp-on digital multimeters combines all the advantages of the clamp-on ammeter with the additional scope of a digital multimeter.

These clamps are lightweight, compact and rugged in design for 'all terrain' use. All the functions are conveniently operated leaving one hand free thanks to an automatic range selector.

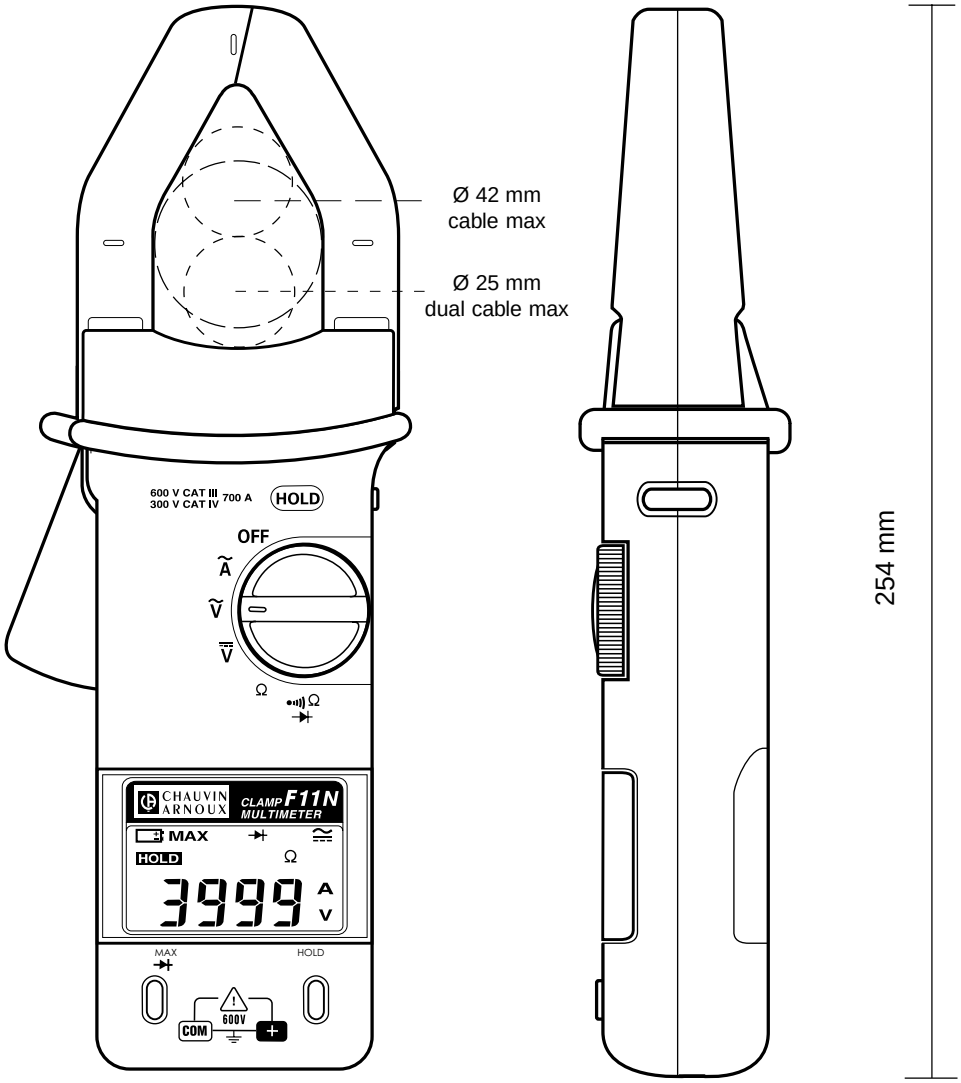
These models have some useful safety features, for example there is the anti-slip guard and the anti-pierce cable system, you don't even have to change a fuse.

All models meet the standard IEC 1010-1 600 V Cat. III, guaranteeing the highest measurement quality whatever the application in question.

The RMS model F11N gives RMS values on sinusoidal signal carrying networks (Linear loads).

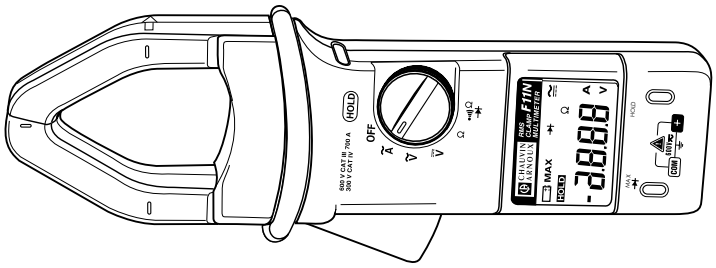
The RMS model F13N gives RMS values on distorted and sinusoidal waveforms (non-linear loads).

The RMS model F15 measures DC intensity with an automatic DC zeroing facility.



Title : Clamp-on multimeters	
Drawing N°	Drawn :
Manufactured by : CHAUVIN ARNOUX	

Clamp-on AC Multimeter
Model F11N



■ Electrical Specification

Bandwidth
45...450 Hz

AC Current
■ Measurement range:
2 automatic ranges: 0.5...700 A AC
■ Resolution:
0.5...399.9 A: 0.1 A
400...700 A: 1 A
■ Accuracy *(1)*:
0.5 .. 399.9 A: ≤ 2.5% R ±5 cts
400...700 A : ≤ 2.5% R ±5 cts
from 0 to 90% of the range
■ Frequency influence
< 2% R from 45 Hz to 450 Hz

AC Voltage
■ Measurement range:
2 automatic ranges: 0.1... 600 V AC
■ Resolution:
0.1...399.9 V : 0.1 V
400...600 V : 1 V
■ Accuracy *(1)*:
0.1...399.9 V : ≤ 1.5% R ±5 cts
400...600 V : ≤ 1.5% R ±3 cts
■ Input impedance: 1 MΩ
■ Frequency influence:
< 1% R from 45 Hz to 450 Hz

DC Voltage
■ Measurement range:
2 automatic ranges: 0.1 .. 600 V DC
■ Resolution:
0.1 .. 399.9V : 0.1 V
400 .. 600V : 1 V
■ Accuracy *(1)*:
0.1...399.9 V : ≤ 1% R ±3 cts
400...600 V : ≤ 1% R ±2 cts
■ Input impedance: 1 MΩ

Resistance
■ Measurement range:
2 automatic ranges: 0.1 .. 4000 Ω
■ Resolution:
0.2...399.9 Ω : 0.1 Ω
400...3999 Ω : 1 Ω
■ Accuracy *(1)*:
0.1...399.9 Ω : ≤ 1% R ±5 cts
400...3999 Ω : ≤ 1% R ±3 cts

Continuity
Beep signal for R ≤ 40 Ω
Temporal response: 10 ms

Diode Test
The voltage value at the semiconductor junction is displayed directly in volts for the forward bias.
The test is carried out under a 4 V potential with a short circuit current of 500 mA
■ Accuracy: 3% R ±10 cts
■ Resolution: 1 mV

Functions
■ MAX Function:
Displays the maximum value of the measured signal (current of voltage range).
Accuracy*(1)* :
≤ 2.5% R ±3 cts (largest scale)
≤ 2.5% R ±30 cts (smallest scale)
Acquisition time: 100 ms
■ HOLD Function:
Freezes displayed measurement.

