AC Current Probe
Model MD305

User Manual

DESCRIPTION

The AEMC® Instruments AC Current Probe **Model MD305** (Catalog #1201.36) is designed for use in industrial environments. The hook shaped jaws enable the user to pry into or hook onto cables (will accept 2 x 500 MCM) or smaller bus bars. This device is compatible with any AC Ammeter, multimeter, or other current measurement instruments with an input impedence lower than 5 Ω. To achieve this stated accuracy, use the MD305 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 respondibility 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 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.

DEFINITION OF MEASUREMENT CATEGORIES (CAT)

CAT IV: Corresponds to measurements performed at the primary electrical supply (< 1000 V).
Example: primary overcurrent protection devices, ripple control units, and meters.

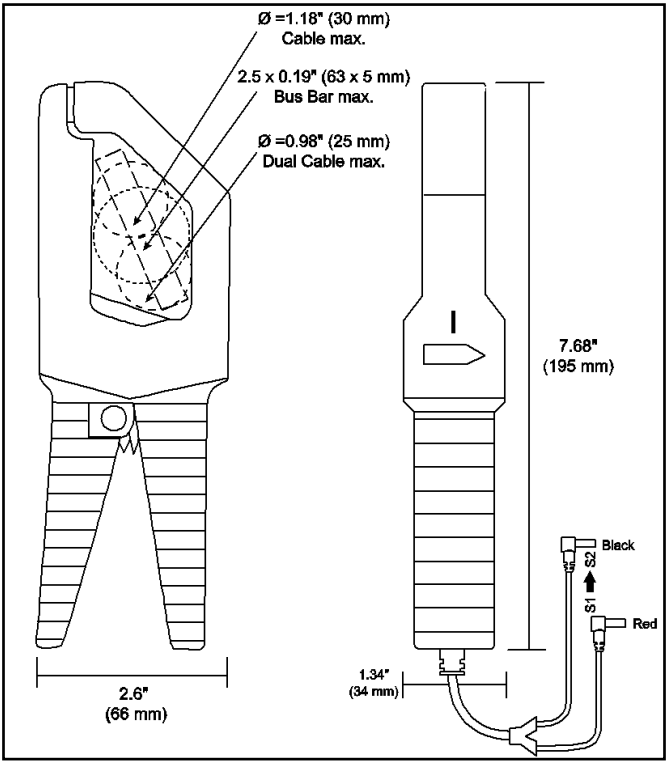
CAT III: Corresponds to measurements performed in the building installation at the distribution level.
Example: hardwired equipment in fixed installation and circuit breakers.

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 with a detailed description of any damage immediately.

CURRENT PROBE - MD305 DRAWING



ELECTRICAL SPECIFICATIONS

Current Range:
1 to 600 AAC

Transformation Ratio:
1000:1

Output Signal:
1 mA AC/AAC

Overload:
700 A for 10 min

Accuracy*:

Primary Current	25 A	100 A	250 A; 500 A	600 A
Accuracy %	3 %	1.5 %	1 %	2 %
Phase Shift	3 °	1.5 °	1 °	1 °

600 A for 20 min max

(*Referenced conditions: 23 °C ± 5 °K, (20 to 75) % RH, external magnetic field < 40 A/m, no DC component, no external current carrying conductor, test sample centered.) 5 Ω load.

Frequency Range:
(40 to 1000) Hz
(error: add 2 % to ref.)

Load Impedence:
5 Ω max non-inductive

Open Secondary Voltage:
Limited to 10 V peak max

Working Voltage:
600 VRMS

Common Mode Voltage:
600 VRMS

Influence of Adjacent Parallel Conductor:
< 30 m A/A at 50 Hz

Influence of Conductor in Jaw Opening:
< 1 %

MECHANICAL SPECIFICATIONS

Operating Temperature:
(-5 to 122) °F (-15 to 50) °C

Storage Temperature:
(-40 to 185) °F (-40 to 85) °C

Influence of Temperature:
< 0.1 % per 10 °K

Altitude:
Operating: (0 to 2000) m
Non-operating: (0 to 12,000) m

Jaw Opening:
1.3 in (33 mm)

Maximum Conductor Size:
1.18 in (30 mm)

Maximum Bus Bar Size:
1.48 x 0.20 in (63 x 5 mm)

Envelope Protection:
IP 20 (IEC 529)

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

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

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

Polycarbonate Material:
Handles: 10 % fiberglass charged polycarbonate UL 94 V0

Dimensions:
2.6 x 7.68 x 1.34 in (66 x 195 x 34 mm)

Weight:
14.82 oz (420 g)

Colors:
Dark gray handles

Output:
Double insulated 5 ft (1.5 m) lead with safety banana plugs

SAFETY SPECIFICATIONS

CE

Electrical:
Double insulation or reinforced insulation between the primary or secondary and the outer case of the handle conforms to IEC 1010-2-32.

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

Electromagnetic Compatibility:
EN 50081-1 Class B
EN 50081-2 Electrostatic discharge
IEC 1000-4-2
Radiated field IEC 1000-4-3
Fast transients IEC 1000-4-4
Magnetic field at 50/60 Hz IEC 1000-4-8

ORDERING INFORMATION

Current Probe MD305 .....Cat #1201.36

Accessories:

Adapter – 4 mm non-insulated for Safety Leads.....**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 MD305

- Connect the black and red terminals to the Ampere AC range of your DMM or current measuring instrument. Select the appropriate current range (2 Aac range). Clamp the probe around the conductor with the arrow pointing toward the load. If the reading is less than 200 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 = 0.459 A, the current flowing through the probe is 0.459 A x 1000 = 495 Aac.
- 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, please select the range that provides the best resolution. Failure to do this may result in measurement errors.
- Make sure that the probe jaw mating surfaces are free from 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.

(Or contact your authorized distributor)

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, fax or e-mail our technical support team:

LIMITED WARRANTY

The current probe is warrantied 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.