

OPERATING INSTRUCTIONS

for

AMPROBE®

Volt-Ohm-Milliammeter

Models

AM-1E, AM-2E

and AM-2EDP*

- See PRECAUTIONS FOR PERSONAL AND INSTRUMENT PROTECTION on page 5.
- See Limited Warranty on page 2.
- See pages 6 and 11 for Fuse Protection.

** Model AM-2EDP is drop-proof up to 5 feet.*



LIMITED WARRANTY

Congratulations! You are now the owner of an AMPROBE® instrument. It has been quality crafted according to quality standards and contains quality components and workmanship. This instrument has been inspected for proper operation of all of its functions. It has been tested by qualified factory technicians according to the long-established standards of AMPROBE INSTRUMENT.

Your AMPROBE instrument has a limited warranty against defective materials and/or workmanship for one year from the date of purchase provided that, in the opinion of the factory, the instrument has not been tampered with or taken apart.

Should your instrument fail due to defective materials, and/or workmanship during the one-year warranty period, return it along with a copy of your dated bill of sale which must identify instrument by model number and serial number.

For your protection, please use the instrument as soon as possible. If damaged, or should the need arise to return your instrument, it must be securely wrapped (to prevent damage in transit) and sent prepaid via Air Parcel Post insured or UPS where available to:

SPECIFICATIONS MODEL AM-1E

Voltage Ranges:

AC: 0-30/150/300/600 (10,000 ohms per volt)

DC: 0-3/15/30/300/600 (30,000 ohms per volt)
(see page 10 for extending range of instrument to measure up to 15,000VAC/DC)

Resistance Ranges:

R x 1 200Ω (5Ω mid-scale)

R x 10 2KΩ (50Ω mid-scale)

R x 100 20KΩ (500Ω mid-scale)

R x 1K 200KΩ (5KΩ mid-scale)

Current Ranges:

0-30/150 mA at 300 mV

DC Millivolt Ranges:

0-60/1200 at 50 μA

Temperature Range:

+ 70°F to 1200°F. Use optional accessory TC-3 thermocouple (not supplied)

Accuracy: ± 3% of F.S. on DC
± 4% of F.S. on AC

Ohmmeter Accuracy: ± 3% of arc

Temperature: ± 2% F.S.

Ohmmeter Battery: Four Type "AA"
(not supplied)

SPECIFICATIONS MODEL AM-2E, AM-2EDP

Voltage Ranges:

AC: 0-10/50/125/250/1000 (10,000 ohms per volt)

DC: 0-0.5/2.5/10/25/125/250/1000 (30,000 ohms per volt)

Resistance Ranges:

R x 1 500 Ω (20 Ω mid-scale)

R x 10 5K Ω (200 Ω mid-scale)

K Ω 1 megohm (10K Ω mid-scale)

Current Ranges:

DC: 0-25/250 mA, 0-50 μ A

Battery Test Range: 1.8VDC

Temperature Range:

Low: -50° to +100°F (K Ω range)

High: 0 to +250°F (R x 10 range)

Accuracy: \pm 3% of F.S. on all ranges except 10VAC range, which is \pm 4% F.S.

Temperature: \pm 3% of arc

Ohmmeter Battery: One type "AA" (not supplied)

PRECAUTIONS FOR PERSONAL AND INSTRUMENT PROTECTION

- 1) Read these instructions thoroughly and follow them carefully.
- 2) In many instances you will be working with dangerous levels of voltage and/or current; therefore, it is important that you avoid direct contact with any uninsulated, current-carrying surfaces. Appropriate insulating gloves and clothing should be worn.
- 3) Before connecting or disconnecting the meter to or from the circuit to be tested, turn off all power to the circuit.
- 4) Before applying test leads to circuit under test, make certain that leads are plugged into proper jacks and switches are set to proper range and function.
- 5) Before using any electrical instruments or tester for actual testing, the unit should be checked on a low energy high impedance source. **Do not use power distribution lines or any other high energy sources.**
- 6) If the instrument should indicate that voltage is not present in circuit, do not touch circuit until you have checked to see that all instrument switches are in proper position and instrument has been checked on a known live line.
- 7) Make certain no voltage is present in circuit before connecting ohmmeter to circuit.
- 8) When not in use, set selector switch to "OFF" position.

continued

IMPORTANT: Plug in only one accessory probe or set of test leads at any one time, except as directed.

IMPORTANT: Failure to follow these instructions and/or observe the above precautions may result in personal injury and/or damage to the instrument and/or accessories.

