AC Current Probe
Model MN02
User Manual

DESCRIPTION

The **Model MN02** (Cat. #2129.20) is a small, compact AC current probe and is designed to meet the most stringent demands in industry and electrical contracting. This instrument meets the latest safety and performance standards. The probe has a measurement range up to 100 Arms which makes it a perfect tool for measurement with DMMs and recorders. The **Model MN02** is compatible with any AC ammeter, multimeter, or other current measurement instrument with an input impedance lower than 10 Ω. To achieve the stated accuracy, use the probe with an ammeter with an accuracy of 0.75 % or better.

WARNING

These safety warnings are provided to ensure the safety of personnel and proper operation of the instrument.

- Read the instruction manual completely and follow all the safety information before attempting to use or service this instrument.
- Use caution on any circuit: high voltages and currents may be present and may pose a shock hazard.
- Read the Safety Specifications section prior to using the current probe. Never exceed the maximum voltage ratings given.
- Safety is the responsibility of the operator.
- ALWAYS connect the current probe to the display device before clamping the probe onto the sample being tested.
- ALWAYS inspect the instrument, probe, probe cable, and output terminals prior to use. Replace any defective parts immediately.
- NEVER use the current probe on electrical conductors rated above 600 V in overvoltage category III (CAT III). Use extreme caution when clamping around bare conductors or bus bars.

INTERNATIONAL ELECTRICAL SYMBOLS


This symbol signifies that the current probe is protected by double or reinforced insulation. Use only factory-specified replacement parts when servicing the instrument.


This symbol signifies **CAUTION!** and requests that the user refer to the user manual before using the instrument.


This symbol signifies that this is a type A current sensor and that application near and removal from **HAZARDOUS LIVE** conductors is permitted.


This symbol signifies a voltage limiting circuit.

DEFINITION OF MEASUREMENT CATEGORIES (CAT)

CAT IV: For measurements performed at the primary electrical supply (< 1000 V), such as primary overcurrent protection devices, ripple control units, or meters.

CAT III: For measurements performed in the building installation at the distribution level, such as hardwired equipment in fixed installation or circuit breakers.

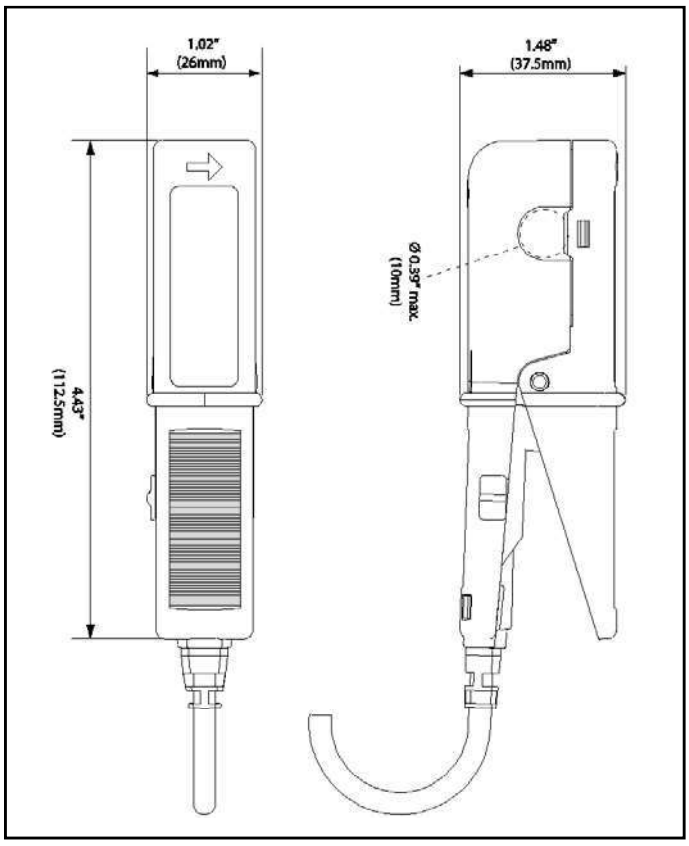
CAT II: For measurements performed on circuits directly connected to the electrical distribution system, such as measurements on household appliances or portable tools.

AEMC INSTRUMENTS
CHAUVIN ARNOUX GROUP

RECEIVING YOUR SHIPMENT

Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage.

CURRENT PROBE - MN02 DRAWING



ELECTRICAL SPECIFICATIONS

Nominal Range: 100 A

Measurement Range:

50 mA to 100 A (1 Ω load)
50 mA to 90 A (10 Ω load)

Transformation Ratio: 1000:1

Output Signal: 1 mA/A from (1 to 10) Ω

Accuracy and Phase Shift*:
Accuracy 1 Ω load: ≤ 1 % Reading ± 0.02 A
Accuracy 10 Ω load: ≤1.5 % Reading ± 0.01 A
Phase Shift: < 3 ° with 1 Ω load
< 6 ° with 10 Ω load

**Reference conditions: (18 to 28) °C, (20 to 75) % RH, external magnetic field < 40 A/m, (48 to 65) Hz sine wave, distortion factor less than 1 %, no DC component, no external current carrying conductor, test sample centered.*
Load impedance 1 Ω or 10 Ω.