Power Supply
9V Alkaline battery (NEDA 1604A, IEC 6LR61)

Battery life
≥ 100 Hrs of continual use
Automatic battery level tester

■ Mechanical Specification

Dimensions
252 x 97 x 44 mm

Weight: 500 g without battery

Display:
4000 count LCD
digit height: 12.5 mm

Voltage input:
Via (4 mm) safety sockets (pitch:19 mm)

Temperature:
In use: +0° to +50°C
In storage: -40° to +70°C

Relative Humidity:
In use: from 0 to 95 % RH up to 30°C (50% RH at 45°C)
In storage: from 0 to 95 % RH up to 40°C (50% RH at 70°C)

Casing protection:
IP 30 (IEC 529)

Self-extinguishing ability: UL94 V2

Drop test: 1 m (IEC 68-2-32)

Mechanical shock:
100 g (IEC 68-2-27)

Vibrations:
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Operating altitude:
0 to 2000 m

Clamps max. cable diameter of:
∅ max : 42mm / 2 x ∅ 25 mm or;
2 busbars of 50 x 5 mm

Colours:
Dark grey casing with red clamp jaws

■ Safety Specifications

Electrical:
Double insulated device in accordance with IEC 1010-1 & CEI 1010-2-032
600 V category III, degree 2 of pollution
300 V category IV, degree 2 of pollution

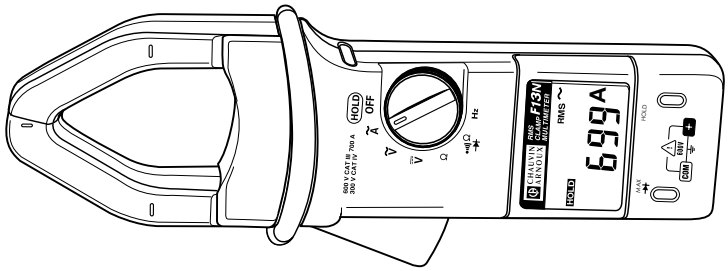
Overload Protection:
V range: 1000 V rms
A range: 700 A rms (to 500 Hz at 50°C)
Ω range: 600 V rms
Continuity/Diode range: 600 V rms

Electromagnetic Compatibility (E.M.C.):
EN 50081-1: Class B
EN 50082-2:
Electrostatic Discharge: IEC 1000-4-2
Radial field: IEC 1000-4-3
Rapid Transients: IEC 1000-4-4
Magnetic field at 50/60 Hz: IEC 1000-4-8

(1) Reference Conditions: 23 °C ± 5°K, 45 at 75 % RH, battery voltage: 9V ± 0,1V, centred test sample, external DC magnetic field < 40 A/m, no AC external magnetic field, no electric field, no DC component, no external current carrying conductor, sinusoidal signal frequency 45...450 Hz.

To Order	Reference
Clamp-on multimeter model **F11N** with test leads, battery, carrying case and user's manual	P01.**1207.51C**

Clamp-on AC RMS multimeter
Model F13N



■ Electrical Specification

Bandwidth
45...450 Hz

AC Current
■ Measurement range:
2 automatic ranges: 0.5...700 A AC
■ Resolution:
0.5...399.9 A : 0.1 A
400...700 A : 1 A
■ Accuracy *(1)*:
0.5 .. 399.9 A: ≤ 2,5% R ±5 cts
400...700 A : ≤ 2,5% R ±5 cts
from 0 to 90% of range
■ Crest factor influence
(for I peak < 1000 A):
1.5 ≤ CR < 2.5 : 5% of R
2.5 ≤ CR ≤ 5 : 8% of R
■ Frequency influence
< 2% R from 45 Hz to 450 Hz

AC Voltage
■ Measurement range:
2 automatic ranges: 0.2... 600 V AC
■ Resolution:
0.2...399.9 V : 0.1 V
400...600 V : 1 V
■ Accuracy *(1)*:
0.2...399.9 V : ≤ 1.5% R ±5 cts
400...600 V : ≤ 1.5% R ±3 cts
■ Crest Factor influence:
1.5 ≤ CF < 3 : 3% of R
3 ≤ CF ≤ 5 : 8% of R
■ Input Impedance: 1 MΩ
■ Frequency influence:
< 1% R from 45 Hz to 450 Hz

DC Voltage
■ Measurement range:
2 automatic ranges: 0.2 .. 600 V DC
■ Resolution:
0.2 .. 399.9 V : 0.1 V
400 .. 600 V : 1 V
■ Accuracy*(1)* :
0.2...399.9 V : ≤ 1% R ±3 cts
400...600 V : ≤ 1% R ±2 cts
■ Input impedance: 1 MΩ

Resistance
■ Measurement range :
2 automatic ranges : 0.1 .. 4000 Ω
■ Resolution :
0.1...399.9 Ω : 0.1 Ω
400...3999 Ω : 1 Ω
■ Accuracy *(1)* :
0.2...399.9 Ω : ≤ 1% R ±5 cts
400...3999 Ω : ≤ 1% R ±3 cts

Continuity
Beep signal for R ≤ 40 Ω ± 10 Ω
Open circuit voltage: ≤ 4.4 V
Short circuit current: ≤ 1.2 mA

Diode Test
The voltage value at the semiconductor junction is displayed directly in volts for forward bias.
Displays OL for the reverse bias.
■ Open circuit voltage: ≤ 4.4 V
■ Short circuit current: ≤ 1.2 mA
■ Accuracy: 3% R ±10 pt
■ Resolution: 1 mV

Frequency
■ Measurement range: 0...4000 Hz
■ Accuracy *(1)*: ≤ 0.1% R ± 1 cts
■ Trigger threshold: 1 V ou 1 A

Functions
■ MAX Function:
Displays the maximum value of the measured signal (current or voltage range).
Accuracy:
Accuracy of range with additional error:
< 2.5% R ±5 cts
Acquisition time: < 500 ms
■ HOLD Function:
Freezes the displayed value.

Power supply
9V Alkaline battery
(NEDA 1604A, IEC 6LR61)

Battery life
≥ 100 Hrs in constant use
Automatic battery level tester

Dimensions
252 x 97 x 44 mm

■ Mechanical Specifications

Weight: 500 g without battery

Display:
4000 count LCD
digit height: 12.5 mm

Voltage input:
Via (4mm) safety sockets (pitch: 19 mm)

Temperature :
In use: +0° to +50°C
In storage: -40° to +70°C

Relative Humidity:
In use: from 0 to 95 % RH up to 30°C (50% RH at 45°C)
In storage: from 0 to 95 % RH

Casing protection:
IP 30 (IEC 529)

Self-extinguishing ability: UL94 V2

Drop test: 1 m (IEC 68-2-32)

Mechanical shock:
100 g (IEC 68-2-27)

Vibrations:
10/55/10 Hz, 0.15mm (IEC 68-2-6)

Operating altitude:
0 to 2000 m

Clamps max. cable diameter of:
∅ max: 42 mm / 2 x ∅ 25 mm or;
2 busbars measuring 50 x 5 mm

Colour:
Dark grey casing with red clamp jaws

■ Safety Specifications

Electrical:
Double insulated device in accordance with IEC 1010-1 & CEI 1010-2-032
600V category III, degree 2 of pollution
300V category IV, degree 2 of pollution

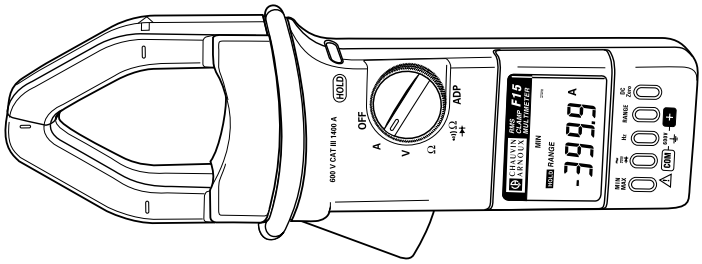
Overload protection:
V range: 1000 V rms
A range: 700 A rms (500Hz at 50°C)
Ω range: 600 V rms
Continuity/Diode range: 600 V rms
Hz range: 1000 V rms

Electromagnetic Compatibility (E.M.C.) :
EN 50081-1 : Class B
EN 50082-2 :
Electricity: IEC 1000-4-2
Radial field: IEC 1000-4-3
Rapid Transients: IEC 1000-4-4
Magnetic field to 50/60 Hz: IEC 1000-4-8

(1) Reference Conditions: 23 °C ± 5°K, 45 to 75 % RH, battery voltage : 9V ± 0,1V, centred test sample, external DC magnetic field < 40 A/m, no external AC magnetic field, no electric fiels, no DC component, no external current carrying conductor, sinusoidal signal frequency 45...450 Hz.

