- PINCES AMPEREMETRIQUES AC
- AC CURRENT CLAMPS
- AC ZANGENSTROMWANDLER
- PINZE AMPEROMETRICHE CA
- PINZAS AMPERIMETRICAS AC

“MN”

FRANÇAIS
ENGLISH
DEUTSCH
ITALIANO
ESPANOL

Mode d’emploi
User’s manual
Bedienungsanleitung
Libretto d’istruzioni
Manual de instrucciones

CHAUVIN ARNOUX

ENGLISH

Meaning of symbol ⚠
Attention ! Consulter le mode d'emploi avant d'utiliser l'appareil. In this User's manual, failure to follow or carry out instructions preceded by this symbol may result in personal injury or damage to the device and the installations.

Meaning of symbol ⧈
This appliance is protected by dual insulation or reinforced insulation. It does not have to be connected to an earth protection terminal for electrical safety.

Meaning of symbol 

Clamp fitted with an electronic output limiter, providing protection against voltage surges caused by the accidental opening of the clamp's secondary circuit, 8 V max. peak.

Meaning of CAT III symbol
This voltage surge category III clamp, with pollution level 2, complies with stringent reliability and availability requirements, corresponding to fixed industrial and domestic installations (see IEC 664-1).

Thank you for purchasing this **MN series ammeter miniclamp**. To obtain the best possible service from your device :

- **read** this User's manual carefully,
- **comply** with the precautions for use.

⚠ PRECAUTIONS FOR USE ⚠

- Do not measure currents greater than 240 A and limit measuring times above 200A (see 4.4.1 Overloads and 4.4.2 Frequencies).
- Do not use the device on non-insulated conductors with a potential of more than 600 V in relation to the earth and a voltage surge category greater than III.
- Comply with environmental conditions (see 4.4.3).
- Keep the jaw gap perfectly clean (see 5.1 Cleaning).

CONTENTS

1. PRESENTATION

The MN series miniclamps are designed to measure alternating currents up to 10 kHz, on low-powered installations, from 10 mA~ to 240 A ~. They can be used on any multimeter or oscilloscope for the MN 60. Depending on model (see 4.2) : single or dual calibre output, alternating current, alternating voltage or direct voltage.
They have dual insulation or reinforced insulation and comply with international norms, particularly IEC 1010-2-032 “ammeter clamps”. (See 4.6.)

2. DESCRIPTION

(See drawing in 7. Appendix)

❶ Output: sockets or lead (according to model): lead length: 1.5 m and 2 m for the MN60 model.

❷ Ratio switch for dual calibre models.

❸ The raised arrow on top of the unit indicates the direction of the current flow. The current is considered to flow in the positive direction when it flows from the current producer to the current consumer. This clamp orientation is necessary when measuring power (measuring current in parallel with voltage).

3. USE

⚠ Limit the measuring time between 200 and 240 A : 10 minutes on, followed by 30 minutes off.

⚠ With the MN 08 and 09 models, do not clamp a conductor before connecting the clamp to the corresponding measuring device. Likewise, do not disconnect the clamp from the measuring appliance when the clamp is still attached to the cable.

- Before connecting the clamp to the multimeter, check that the multimeter has an appropriate calibre.
- Open the jaws and clamp the cable through which the current you wish to measure is running. Roughly centre the cable in the jaws. Follow the direction of the arrow, if so required by the application in question.
- To read the measurement, apply the appropriate reading coefficient (See 4.2 “Input/output ratio”).

NB : for dual calibre models, select the ratio which provides the best resolution and precision.

4. CHARACTERISTICS

4.1 Reference conditions

- Temperature : +20... +26°C
- Humidity : 20... 75% RH
- Conductor centred in jaws
- Sinusoidal current : 48... 65 Hz
- Distortion factor : < 1%
- Direct current : no
- Continuous magnetic field: earth field (< 40A/m).
- Proximity of external conductors : no current
- Measuring device impedance :
  - MN 08/09/10/11/21 : 1 Ω
  - MN 12/13/14/15/23/38/39/71/73/88/89 : > 1 MΩ
  - MN 60 : > 1 MΩ and < 100 pF

4.2 Specifications and references for ordering

Model	Reference for ordering	Nominal measuring scope	Ratio Input/Ouput	Connec-tion	Ouput protected against volt-age surges
Alternating current output					
MN 08	P01.1204.01	500 mA...200 A	1 A~ / 1 mA~	Sockets	Non
MN 09	P01.1204.02			Lead	
MN 10	P01.1204.03	500 mA...200 A	1 A~ / 1 mA~	Sockets	8 V peak max.
MN 11	P01.1204.04			Lead	
MN 21	P01.1204.18	100 mA...200 A			
Alternating voltage output					
MN 12	P01.1204.05	500 mA...200 A	1 A~ / 10 mV~	Sockets	
MN 13	P01.1204.06			Lead	
MN 23	P01.1204.19	100 mA...200 A			
MN 14	P01.1204.16	500 mA...200 A	1 A~ / 1 mV~	Sockets	
MN 15	P01.1204.17			Lead	
MN 38	P01.1204.07	500 mA...200 A and 100 mA...20 A	1 A~ / 10 mV~ and 1 A~ / 100 mV~	Sockets	
MN 39	P01.1204.08			Lead	
MN 60	P01.1204.09	500 mA...200 A and 100 mA...20 A	1 A~ / 10 mV~ and 1 A~ / 100 mV~	BNC	
MN 71	P01.1204.20	10 mA...10 A	1 A~ / 100 mV~	Lead	
MN 73	P01.1204.21	100 mA...200 A and 10 mA...2 A	1 A~ / 10 mV~ and 1 A~ / 1V~		
Direct voltage output					
MN 88	P01.1204.10	500 mA...200 A	1 A~ / 100 mV⎓	Sockets	
MN 89	P01.1204.15			Lead	

