



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.

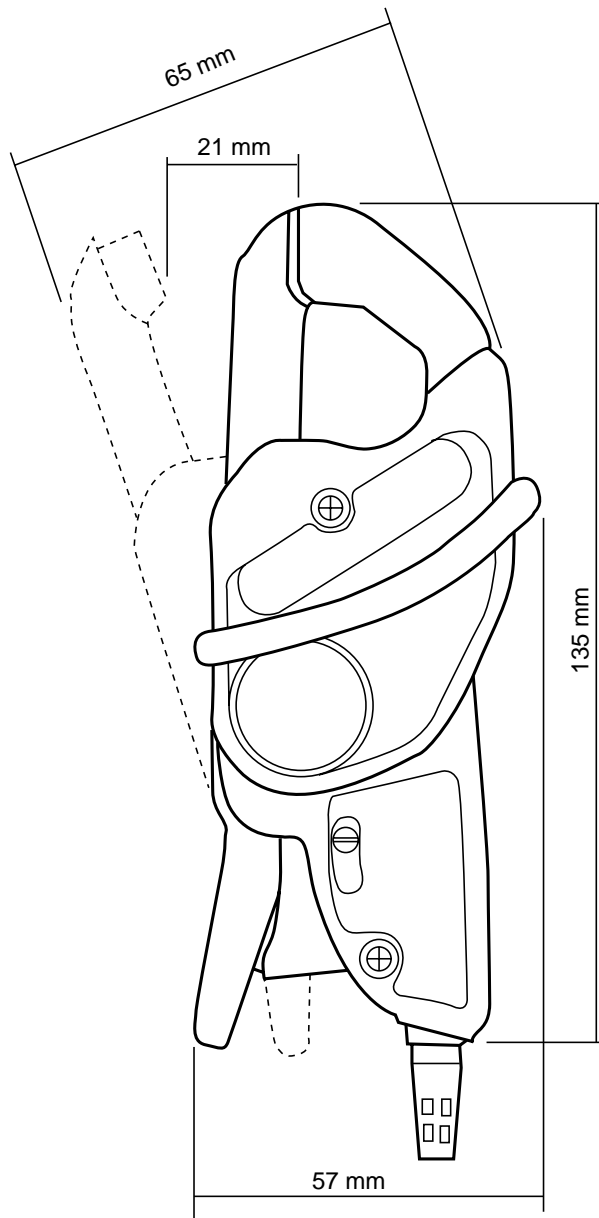
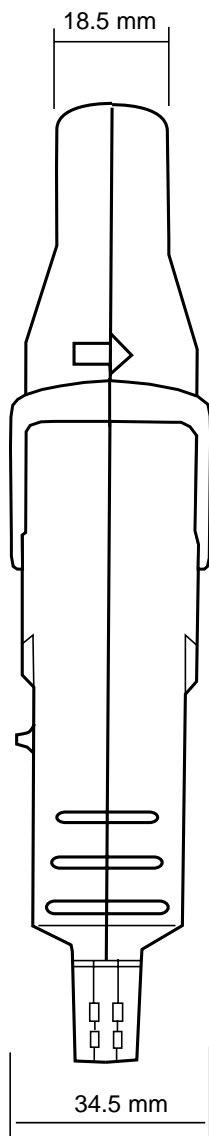
Depending on the particular model, they have one or two ranges. The output is via either jack sockets or a lead with 4 mm \varnothing plugs, hence these probes are compatible with all multimeters and testers on the market.


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.

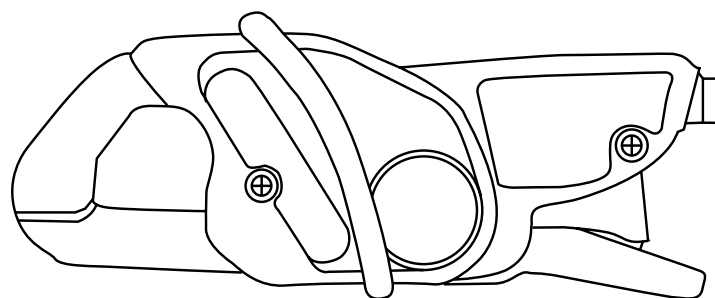


Title : MN series	
Drawing N°	Drawn by :
Manufactured by :  CHAUVIN ARNOUX	

AC Current Probes

Models MN08 and MN09

Current	200 A AC
Ratio	1000/1
Output	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 : Ø 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