To Order	Reference
Clamp-on multimeter RMS model **F13N** with test leads, battery, carrying case and user's manual	P01.**1207.53C**

Clamp-on AC RMS + DC multimeter
Model F15



■ Electrical Specification

Bandwidth
45...450 Hz

AC current
■ Measurement range:
2 manual or automatic ranges:
0.5...1000 A AC

■ Resolution :
0.5...399.9 A : 0.1 A
400...1000 A : 1A

■ Accuracy *(1)*:
0.5...49.9 A : ≤ 2% R ± 10 cts
50.0...399.9 A : ≤ 2.5% R ± 2 cts
400...800 A : ≤ 2.5% R ± 5 cts
800...1000 A : ≤ 5% R ± 5 cts

■ Crest Factor Influence
(for I peak < 1000A):
400 A range:
1.5 ≤ CF < 3 : 5% R
(for I peak < 600 A)
1000 A range:
1.5 ≤ CF < 3: 5% R (for I peak < 1400 A)

DC current
■ Measurement range:
2 automatic or manual ranges:
0.5...1400 A DC

■ Resolution:
0.5...399.9A : 0.1 A
400...1400A : 1 A

■ Accuracy *(1)*:
0.5...49.9 A : ≤ 2% R ± 10 cts
50.0...399.9 A : ≤ 2,5% R ± 2 cts
400...800 A : ≤ 2,5% R ± 5 cts
800...1000 A : ≤ 8% R ± 5 cts

■ Automatic DC zeroing:
± 10 A DC

AC Voltage
■ Measurement range:
0.2...600V AC
4 automatic ranges:
4 / 40 / 400 / 600 V AC
5 manual ranges :
0.4 / 4 / 40 / 400 / 600 V AC

■ Resolution:
200.0...399.9 mV : 0.1 mV
0.400...3.999 V : 1 mV
4.00...39.99 V : 10 mV
40.0...400.0 V : 100 mV
400...600 V : 1V

■ Accuracy *(1)*:
200.0...399.9 mV : non-specified
0.400...3.999 V : ≤ 1.5% R ± 7 cts
4.00...39.99 V : ≤ 1.5% R ± 2 cts
40.0...400.0 V : ≤ 1.5% R ± 4 cts
400...600 V : ≤ 1.5% R ± 1 cts

■ Crest Factor Influence:
4 V range:
1.5 ≤ CF < 3: 3% R (Peak V ≤ 6V)
40 V range:
1.5 ≤ CF < 3: 3% R (Peak V ≤ 60V)
400 V range:
1.5 ≤ CF < 3: 3% R (Peak V ≤ 600V)
600 V range:
1.5 ≤ CF < 3: 3% R (Peak V ≤ 1000V)

■ Input Impedance: 10 MΩ

DC Voltage
■ Measurement range:
40 mV...600 V DC
5 automatic or manual ranges:
0.4 / 4 / 40 / 400 / 600 V DC

■ Resolution:
40.0...399.9mV : 0.1 mV
0.400...3.999 V : 1 mV
4.00...39.99 V : 10 mV
40.0...400.0 V : 100 mV
400...600 V : 1 V

■ Accuracy *(1)*:
40.0...399.9 mV : ≤ 1% R ± 3 cts
0.400...3.999 V : ≤ 1% R ± 2 cts
4.00...39.99 V : ≤ 1% R ± 2 cts
40.0...400.0 V : ≤ 1% R ± 1 cts
400...600 V : ≤ 1% R ± 1 cts

■ Input Impedance: 10 MΩ

Resistance
■ Measurement range: 0.5...400 Ω
5 automatic or manual ranges:
400 / 4k / 40k / 400k / 4M / 40 MΩ

■ Resolution:
0.5...399.9 Ω : 0.1 Ω
400...3999 Ω : 1 Ω
4.00...39.99 kΩ : 10 Ω
40.0...399.9 kΩ : 100 Ω
400...3999 kΩ : 1 kΩ
4.00...39.99 MΩ : 10 kΩ

■ Accuracy *(1)*:
0.5...399.9 Ω : ≤ 1.5% R ± 7 cts
400...3999 Ω : ≤ 1.5% R ± 4 cts
4.00...39.99 kΩ : ≤ 1.5% R ± 4 cts
40.0...399.9 kΩ : ≤ 1.5% R ± 4 cts
400...3999 kΩ : ≤ 1.5% R ± 4 pt
4.00...39.99 MΩ : non specified

Continuity
■ Resolution : 0.1 Ω
■ Accuracy *(1)*: 2% R ± 12 cts
■ Beep signal for R ≤ 40 Ω ± 10 Ω
■ Temporal response: ≤ 10 ms
■ Open circuit voltage: ≤ 0.5 V
■ Short circuit current: ≤ 0.37 mA

Diode Test
■ Forward-Biased:
The value of the semiconductor junction voltage is displayed directly in V

■ Reverse-Biased:
Value of the open circuit voltage

■ Resolution: 1 mV

■ Accuracy *(1)*: 3% of reading ± 10 mV
■ Open circuit voltage : ≤ 3.5 V
■ Short circuit current : ≤ 0.88 mA

DC input for accessories
■ Input Signal : ± 4000 mV DC
■ Sensitivity : 1 mV / count displayed
■ Accuracy *(1)* : 2%R ± 5 cts

Functions
■ Hz Function:
Works in V or A
Measurement range:
1...4000 Hz
3 automatic ranges
Resolution:
1.00...99.99 Hz : 0.01Hz
100.0...999.9 Hz : 0.1 Hz
1000...4000 Hz : 1 Hz
Accuracy *(1)*:
≤ 0.1% ± 15 cts
Trigger threshold:
≥ 10 V or ≥ 20 A

■ "DC Zeroing" Function:
Before each DC current measurement, this function automatically adjusts the DC zero setting.

■ MIN/MAX Function:
Displays the minimum and maximum value of the measured signal.
An additional error is added to the typical range accuracy: 2.5% of reading.
This mode freezes the measurement range and eliminates the automatic power off.

■ HOLD Function:
Freezes the measured value.

■ Power supply:
9 V Alkaline battery
(NEDA 1604A, IEC 6LR61)

(1) Reference Conditions: 23 °C ± 3°K, 45 to 75 % RH, battery voll:age 8.5V to 9V, centred test sample, external DC magnetic field < 40 A/m, no external AC magnetic field, no electric field, no DC component, no external current carrying conductor, sinusoidal signal from 45 to 65 Hz.

Model F15 (cont.)

■ Battery life:
≥ 60 Hrs in continual use
Automatic battery level indicator. Automatic multimeter power off after 10 min's of not being used. This function can be disengaged during start up.

■ Mechanical Specifications

Dimensions:
254 x 97 x 46 mm

Weight:
600 g without battery

Display:
4000 count LCD
Digit height: 12.5 mm

Voltage input:
Via (4mm) safety sockets (pitch: 19mm)

Temperature:
In use: +0° to +50 °C
In storage: -40° to +70 °C

Relative Humidity:
In use: from 0 to 95 % RH up to 30°C
(50%HR at 45°C)
In storage: from 0 to 95 % RH

Casing protection:
IP 30 (IEC 529)

Self-extinguishing ability:
UL94 V0, (Display UL94 V1)

Drop test:
1m (IEC 68-2-32)

Mechanical shock:
100g (IEC 68-2-27)

Vibrations:
10/55/10 Hz, 0.15 mm (IEC 68-2-6)

Operating altitude:
0 to 2000 m

Clamps max. cable diameter of:
1 x ∅ 42 mm or 2 x ∅ 25 mm or;
Busbars :1 busbar: 50 x 10 mm or
2 busbars: 50 x 5 mm

Colour:
Dark grey casing with red clamp jaws

■ Safety Specification

Electrical:
Double insulated device in accordance with IEC 1010-1 & IEC 1010-2-032
600 V category III, degree 2 of pollution
300 V category IV, degree 2 of pollution

Overload protection:
V range : 1000 V rms
A range : 1000 A AC rms (≤ 1 kHz)
3000 A DC
Ω range : 600 V rms
Continuity/Diode range: 600 V rms
Hz range : 1000 V rms
ADP range: 1000 V rms

Electromagnetic Compatibility (E.M.C.):
EN 50081-1: Class B
EN 50082-2:
Electrostatic discharge: IEC 1000-4-2
Radial field: IEC 1000-4-3
Rapid transients: IEC 1000-4-4
Magnetic field to 50/60 Hz: IEC 1000-4-8

To Order	Reference
Clamp-on AC/DC RMS multimeter model **F15** supplied with test leads, battery, carrying case and user's manual	P01.**1207.55**

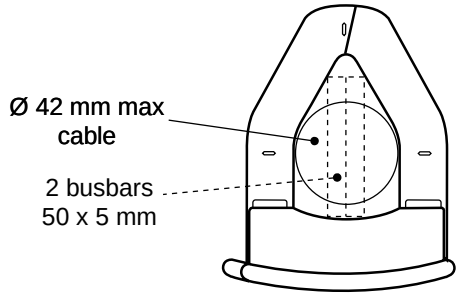
F21 / F25 Series

In order to ensure the optimal quality of the electrical supply on a network it is essential to be able to measure and identify patterns of harmonic distortion so that corrective measures can be implemented.

