

AC Current Probe Model MN375

User Manual

DESCRIPTION

The MN375 (Cat. #2115.41) is the latest in compact AC current probes. Designed to meet the most stringent demands in industry and electrical contracting, it also meets the latest safety and performance standards. This probe has a measurement range up to 10 Arms and is compatible with any AC voltmeter, multimeter, or other voltage measurement instrument that has the following features: Range and resolution capable of displaying 100 mV of output per amp of measured current; Voltmeter accuracy of 0.7 % or better to take full advantage of the accuracy of the probe; Input impedance of $\geq 1 \text{ M}\Omega$.

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: Potentially 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 250 V. 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.

DEFINITION OF MEASUREMENT CATEGORIES (CAT)

CAT IV corresponds to measurements performed at the primary electrical supply ($< 1000 \text{ V}$).

Example: primary overcurrent protection devices, ripple control units, and meters.

CAT III corresponds to measurements performed in the building installation at the distribution level.

Example: hardwired equipment in fixed installation and circuit breakers.

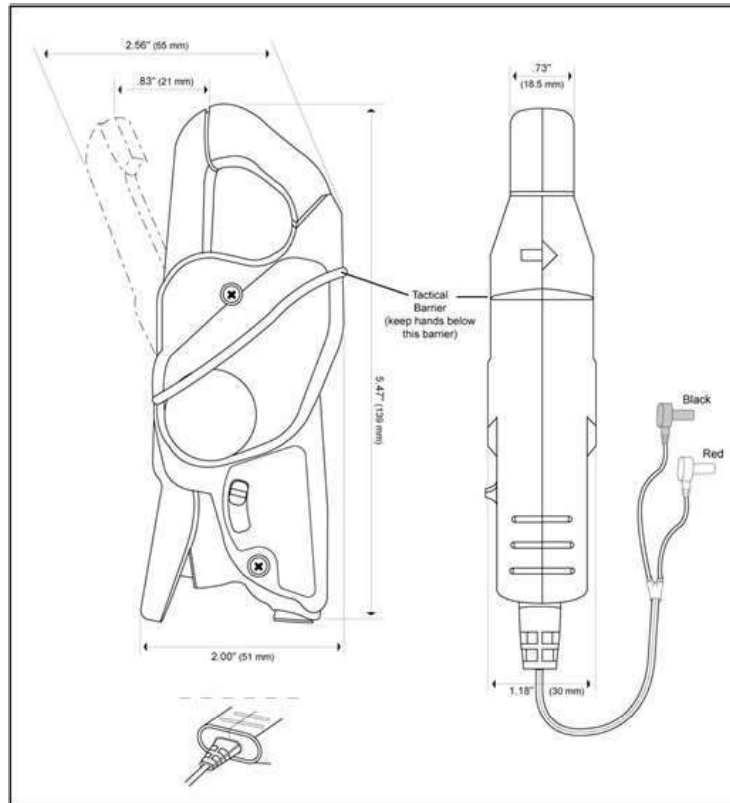
CAT II corresponds to measurements performed on circuits directly connected to the electrical distribution system.

Example: measurements on household appliances and portable tools.

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.





ELECTRICAL SPECIFICATIONS

Nominal Range: 10 A

Measurement Range: 0.1 to 10 A

Transformation Ratio: Voltage output

Output Signal: 100 mV/A (1 V at 10 A_{AC})

Accuracy and Phase Shift*:

Accuracy Shift:

0.1 to 1 A: 1 % Reading ± 2 mV
1 to 10 A: 1 % Reading ± 1.5 mV

Phase Shift:

1 to 5 A: ≤ 1 ° @ 60 Hz
5 to 10 A: ≤ 1.5 ° @ 60 Hz

(*Reference conditions: (20 to 26) °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: 1MΩ.

Frequency Range: (40 to 3) kHz

Limit Operating Conditions:

20 A permanently to 1 kHz

Crest Factor:

3 @ 10 Arms with an error (due to CF) of 3 %

Working Voltage:

600 Vrms

Common Mode Voltage:

600 Vrms

Influence of Adjacent Conductor:

< 15 mA/A at 50 Hz

Influence of DC on AC signal:

DC Current < 20 A, < 5 %

Influence of Conductor Position in Jaw:

0.5 % of mV output @ 50/60 Hz

Influence of Frequency:

40 Hz to 1 kHz: 3 % of mV output

1 kHz to 3 kHz: 10 % of mV output

Influence of Temperature:

≤ 150 ppm/°K, or 0.15 % of mV output per 10 °K

Influence of Humidity (10 - 90 % RH):

≤ 0.2 % of mV output per 10 °K @ (18 to 28)°C

MECHANICAL SPECIFICATIONS**Operating Temperature:**

(14 to 131) °F (-10 to 55) °C

Storage Temperature:

(-40 to 158) °F (-40 to 70) °C

Operating Relative Humidity:

(10 to 35) °C 85 % RH
(without roll-off above 35 °C)

Maximum Cable Diameter:

One Ø 0.78 in (20 mm), bus bar (20 x 5) mm

Cable Protection:

IP 40 (IEC 526)

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:

(5.47 x 2.00 x 1.18) in (139 x 51 x 30) mm

Weight:

6.5 oz (180 g)

Polycarbonate Material:

Jaws: Polycarbonate with 10 % fiberglass charge,
Red UL 94 V)

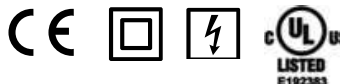
Case: Polycarbonate 920 A Gray

Opening Operations - Life:

> 50,000

Output:

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

SAFETY SPECIFICATIONS**Electrical:**

Double insulation or reinforced insulation between
the primary or secondary and the outer case of the
handle conforms to IEC 1010-2-32, 600 V CAT III,
Pollution Degree 2.

Common Mode Voltage:

600 V

Electromagnetic Compatibility:

Emission and immunity in an industrial environ-
ment according to EN 61326-1.

ORDERING INFORMATION

AC Current Probe MN375.....Cat #2115.41

Accessories:

Banana plug adapter
(to nonrecessed 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 MN375.

- Connect the black lead of the current probe to "common" and the red lead to the AC voltage input on your DMM or other voltage-measuring instrument. The AC current probe has an output of 100mV/A. This means that for 10A AC in a conductor around which the probe is clamped, 1 V AC will come out of the probe leads to your DMM or instrument. Select the range which corresponds to the measured current. If the current magnitude is unknown, start with the highest range and work down until the appropriate range and resolution are reached. Clamp the probe around the conductor. Take the reading on the meter and multiply it by 10 to obtain the measured current (e.g. 160 mV reading = 160 x 10 = 1,600 mA or 1.6 A).
- For best accuracy, avoid if possible, the proximity of other conductors which may create noise.

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. Contaminants cause air gaps between the jaws, increasing the phase shift between primary and secondary. It is very critical for power measurement.

MAINTENANCE

Warning

- For maintenance use only original factory replacement parts.
- To avoid electrical shock, do not attempt to perform any servicing 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.



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 use or application of this instrument, please contact our technical hotline.

LIMITED WARRANTY

The instrument 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.

Please print the online Warranty Coverage Information for your records.