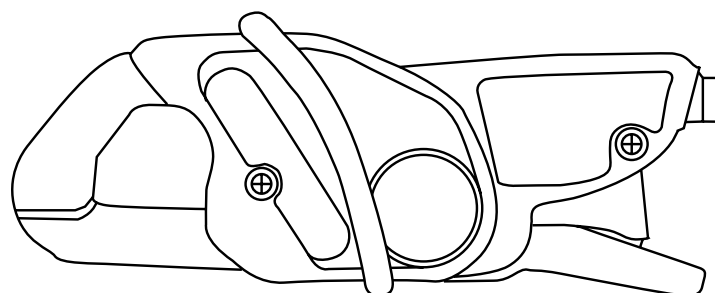
Ordering information	Reference
AC current probe model MN08 including user's manual	P01.1204.01
AC current probe model MN09 including user's manual	P01.1204.02

AC Current Probes

Models MN10 and MN11

Current	200 A AC
Ratio	1000/1
Output	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 : Ø 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.

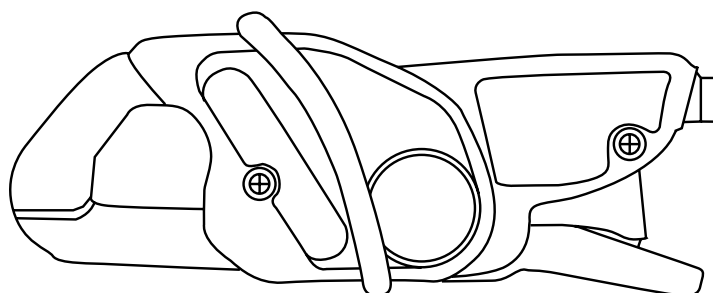
(2) Out of reference field.

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
Output	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 : Ø 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

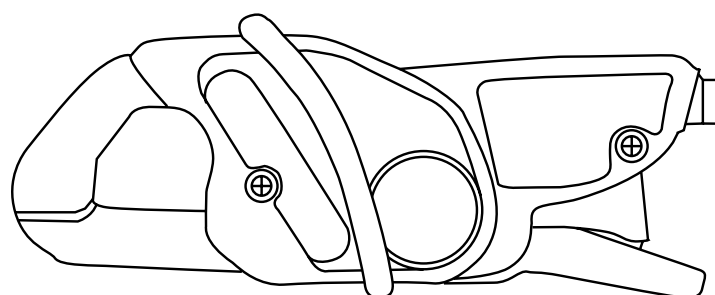
Ordering information	Reference
AC current probe model MN12 including user's manual	P01.1204.05
AC current probe model MN13 including user's manual	P01.1204.06

AC Current Probes

Models MN14 and MN15

MN Series

Current	200 A AC
Output	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 : Ø 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

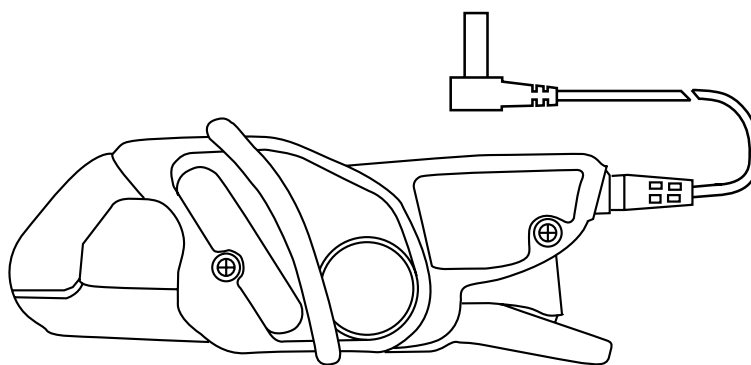
Ordering information	Reference
AC current probe model MN14 including user's manual	P01.1204.16
AC current probe model MN15 including user's manual	P01.1204.17

AC Current Probe

Model MN21

Current	200 A AC
Ratio	1000/1
Output	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 $I_p < 150A$ (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 < I_p < 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 : Ø 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

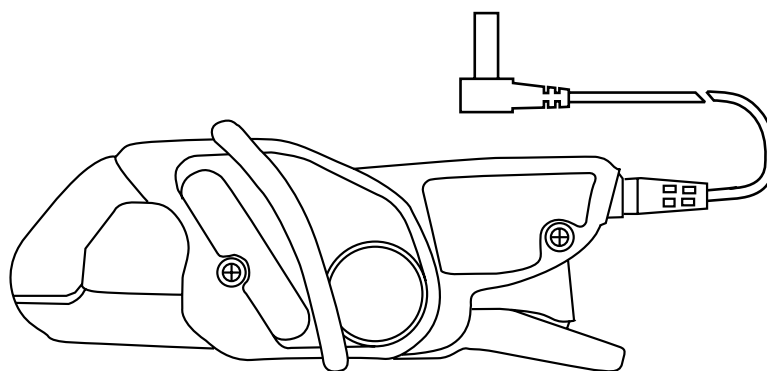
Ordering information	Reference
AC current probe model MN21 including user's manual	P01.1204.18

AC Current Probe

Model MN23

MN Series

Current	200 A AC
Output	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 I_p < 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 < I_p < 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 : Ø 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.