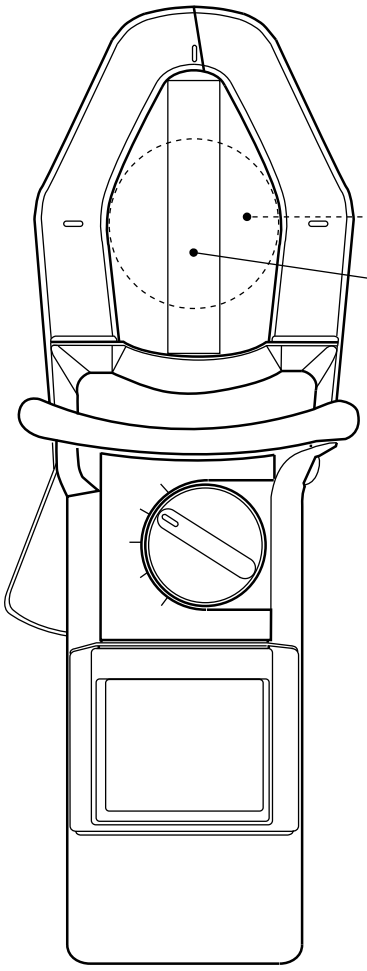
These two clamp-on harmonic meters make for the rapid diagnosis, identification and measurement of harmonic "pollution". They measure voltages and intensities in true RMS value, as well as frequencies. Model F21 is designed for use on AC networks.

As a diagnostic tool, it directly measures the overall distortion of the current or the voltage. The F21 also has an analogue output so that the current may be displayed visually on an oscilloscope.

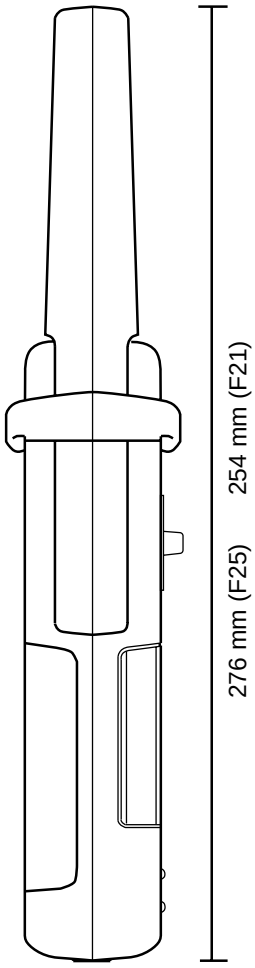
Model F25 is suited to both DC and AC networks. For a more thorough diagnosis the F25 measures harmonics order by order, as an absolute value (A or V) or as a relative value (%) up to the 25thharmonic.



Jaws of F21 Model



F25 Model

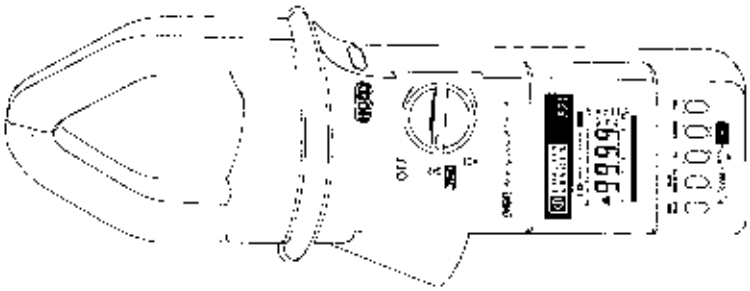


104 mm (F25)
97 mm (F21)

52 mm (F25)
44 mm (F21)

Title : F21 / F25 Series	
Drawing N°	Drawn :
Manufactured by : CHAUVIN ARNOUX	

Clamp-on harmonic meters
Model F21



Electrical Specification

Current (true RMS AC)
0.05 to 700 A RMS
0.05 to 1000 A Peak

- Ranges:
0 to 100 A - 100 to 400 A - 400 to 700 A
- Typical accuracy
(45 to 65 Hz sinusoidal signal): 2%
- Frequency range:
15 Hz to 10 kHz
- Max sustainable overload:
3 kA Peak

Voltage (true RMS AC)
0.05 to 600 V RMS or DC
0.05 to 1200 V Peak

- Ranges:
0 to 400 V - 400 to 1000 V
- input impedance: 1 MΩ
- Typical accuracy
(40 to 65 Hz sinusoidal signal): 1.5%
- Frequency range: 15 Hz to 10 kHz
- Max sustainable overload:
1.5 kV Peak

Peak Factor PF
- Measurement range: 1 to 10
- Trigger threshold:
300 mA or 300 mV
- Resolution: 0.01
- Accuracy (40 to 450 Hz): 10%
- Frequency response: 15 Hz to 10 kHz

Frequency
- Measurement range: 0.5 to 9999 Hz
- Trigger threshold: 1 A or 1 V
- Ranges: 0.5 to 999. 9 Hz - 1000 to 9999 Hz
- Accuracy:
0.5 to 999.9 Hz : 0.1% R. ± 1 ct
1000 to 9999 Hz: 0.2% R. ± 1 ct

Harmonics
Overall measurement of:
- Total harmonic distortionTHD: 0. 5 to 600%
- Trigger threshold: 300mA or 300 mV
- Accuracy: 3% ± 2 pt
- Frequency range:
Fundamental between 45 and 65 Hz,
Up to the 25th harmonic
- Distortion factor DF: 0.5 to 100%
- Trigger threshold: 300mA or 300 mV
- Accuracy: 3% ± 2 pt
- Frequency range: fundamental between 45 and 65 Hz, up to the 25th harmonic

Analogue output: V out
- Measurement range:
0.05 to 700 A RMS for 1 mV/A
0.05 to 60 A RMS for 10 mV/A
- Accuracy: 3%
- Impedance: 4 kΩ, 47 pF
- Max sustainable overload: 1.5 kV Peak

Power supply:
- Type : 1 6LF22 9 V battery
- Battery life :
50 hours of continual use (without using back-light)
Low battery level indicated by “battery” symbol

Mechanical Specification

Clamps max. cable diameter of:
Ø 42 mm or 2 busbars: 50 x 5 mm

Display:
10000 count LCD,
30 segment back-lit Bar-graph

Dimensions:
254 x 97 x 44 mm

Weight :
600 g approx.

Operating temperature:
-10 to +55°C

Storage temperature :
-40 to +70°C

RH in use :
0 to 80% up to 40°C

Safety Specifications

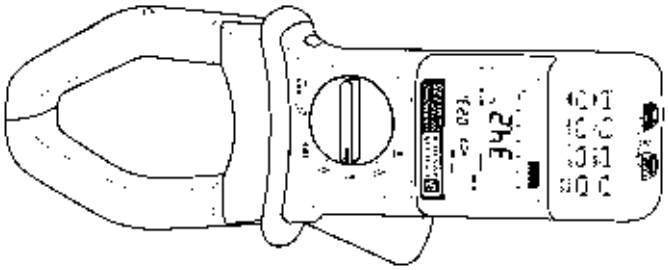
Protection level:
- IEC 1010-2-032 / IEC 1010-1
Double insulation
Category III installation
Degree 2 of pollution
Voltage rating: 600 V RMS
- EMC series IEC 1000-4

Mechanical protection ratings:
Watertightness: IP40
Drop test: 1 m
Mechanical shock: 100 g (IEC 68-2-27)
Vibrations: IEC 68-2-6

Self-extinguishing ability of case:
UL94 V2

To Order	Reference
Clamp-on Harmonic meters **F21** with carrying case, test probe leads, BNC lead/safety plug, battery and user's manual	P01.**1207.52**