Overload: 170 A for 10 min ON, 30 min OFF

Frequency Range: (48 to 10,000) Hz

Open Secondary Voltage: ≤ 30 V

Working Voltage: 600 Vrms

Common Mode Voltage: 600 Vrms

Influence of Adjacent Conductor:
< 2 mA/A at 50 Hz

Influence of Conductor Position in Jaw:
< 0.1 % of mA output at 50/60 Hz

Influence of Frequency:
< 2 % of mA output from (65 to 500) Hz

Influence of Temperature: ≤ 0.2 % per 10 °K

Influence of Humidity (10 to 90% RH):
≤ 0.1 % of mA

MECHANICAL SPECIFICATIONS

Operating Temperature:
(14 to 122) °F (-10 to +50) °C

Storage Temperature:
(-40 to 176) °F (-40 to +80)°C

Maximum Cable Diameter:
One Ø 0.39 in (10 mm)

Case Protection: IP 40 (IEC 529)

Drop Test:
Test per IEC 68-2-32:
1.0 m drop on 38 mm of Oak on concrete

Mechanical Shock: Test per IEC 68-2-27

Vibration: Test per IEC 68-2-6

Dimensions:
(4.43 x 1.48 x 1.02) in (112.5 x 37.5 x 26) mm

Weight: 180 g (6.5 oz)

Polycarbonate Material:
Jaws: Red Polycarbonate
Case: Dark Polycarbonate

Opening Operations - Life: > 50,000

Output:
Double/reinforced insulated 5 ft (1.5 m) lead with safety 4 mm banana plug

Altitude: < 2000 m

Indoor use only

SAFETY SPECIFICATIONS

Electrical:
Conforms to IEC 1010-2-32. ed. 2 2003

Common Mode Voltage:
300 V CAT IV, 600 V CAT III,
Pollution Degree 2

Electromagnetic Compatibility:
EN61326-1 (ed. 97)+A1 (ed. 98):
transmission and immunity in an industrial site

ORDERING INFORMATION

AC Current Probe MN02..... **Cat. #2129.20**

Accessories:

Banana plug adapter
(to non-recessed plug)..... **Cat. #1017.45**

OPERATION

Please make sure that you have already read and fully understand the WARNING section on page 1.

Making Measurements with the AC Current Probe Model MN02

- Connect the black lead of the current probe to “common” and the red lead to the AC current input on your DMM or other current measuring instrument. Select the appropriate current range (400 mA_{AC} range). Clamp the probe around the conductor to be tested. If the reading is less than 400 mA, select the lower range until you obtain the best resolution. Read the value display on the DMM and multiply it by the probe ratio (1000/1). If the reading = 0.098 A, the current flowing through the probe is 0.098 A x 1000 = 98 A_{AC}.
- For best accuracy, avoid taking measurements in the proximity of other conductors if possible. The other conductors may create noise that will affect the accuracy of the measurement.

Tips for Making Precise Measurements

- When using a current probe with a meter, it is important to select the range that provides the best resolution. Failure to do this may result in measurement errors.
- Make sure that probe jaw mating surfaces are free of dust and contamination. It is critical for power measurement. Contaminants cause air gaps between the jaws, which increases the phase shift between primary and secondary.

MAINTENANCE

Warning

- For maintenance, use only original replacement parts.
- To avoid electrical shock, do not attempt to perform any service on the device unless you are qualified to do so.
- To avoid electrical shock and/or damage to the instrument, do not allow water or other foreign agents to come into contact with the probe.

Cleaning

To ensure optimum performance, it is important to keep the probe jaw mating surfaces clean at all times. Failure to do so may result in error in readings. To clean the probe jaws, use very fine sand paper (fine 600) to avoid scratching the jaw, and then gently clean with a soft, oiled cloth.

REPAIR AND CALIBRATION

You must contact our Service Center for a Customer Service Authorization number (CSA#). This will ensure that, when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container.

Ship To:

NOTE: You must obtain a CSA# before returning any instrument.

TECHNICAL AND SALES ASSISTANCE

If you are experiencing any technical problems, or require any assistance with the proper operation or application of your instrument, please call, e-mail or fax our technical support team:

Contact:

LIMITED WARRANTY

The current probe is warranted to the owner for a period of two years from the date of original purchase against defects in manufacture. This limited warranty is given by AEMC® Instruments, not by the distributor from whom it was purchased. This warranty is void if the unit has been tampered with, abused, or if the defect is related to service not performed by AEMC® Instruments.

Full warranty coverage and product registration is available on our website at:

~~Please print the online Warranty~~ Coverage Information for your records.