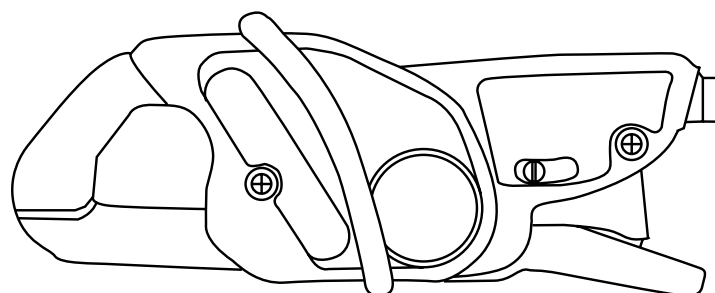
(2) Out of reference field

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
Output	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	200 A				
	20 A	0.5...10 A	10...40 A	40 A ...100 A	100...240 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 : Ø 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 :

■ 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.

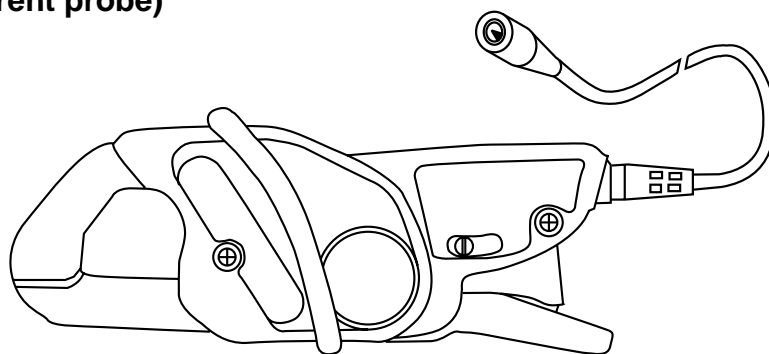
(2) Out of reference field

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
Output	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		
	0.1...20 A	0.5...10 A	10...40 A	40 A ...100 A	100...240 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 : Ø 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

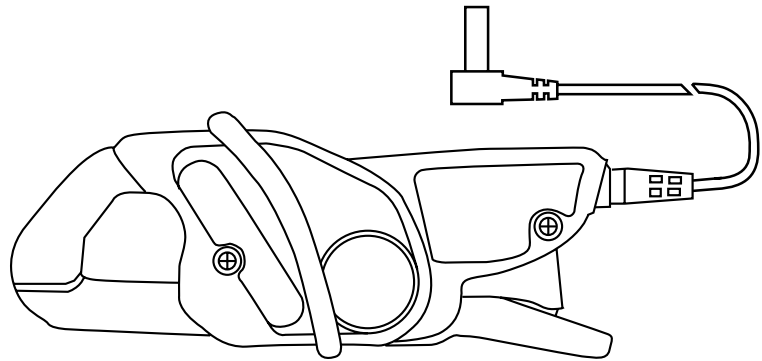
AC Current Probe

Model MN71

MN Series

Current	10 A AC
Output	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 : Ø 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
Output	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				
	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
Primary current									
% 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 < I_p < 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 : Ø 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

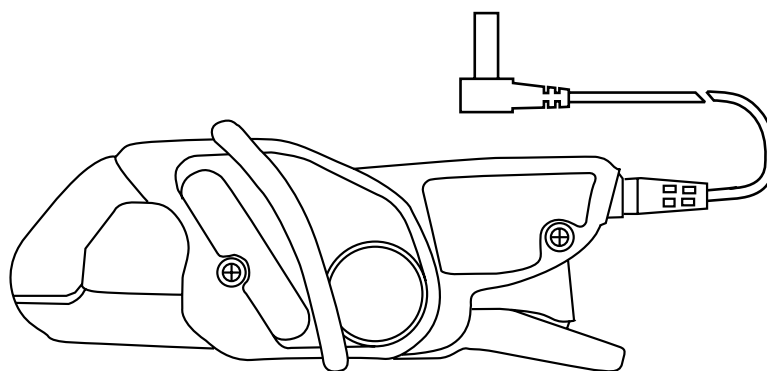
Ordering information	Reference
AC current probe model MN73 including user's manual	P01.1204.21

AC Current Probes

Models MN88 and MN89

Current	200 A AC
Output	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 : Ø 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 including user's manual	P01.1204.10
AC current probe model MN89 including user's manual	P01.1204.15