Clamp-on Harmonic Meter
Model F25



■ Electrical Specification

Current (true RMS AC+DC)
0.30 to 1000 A RMS or DC
0.50 to 1500 A peak
■ Ranges:
0 to 60 A - 60 to 600 A - 600 to 1500 A
■ Resolution: 10 mA - 100 mA - 1 A
■ Basic accuracy
(45 to 65 Hz sinusoidal signal): 2%
■ Frequency range:
DC and 10 Hz to 5 kHz
■ Automatic DC zeroing
■ Max sustainable overload:
3 kA Peak

Voltage (true RMS AC+DC)
0.05 to 600 V rms or DC
0.1 to 1500 V Peak
■ Ranges:
0 to 60 V- 60 to 600 V - 600 to 1500 V
■ Resolution : 10 mV - 100 mV - 1 V
■ Input impedance: 1 MΩ
■ Typical accuracy
(40 to 65 Hz sinusoidal signal): 1%
■ Frequency range:
DC and 10 Hz to 5 kHz
■ Max sustainable overload:
1.5 kV Peak

Peak Factor
■ Measurement range: 1 to 10
■ Resolution: 0.01
■ Accuracy (40 to 70 Hz):
2% for CF < 3.5 ± 2 cts
■ Trigger threshold: 5 V or 5 A

Frequency
■ Measurement range: 0.5 to 19.99 kHz
■ Range:
0.5 to 99.99 Hz – 100.0 to 999.9 Hz
1000 to 9999 Hz – 10.00 to 19.99 kHz
■ Resolution: 0.01 – 0.1 - 1 - 10 Hz
■ Accuracy (< 1 kHz): 0.1% ± 2 cts
■ Trigger threshold: 2 V or 2 A

DC Ripple
■ Measurement range: 2 to 999.9%
■ Ranges: 2 to 99.9 % - 100.0 to 999.9 %
■ Resolution: 0.1 %
■ Accuracy: 5%

Harmonics
Overall, or harmonic by harmonic up to 25th
■ Total Harmonic Distortion (THD):
0.2 to 600%
Overall accuracy across global THD:
5% ± 2 cts
Frequency range:
fundamental between 40 and 70 Hz
Min. signal: 10 V or 10 A
■ Distortion factor DF: 0.2 to 100%
Overall accuracy across DF: 5% ± 2 cts
Frequency range:
fundamental between 40 and 70 Hz
Min. signal value: 10 V or 10 A

Power supply:
■ Type: 4 LR6 1.5 V batteries or storage cell
■ Battery life: 40 hours in continual use
■ Displays hours left on battery supply
■ Battery low indicator

■ Mechanical Specifications

Clamps max. cable diameter of:
Ø 50 mm or; busbar: 80 x 5 mm
Display: 2 x 10000 count back-lit LCD,
1 × 100 count display
Dimensions:
276 x 104 x 52 mm
Weight:
670 g approx.
Operating temperature:
-10 to +55°C
Storage temperature:
-40 to +70°C
RH during use:
0 to 80% up to 40°C

■ Safety Specifications

Protection level:
■ IEC 1010-2-032
Double insulation
Category III installation
Degree 2 pollution
Voltage rated: 600 V rms
■ EMC series IEC 1000-4

Mechanical protection ratings
Watertightness: IP40
Drop test: 1m
Mechanical shock: 100 g (IEC 68-2-27)
Vibrations: IEC 68-2-6

Casing self-extinguishing ability:
UL94 V2

To Order	Reference
Clamp-on harmonic meter **F25** with case, test probe leads, batteries, mini-guide manual and user's manual	P01.**1207.54A**

F23 / F27 Series

The F23 and the F27 clamp-on power meters offer the combined functions of the current, voltage, harmonic and power meter (single and matched 3 phase).

Designed for on-site use, the F23 and the F27 are particularly user friendly and offer easy handling. Measurement values are displayed as the true RMS value.

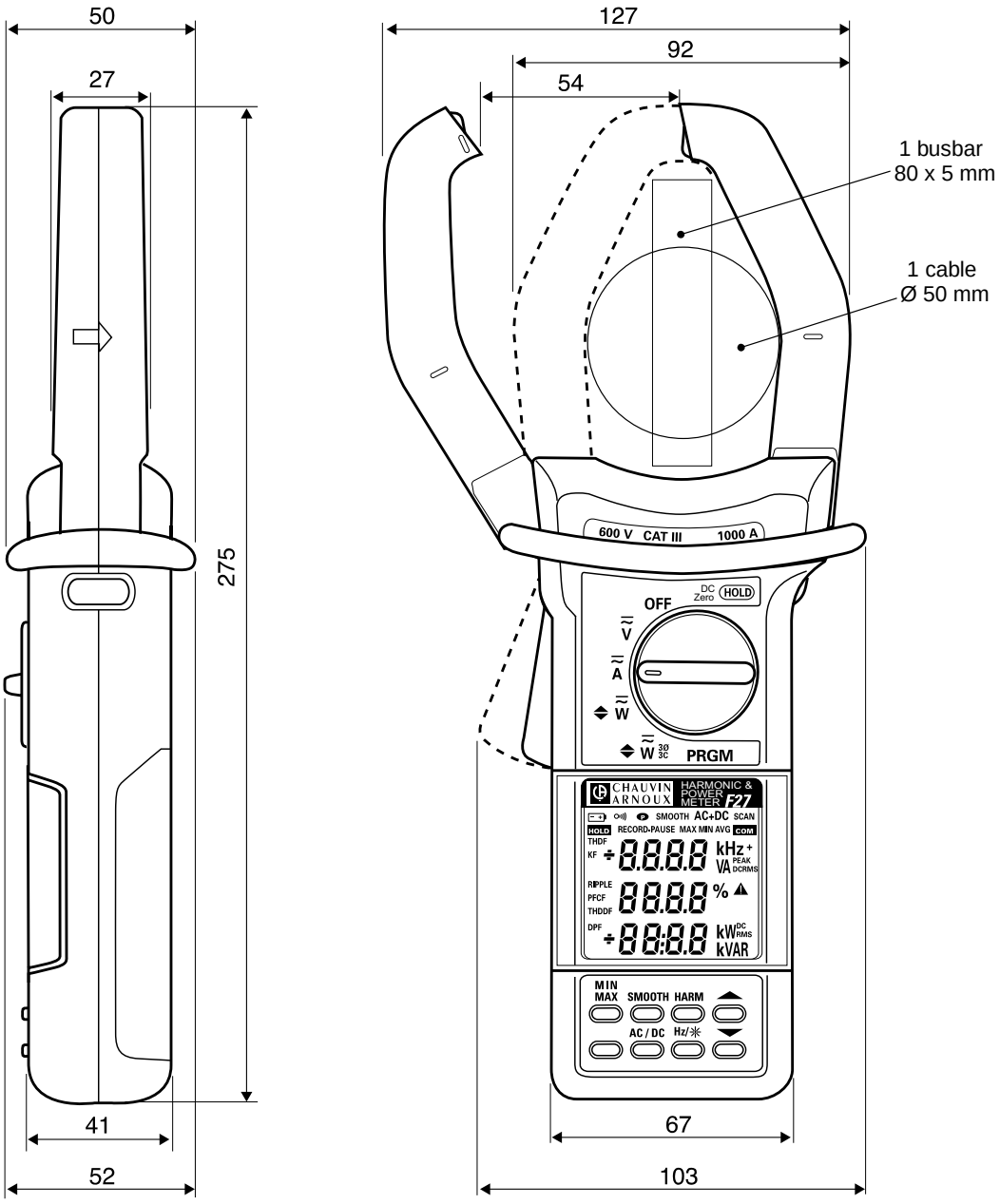
Model F23 is for use on AC circuits and the F27 handles both AC and DC installations.

For harmonic distortion measurement the F23 measures the total harmonic distortion whereas the F27 gives you all the harmonic distortion parameters order by order up to the 25th harmonic.

The large display has a lighting facility and 3 reading levels that display all the measured parameters directly so there's no need to make calculations or carry out separate analysis.