FUSE PROTECTION

All ohms and milliamp ranges of the AM-1E, AM-2E, and AM-2EDP are fuse protected to withstand the momentary misapplication of up to a maximum of 220 volts.

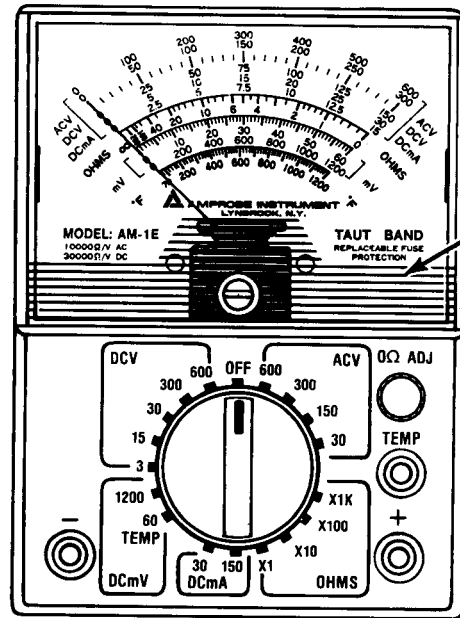
If you should accidentally apply voltage while on these ranges, disconnect the leads from the circuit as quickly as possible. Check instrument operation on that range by applying the proper input. If instrument does not operate properly on that range, remove the back cover of the instrument (see page 12). Check fuse. If it is blown, replace with appropriate fuse (see page 11).

ACCURACY

1. For greatest accuracy, the pointer should be set on the zero line. Use zero adjusting screw, if necessary.
2. When using meter, place it panel side up on a flat non-metallic surface.
3. Take reading on the range on which the reading is as close to full scale as possible.

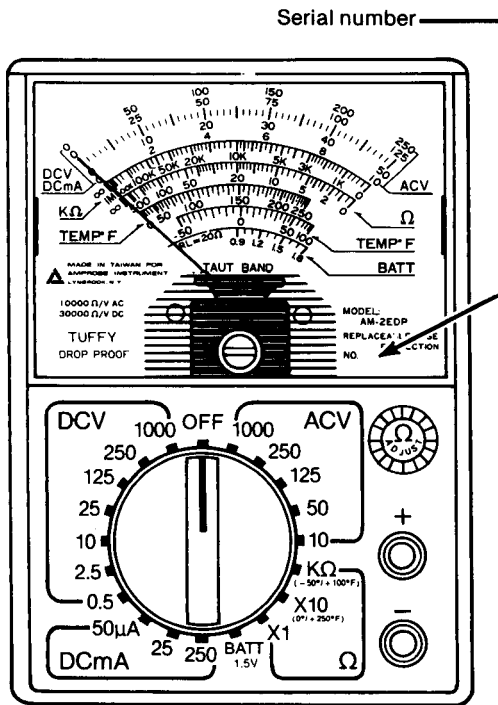
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Serial number



AM-1E

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AM-2EDP

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OPERATION

Before using instrument, read "Precautions for Personal and Instrument Protection" on page 5.

DC/AC Voltage Ranges:

On AM-1E all voltage measurements are taken directly on the appropriate 15/30/150/300/600 scale. When using 3VDC range, take reading on 30 volt scale and divide reading by 10.

On AM-2E and AM-2EDP all voltage measurement readings are taken on the 10/50/125/250 scales. When using 0.5/2.5/25 and 1000V ranges, use appropriate scale and multiplier.

AC Voltage Measurement: AM-1E, AM-2E, AM-2EDP

1. Set the selector switch to appropriate AC voltage range. When voltage is unknown, use the highest voltage range.
2. Plug the Black test lead into "-" jack.
3. Plug the Red test lead into the "+" jack.
4. Place one test prod on each side of the AC Voltage.

DC Voltage Measurement: AM-1E, AM-2E, AM-2EDP

1. Set the selector switch to appropriate DC voltage range. When voltage is unknown, use the highest voltage range.
2. Plug the Black test lead into the "-" jack.
3. Plug the Red test lead into the "+" jack.
4. If negative and positive sides of the circuit to be tested are known:
 - a) connect the black test prod to the negative side of the circuit.

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b) connect the red test prod to the positive side of the circuit.

If the negative and positive sides of the circuit are not known:

- a) connect the black and red prods to circuit.
 - b) If meter deflects to the left, reverse the black and red prods.
5. If meter indication is in lower half of scale and falls within the range of a lower scale, reset selector switch to the lower range.