4.3 Precision and dephasing

NB : Intrinsic error as µ of output signal

■ **200 A calibre**

Intensity in A~	0.5 à 10 A	10 à 40 A	40 à 100 A	100 à 240 A
MN 08 - MN 09 - MN 10 - MN 11 - MN 12 - MN 13 - MN 14 - MN 15 - MN 38 - MN 39				
Intrinsic error (1)	≤ 3 %	≤ 2.5 %	≤ 2 %	≤ 1 %
Dephasing	(2)	≤ 5 °	≤ 3 °	≤ 2.5 °
MN 60				
Intrinsic error (1)	≤ 3.5 %	≤ 3 %	≤ 2,5 %	≤ 1.5 %
Dephasing	(2)	≤ 6 °	≤ 4 °	≤ 3 °
MN 88 - MN 89				
Intrinsic error (1)	≤ 5 %	≤ 3 %	≤ 2 %	≤ 2 %

(1) + 0.5 mA (MN 08/09/10/11) or + 0.5 mV (MN 14/15) or + 5 mV (MN 12/13/38/39/60) or + 50 mV (MN 88/89) (2) Unspecified

■ **200 A calibre**

Intensity in A~	0,1 à 1 A	1 à 20 A	20 à 80 A	80 à 150 A	150 à 200 A
MN 21					
Intrinsic error (1)	≤ 5 % (1)	≤ 3 % (1)	≤ 1.5 %	≤ 3 %	≤ 5 %
Dephasing	(2)	(2)	≤ 2 °		≤ 3 °
MN 23 - MN 73					
Intrinsic error (1)	≤ 3 % (3)	≤ 2 % (3)	≤ 1 %	≤ 3 %	≤ 7 %
Dephasing	(2)	≤ 3 °	≤ 2 °	≤ 3 °	≤ 4 °

(1) + 20 mA (2) Unspecified (3) + 200 mV

■ **20 A calibre**

Intensity in A~	0.1 à 20 A (24 A maxi)
MN 38 - MN 39	
Intrinsic error	≤ 1 % + 50 mV
MN 60	
Intrinsic error	≤ 2 % + 50 mV

■ **10 A calibre**

Intensity in A~	0.01 à 0.1 A	0.1 à 1 A	1 à 5 A	5 à 12 A
	MN 71			
Intrinsic error	≤ 3 % (1)	≤ 2.5 %	≤ 1 %	
Dephasing	(2)	≤ 5 °	≤ 3 °	

(1) + 0,1 mV (2) Unspecified

■ **2 A calibre**

Intensity in A~	0.01 à 0.1 A	0.1 à 1 A	1 à 2 A	2 à 2.4 A
MN 73				
Intrinsic error	≤ 5 % (1)	≤ 3 % (2)	≤ 1 %	

(1) + 2 mV (2) + 1 mV

4.4 Conditions of use

The miniclamps must be used in the following conditions, in order to comply with user safety and metrological performance requirements.

⚠

4.4.1 Overloads

Limit measuring time above 200 A.

Intensity	I ≤ 200 A~	200 A~ < I ≤ 240 A~
Operation	Permanent (1)	10 min. ON followed by 30 min. OFF

(1) With a frequency F < 1kHz and a peak factor Fc < 3

4.4.2 Frequency

- Use : 40 Hz to 10 kHz
  Limit to 1 kHz if permanent operation at 200 A~.

4.4.3 Environmental conditions

- Indoor use
- Altitude: < 2000 m
- Climatic conditions: -10 to +55° C and RH < 85%
- Avoid splashing with water

4.5 Dimensions and weight

- Overall dimensions : 135 x 50 x 30 mm
- Weight: approx. 180 g
- Jaw opening : 21 mm
- Open jaw height : 69 mm
- Max. clamping capacity : Ø 20 mm cable or 20 x 5 mm bar.

4.6 Compliance with international norms

4.6.1 Electrical safety (as per IEC 1010-1 and 1010-2-032)

- Dual insulation
- Installation category III
- Pollution level 2
- Operating voltage 600

4.6.2 EC-compliant electromagnetic compatibility

- Emissivity and susceptibility as per EN 61326-1.

4.6.3 Mechanical protection

- IP40 protection rating (as per IEC 529) with jaws closed and IP30 with jaws open.

4.6.4 Auto-extinction

- Jaws : V0 (as per UL 94)

5. MAINTENANCE

Only use specified spare parts for maintenance purposes. The manufacturer cannot accept any responsibility for accidents occurring following repairs carried out outside its after-sales department or approved maintenance network.

5.1 Cleaning

The clamp must not be clamped to a cable and must be disconnected from the measuring device. Do not splash water onto the clamp.

- Keep the jaw gap perfectly clean. Remove dust with a dry, soft cloth. Wipe the iron jaws from time to time with an oil soaked cloth, in order to prevent rust from forming.
- Clean the unit with a cloth and a little soapy water. Rinse with a damp cloth. Then dry quickly with a cloth or pulsed air at 70°C max.

5.2 Metrological verification

- **It is essential that all measuring instruments are regularly calibrated.** For checking and calibration of your instrument, please contact our accredited laboratories (list on request) or the Chauvin Arnoux subsidiary or Agent in your country.
- **Repairs under or out of guarantee**
  Please return the product to your distributor.

6. WARRANTY

Our guarantee is applicable for **twelve months** after the date on which the equipment is made available (extract from our General Conditions of Sale, available on request).