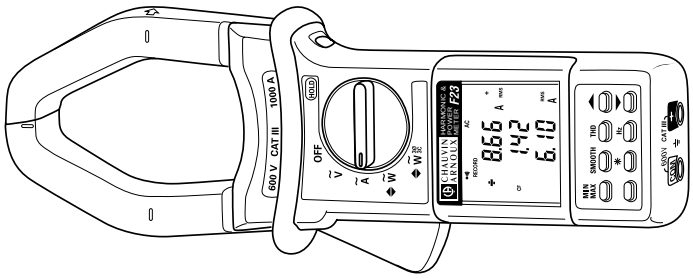
The F27 comes equipped with an optical output (RS 232) making it possible to link up to your PC or printer.

C.A TRANSFER Software operates under Windows and manages data recording.



Title : F23 / F27 Series	
Drawing N°	Drawn:
Manufactured by:	CHAUVIN ARNOUX

Clamp-on Power meter
Model F23



■ Electrical Specification

Current (true rms AC)
0.30 to 1000 A rms
0.30 to 1500 A peak
■ Ranges:
0 to 60 A - 60 to 600 A - 600 to 1500 A
■ Resolution:
10 mA - 100 mA - 1 A
■ Typical accuracy (45 to 65 Hz sinusoidal): 2%
■ Operating frequency: 10 Hz to 5 kHz

Voltage (true rms AC)
0.05 to 600 V rms
0.05 to 1500 V peak
■ Ranges:
0 to 60 V - 60 to 600 V - 600 to 1500 V
■ Resolution: 10 mV - 100 mV - 1 V
■ Input impedance: 1 MΩ
■ Peak detection mode PEAK:
Additional error of 0.5% on the peak value
■ Typical accuracy (40 to 65 Hz sinusoidal): 1%
■ Operating frequency: 10 Hz to 5 kHz

Crest Factor
■ Measurement range: 1 to 10
■ Resolution: 0.01
■ Accuracy (40 to 70 Hz):
2% for CF< 3.5 ± 2 cts

Frequency
■ Measurement range: 0.5 to 19.99 kHz
■ Ranges:
0.5 to 99.99 Hz – 100.0 to 999.9 Hz
1000 to 9999 Hz – 10.00 to 19.99 kHz
■ Resolution: 0.01 – 0.1 - 1 - 10 Hz
■ Accuracy (< 1 kHz): 0.1% ± 2 cts

Harmonics
Measurement of:
■ Total Harmonic Distortion THD: 0.2 to 600%
■ Accuracy: 1% ± 2 cts
■ Distortion Factor DF: 0.2 to 100%
■ Accuracy: 1% ± 2 cts
■ Frequency range:
Fundamental between 40 and 70 Hz,
Harmonics up to 25th order
■ Min. signal value: 10 V or 10 A
■ Simultaneous display of the RMS value and THD or DF

Power
Measures single and matched 3 phase
Accounts for the direction of energy travel (± sign for W and var.)
■ Real power
- Measurement range: 10 W to 599.9 kW
- Ranges:
10 to 5999 W – 6.00 to 59.99 kW
60.0 to 599.9 kW
- Resolution: 1 - 10 - 100 W
- Accuracy: 2% ± 2 cts
- Frequency range: 0.5 Hz to 1 kHz

■ Reactive power
- Measurement range: 10 var to 599.9 kvar
- Ranges:
10 to 5999 var – 6.00 to 59.99 kvar
60.0 to 599.9 kvar
- Resolution: 1 - 10 - 100 var
- Accuracy: 2% ± 2 cts
- Frequency range: 40 to 70 Hz

■ Apparent power
- Measurement range: 10 VA to 599.9 kVA
- Range:
10 to 5999 VA – 6.00 to 59.99 kVA
60.0 to 599.9 kVA
- Resolution: 1 - 10 - 100 VA
- Accuracy: 2% ± 2 cts
- Frequency range: 0.5 Hz to 1 kHz

■ Power factor
- Measurement range: 0 to 1.00
- Resolution : 0.01
-Accuracy: 3% (from 0.5 to 1) ± 2 cts

■ Power factor translation (cos φ)
-Measurement range: 0 to ±1.00 inductive and capacitive
- Accuracy: 5% ± 2 cts

Power supply
■ Type:
4 LR6 1.5 V batteries or storage cell
■ Battery life:
40 Hrs in continual use (without backlight)
■ Low battery level indicator

■ Mechanical Specification

Clamps max. cable diameter of:
Ø 50 mm or; busbar: 80 x 5 mm
Display:
3 x10000 count backlit LCD
Dimensions:
275 x 103 x 50 mm
Weight:
670 g approx.
Operating temperature:
-10 to +55°C
Operating RH:
0 to 90% up to 40°C

■ Safety Specification

Conformity to standards:
■ IEC 1010-2-032
Double insulation
Installation Category III
Degree of pollution 2
Voltage rating: 600 V rms
■ CEM series IEC 1000-4

Mechanical protection
Watertightness: IP40
Drop test: 1 m
Mechanical shock: 100 g (IEC 68-2-27)
Vibrations: IEC 68-2-6

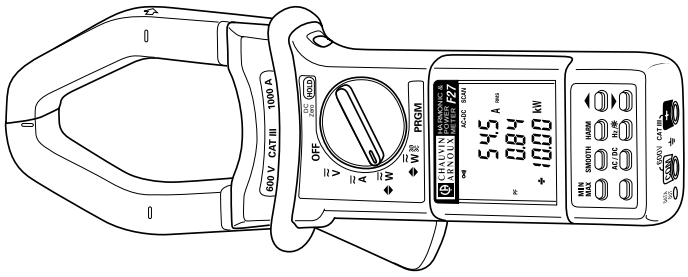
Self-extinguishing ability of the box:
UL94 V2

■ Accessories Supplied

Carrying case with pre-cut foam lining
2 1.5 m banana/banana (4 mm) leads
2 test probes (4 mm) with protection guard
2 safety croc-clips
4 ×1.5 V batteries

To Order	Reference
Clamp-on power meter **F23** with case, leads, croc-clips, batteries and user's manual	P01.**1207.56**

Clamp-on power meter
Model F27



Electrical Specification

Current (true rms AC+DC)
0.30 to 1000 A rms or DC
0.30 to 1500 A peak
■ Ranges:
0 to 60 A - 60 to 600 A - 600 to 1500 A
■ Resolution: 10 mA - 100 mA - 1 A
■ Typical accuracy (45 to 65 Hz sinusoidal): 2%
■ Operating frequency:
DC and 10 Hz to 5 kHz
■ Automatic DC zeroing

Voltage (true rms AC+DC)
0.05 to 600 V rms or DC
0.05 to 1500 V peak
■ Ranges:
0 to 60 V- 60 to 600 V - 600 to 1500 V
■ Resolution : 10 mV - 100 mV - 1 V
■ Input impedance: 1 MΩ
■ Peak detection mode PEAK: Additional error of 0.5 % on the peak value
■ Typical accuracy (40 to 65 Hz sinusoidal): 1%
■ Operating frequency:
DC and 10 Hz to 5 kHz

Crest Factor
■ Measurement range: 1 to 10
■ Resolution: 0.01
■ Accuracy (40 to 70 Hz):
2% for CF < 3.5 ± 2 cts

Frequency
■ Measurement range: 0.5 to 19.99 kHz
■ Ranges:
0.5 to 99.99 Hz – 100.0 to 999.9 Hz
1000 to 9999 Hz – 10.00 to 19.99 kHz
■ Resolution: 0.01 – 0.1 - 1 - 10 Hz
■ Accuracy (< 1 kHz): 0.1% ± 2 cts

DC Ripple
■ Measurement range: 2 to 999.9%
■ Ranges: 2 to 99.9 % - 100.0 to 999.9 %
■ Resolution: 0.1 %
■ Accuracy: 5%

THD Factor
■ Measurement range: 0.2 to 1
■ Resolution: 0.01
■ Accuracy: 5% ± 2 cts

Harmonics
Total and order by order harmonic measurement to the 25th harmonic:
■ Total Harmonic distortion: 0.2 to 600%
■ Accuracy of THD: 1% ± 2 cts
■Distortion factor: 0. 2 to 100%
■ Accuracy of overall DF:1% ± 2 cts
■ Frequency range:
Fundamental between 40 and 70 Hz
■ min. signal value : 10 V or 10 A
■ Simultaneous display of RMS value and of THD or DF

K Factor
■ Measurement range: 1 to 30
■ Ranges: 1.0 to 9.9 - 10.0 to 30
■ Resolution: 0.1 ± 2 cts
■ Accuracy: 5% up to KF = 10

Power
Measurement in single and matched 3 phase
Accounts for the direction of energy travel
(± sign for W and var)
■ Real Power
- Measurement range: 10 W to 599.9 kW
- Ranges:
10 to 5999 W – 6.00 to 59.99 kW
60.0 to 599.9 kW
- Resolution: 1 - 10 - 100 W
- Accuracy: 2% ± 2 cts
- Frequency range: 0.5 Hz to 1 kHz
■ Reactive power
- Measurement range: 10 var to 599.9 kvar
- Ranges:
10 to 5999 var – 6.00 to 59.99 kvar
60.0 to 599.9 kvar
- Resolution: 1 - 10 - 100 var
- Accuracy: 2% ± 2 pt
- Frequency range: 40 to 70 Hz
■ Apparent power
- Measurement range: 10 VA to 599.9 kVA
- Ranges:
10 to 5999 VA – 6.00 to 59.99 kVA
60.0 to 599.9 kVA
- Resolution: 1 - 10 - 100 VA
- Accuracy: 2% ± 2 cts
- Frequency range: 05 Hz to 1 kHz
■ Power factor
- Measurement range:0 to 1.00
- Resolution: 0.01
- Accuracy: 3% (from 0.5 to 1) ± 2 cts
■ Power factor translation (cos φ)
- Measurement range:
0 to ±1,00 inductive (+) and capacitive (-)
- Accuracy: 5% ± 2 cts

Power supply
■ Type:
4 LR6 15 V batteries or storage cell
■ Battery life:
40 Hrs in continual use

Series output
Fibre Optic output type RS232
Unidirectional mode up to 19200 bauds, parity, stop bit and adjustable number of data bits.
Operates with printer or PC
Sending of data in SCAN mode from 1 to 99 min selectable
C.A Transfer software runs under Windows for data storage and conversion in the text table.

Mechanical Specification

Clamps max. cable diameter of:
Ø 50 mm or; busbar 80 x 5 mm
Display:
3x10000 count backlit LCD
Dimensions: 275 x 103 x 50 mm
Weight: 670 g approx.
Operating temperature:
-10 to +55°C
Operating HR:
0 to 90% up to 40°C

Safety Specification

Standards conformity:
■ IEC 1010-2-032
Double insulation
Installation Category III
Degree of pollution 2
Voltage rated : 600 V rms
■ CEM series IEC 1000-4

Mechanical protection
Watertightness: IP40
Drop test: 1 m
Mechanical shocks: 100 g (IEC 68-2-27)
Vibrations: IEC 68-2-6

Self-extinguishing ability of casing:
UL94 V2

Accessories supplied

Carrying case with pre-cut foam padding
2 x 1.5 m banana/banana leads
2 test probes (4 mm) with protection guard
2 safety croc-clips
4 x 1.5 V batteries

To Order	Reference
Clamp-on power meter **F27** with case, leads, croc-clips; batteries, RS 232 optical output adapter and user's manual	**P01.1207.57A**

Clamp-on ground resistance testers

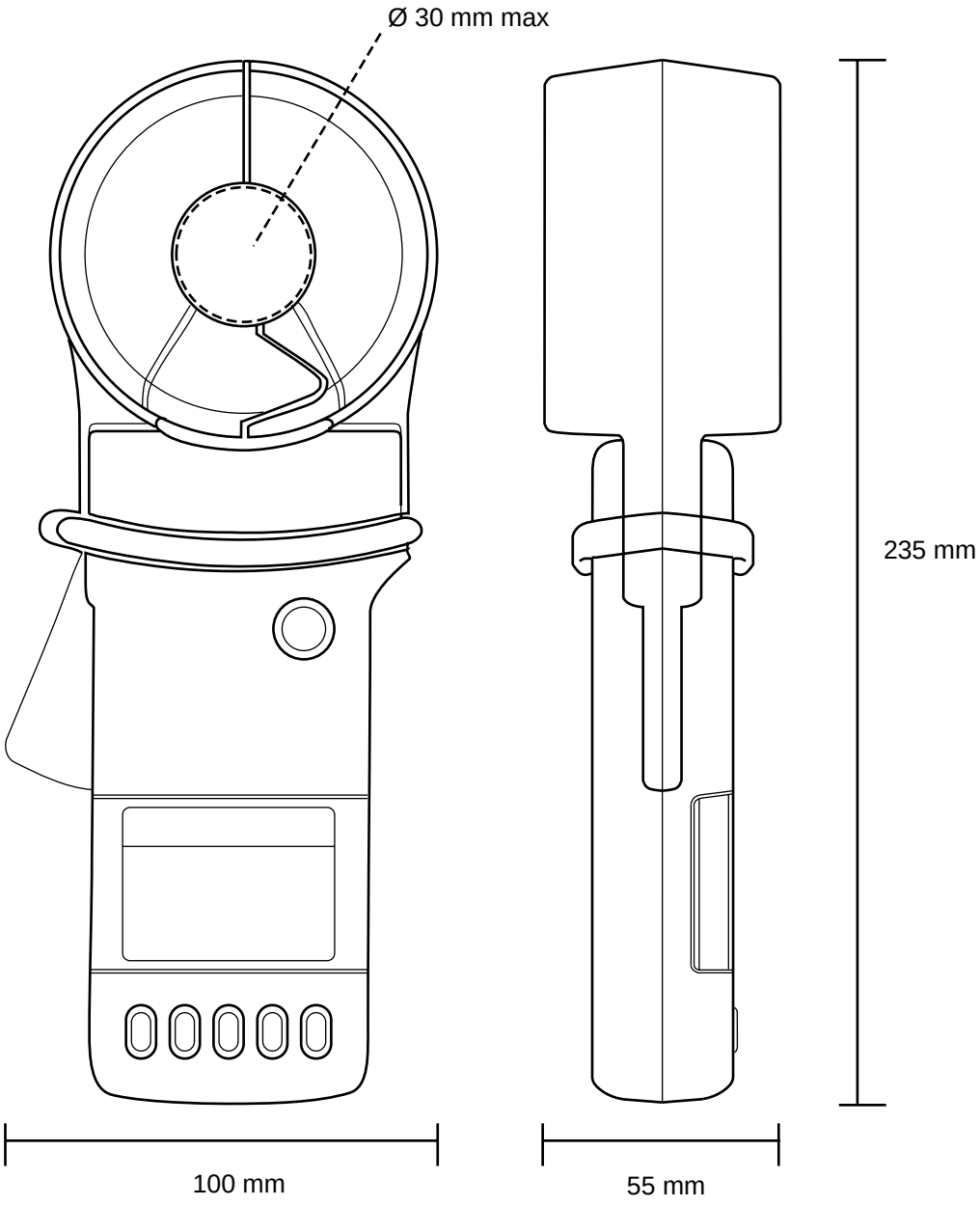
Series C.A 6410, C.A 6412 & C.A 6415

The clamp-on ground resistance tester models C.A 6410, C.A 6412 and C.A 6415 are at the forefront of innovative clamp-on application design.

The earthing point is a key element in electrical protection, consisting of several equipotential (ie. the earth surface) links forming a parallel earthing network. Clamps C.A 6410, C.A 6412 and C.A 6415 give the user the ability to carry out ground testing in the most time effective manner, also allowing traditional ground rod measurement methods to be used. Thus the test can be carried out without having to plant additional ground rods or having to disconnect the electrical installation from the ground during testing.

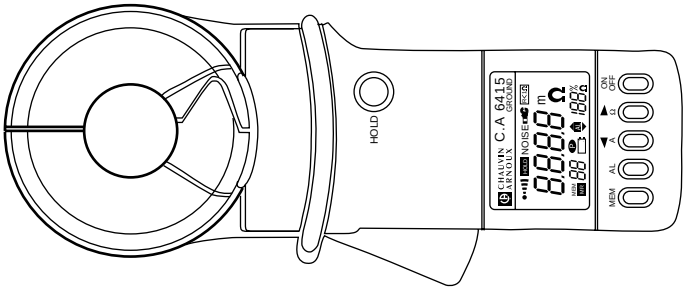
All of these clamps can measure resistances from 0.1 Ω up to 1200 Ω. Models C.A 6412 and C.A 6415 can also be used to measure leakage currents between 1 mA and 30 A flowing in the ground.

Model C.A 6415 is additionally equipped with an alarm function (alerts the user that the threshold has been crossed) and a memory for storage of up to 99 measurements.



Title : Clamp-on ground testers	
Drawing N°	Drawn :
Manufactured by : CHAUVIN ARNOUX	

Clamp-on ground tester
Models C.A 6410 / C.A 6412 / C.A 6415



■ Applications

Clamps C.A 6410, C.A 6412 and C.A 6415 are designed for resistance testing of all systems that behave as conductive loops.

■ Measurement principle :

Some electrical installations are equipped with parallel multiple earthing points. In some countries the earth is "distributed" at each user on the network by the electricity company.

In the railway or telecommunications networks the parallel earthing points ensure the safety and efficiency of the network. For establishments using electrically sensitive equipment, a network of conductors linked to multiple earthing points gives a neutral point without the drawback of equipotentiality.

The theory diagrams of these two types of network are shown in figures 1 and 2.

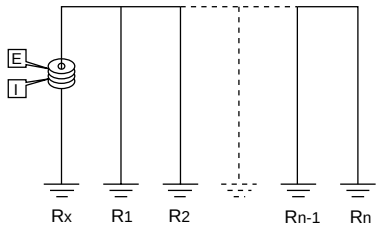


Figure 1

If the clamp's "generator" coil develops an AC voltage of constant value E around the gripped conductor, then a current I = E / R_{loop} travels across the resistive loop. This current is then measured by the clamp's "receiver" coil. Knowing both E and I, the loop resistance is calculated and displayed.

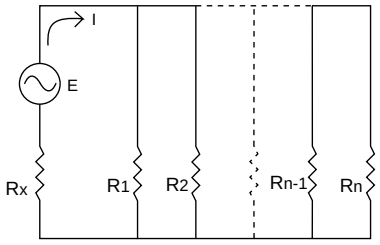


Figure 2

$R_{loop} = R_x + R_{aux}$

(R_{aux} = equivalent to $R_1 ... R_n$ in parallel)

Since $R_x >> R_{aux}$

We obtain $R_{loop} \# R_x$

■ Electrical Specification

Resistance:

■ Measurement range:
0.1...1200 Ω (automatic range selection)

■ Measurement frequency:
2400 Hz (generated voltage = 60 mV rms AC, sinusoidal)

■ Resolution and accuracy

Measurement range	Resolution	Accuracy
0.1...1 Ω *(1)*	0.01 Ω	± (2% + 0.02 Ω)
1.0...50 Ω	0.1 Ω	± (1.5% + 0.1 Ω)
50...100 Ω	0.5 Ω	± (2.0% + 0.5 Ω)
100...200 Ω	1 Ω	± (3.0% + 1 Ω)
200...400 Ω	5 Ω	± (6.0% + 5 Ω)
400...600 Ω	10 Ω	± (10% + 10 Ω)
600...1200 Ω	50 Ω	approx. 25%

(1) Measurement indication from 0.07 Ω, accuracy is not guaranteed below 0.1Ω

■ Influence of interference currents in the loop:
- Operate margins:
5 A / 50 V (50-60 Hz)

- Influence (example):
typically 3%; 5% max,
for I noise source = 1 A,
and measured R = 30 Ω

Intensity:

■ Measurement range:
0...30 A RMS (automatic range selection)

■ Frequency region:
47...800 Hz

■ Resolution and accuracy

Measurement range	Resolution	Accuracy
0...300 mA	1 mA	± (2.5% + 2 mA)
0.300...3.000 A	1 mA	± (2.5% + 2 mA)
3.00...30.00 A	10 mA	± (2.5% + 20 mA)

■ Overload:
Continual = 100 A (50/60 Hz)
Transient (< 5 s) = 200 A (50-60 Hz)

■ Functions

ON/OFF

Ω: Resistance Measurement (second function : increments)

A: Current Measurement (second function: decrements)

HOLD: Holds the last measurement displayed

AL: Activates and adjusts the alarm

MEM:Records measurements, recalls or erases.

Functions	C.A 6410	C.A 6412	C.A 6415
ON / OFF	yes *(1)*	yes	yes
Ω	-	yes	yes
A	-	yes	yes
HOLD	yes	yes	yes
AL	-	-	yes
MEM	-	-	yes

(1) C.A 6410 starts directly in Ω mode

■ Other Specifications

Watertightness:
IP30 in accordance with IEC 359

Clamps max. cable diameter of:
∅ 30 mm max.

LCD:
3 ¾ digit, 44 x 28 mm

Temperature :
In use: -10 to +55°C
In storage: -30 to +70°C

Relative humidity :
In use: 0 to 90% from -10 to +40°C and 75% at 55°C
In storage: 0 to 95%

Power supply:
9 V Alkaline battery 6LF22 or equiv.

Battery life:
12 Hrs or approx. 1500 x 30 s measurements

Dimensions:
235 x 100 x 55 mm

Weight :
1 kg

Models C.A 6410 / C.A 6412 / C.A 6415 (cont.)

Safety specifications

Double insulation:
Conforms with the IEC 1010-2-032 standard:
150 V Category III, degree 2 of pollution
Agency approvals: UL, CSA, GS.

Shock resistance:
100 G (IEC 68-2-27)

Vibration resistance:
0,15 mm from 10 to 55 Hz (IEC 68-2-6)

Drop test:
1 m (IEC 68-2-32)

To Order	Reference
Clamp-on ground tester model **C.A 6410**, delivered in carrying case, with battery and operating instructions	P01.**1220.11**
Clamp-on ground tester model **C.A 6412**, delivered in carrying case, with battery and operating instructions	P01.**1220.12**
Clamp-on ground tester model **C.A 6415**, delivered in carrying case, with battery and operating instructions	P01.**1220.13**
Accessories :	
Calibration loop CL1	P01.**1223.01**

Application for personalized model

" Special " Model

Date : ___ / ___ / ___

Address Details

Surname: _____
1st Name: _____
Company: _____
Address : _____
_____
Town : _____
Post code: _____
Country: _____

Profession: _____
Sector of industry: _____
_____
_____
_____
Telephone N°: _____
Fax N°: _____

application Details

Description/Comments: _____
_____
_____
_____

Desired Specification

■ Type of measurement: ❑ AC ❑ DC ❑ AC + DC
■ Measurement range: from _____ A to _____ A
■ Accuracy: _____ % of output signal
■ Bandwidth: from _____ Hz to _____ Hz
■ Output signal: ❑ A AC ❑ V AC ❑ V DC
■ Number of ranges: _____ 1 Range: _____ A Sensitivity: _____ /A
2 Ranges: _____ A Sensitivity: _____ /A
3 Ranges: _____ A Sensitivity: _____ /A
■ Operating open circuit (working) voltage of the installation where the measurements are to be carried out:
❑ 230 V ❑ 400 V ❑ 600 V ❑ 1000 V ❑ Other : _____ V
■ Diameter of measured conductor: _____ mm or dimensions: _____ x _____ mm
■ Temperature of conductor in use: from ___ ° to ° ____ ❑ °C ❑ °F
■ Output connector:
❑ Safety sockets Ø 4 mm
❑ Length of lead 1.5 m + safety plug Ø 4 mm
❑ 2 m coaxial lead with isolated BNC
❑ Other: _____
■ Colour:
Jaws: ❑ Red CHAUVIN ARNOUX (standard)
❑ Other : _____
Casing: ❑ Grey CHAUVIN ARNOUX (standard)
❑ Other: _____

Delivery Format

❑ Without instruction manual
❑ With CHAUVIN ARNOUX instruction manual (standard)
❑ With personalised operating instructions
❑ Marquage produit CHAUVIN ARNOUX (standard)
❑ Personalised brand markings (supply all plans, diagrams, logotype, etc. necessary for personalisation)

■ **Packaging**
❑ Standard CHAUVIN ARNOUX cardboard box
❑ Plain cardboard box
❑ Other : _____
_____
_____

Your Order

First delivery quantity: _____
Quantity per year: _____
Desired delivery time: _____
Frequency of deliveries: _____

Fax this page to: (33) 01 46 27 07 48

CHAUVIN ARNOUX

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