High Voltage Measurement for AM-1E only:

1. To use accessory high voltage probe HV-2 with AM-1E, unscrew handle from main probe and insert correct resistor (not supplied with probe) with the spring on the resistor toward the handle.
 - a) For 15,000VDC, use resistor no. HVR-1ED
For 15,000VAC, use resistor no. HVR-1
2. Screw handle back onto probe.
3. Set instrument range switch to:
 - a) 15VDC range if measuring 15KVDC and multiply reading by 1000
 - b) 150VAC range if measuring 15KVAC and multiply readings by 100
4. Plug instrument's black voltage test lead into " - " jack on AM-1E and fasten other end of lead to "ground" of circuit being tested.
5. Plug HV-2 probe (with correct resistor installed) into the " + " jack.
6. With your hand behind the protective discs on the handle of the probe, touch the probe tip to the circuit under test. Take the reading on the correct scale and multiply it by the proper factor. (See 3a and b above).

Note: *Tip of HV-2 Probe is replaceable.*

Current Measurements:

A milliampere is one thousandth (1/1000) of an ampere and may be written as 1 mA or 0.001 ampere.

A microampere is one millionth (1/1,000,000) of an ampere and may be written as 1 μ A or 0.000001 ampere. Meter must be connected in series with the circuit under test.

DC Current Measurements: AM-1E, AM-2E, AM-2EDP

- 1) Set the selector switch to appropriate range. When current is unknown use the highest current range.
- 2) Plug black test lead into the " - " jack.
- 3) Plug red test lead into the " + " jack.
- 4) Using the red and black test leads connect the meter in series with the circuit under test.
- 5) If meter deflects to the left, reverse the red and black test prods.
- 6) If meter indication is in lower half of scale and falls within the range of a lower scale, reset selector switch to the lower range.

FUSE/BATTERY INSTALLATION

Model AM-1E

The ohmmeter is powered by four 1.5V type "AA" batteries. This instrument uses an 8AG 1AMP fast blow fuse, cat. no. 8AG-361.

Model AM-2E, AM-2EDP

The ohmmeter is powered by one 1.5V type "AA" battery. These instruments use a 8AG 0.5 amp fast blow fuse, cat. no. 8AG-361.5.

To install (or replace) fuse or battery, remove instrument back cover by removing large plastic screw. Observe proper polarity when installing battery. To replace back cover, line up edges and tighten screw.

Resistance Measurements:

- 1) Set the selector switch to appropriate range. When resistance is unknown use the highest resistance range (K Ω).
- 2) Plug the black test lead into the “-” jack.
- 3) Plug the red test lead into the “+” jack.
- 4) Short the test leads by touching them together.
- 5) With leads shorted together observe pointer. It should read “0” at the righthand end of the ohms scale.
- 6) If pointer does not indicate “0”, use ohmmeter zero adjust knob to line up with “0” on ohms scale. If pointer cannot be brought up to “0”, replace battery.
- 7) Separate the test leads.
- 8) Connect test leads across the resistance to be measured. Caution: Resistance to be measured must be disconnected from all power before applying ohmmeter test leads.
- 9) AM-2E, AM2E-DP only: For RX1 and K Ω ranges, read scale directly. For RX10 range, take reading on 0-500 ohm scale and multiply reading by 10.
- 10) AM-1E only: Take reading on ohms scale and multiply reading by the multiplication factor indicated by the selector switch (X1, X10, X100, X1K).
- 11) If there is little or no pointer deflection from “infinity” (∞ lefthand end of scale), reset selector switch to a higher range to get a

greater deflection. The best readability on an ohmmeter range is between midscale and zero ohms. **Note:** when switching ranges, readjust pointer to “0” ohms as outlined above.

Temperature Measurement with AM-2E, AM-2EDP:

Temperatures of -50° to $+250^{\circ}$ F may be measured directly on the two ranges of -50° to $+100^{\circ}$ F and 0° to $+250^{\circ}$ F.

- 1) Set selector switch to appropriate range.
- 2) Plug in test leads and follow steps 4, 5, and 6 under resistance measurements.
- 3) Remove test leads.
- 4) Plug temperature probe into “+” jack and “-” jack.
RBT-11B immersion probe
RBT-12B universal probe
RBT-13B air probe (max. temperature 150° F)
All for non-corrosive applications.
- 5) Place temperature probe tip in area where temperature is to be measured.
- 6) Read temperature on appropriate scale after meter indication appears to be stabilized.

Temperature Measurements with AM-1E:

Temperatures of $+70^{\circ}$ to $+1200^{\circ}$ F may be measured directly with the model AM-1E by using with thermocouple, cat. no. TC-3 which is available separately as an accessory item.

- 1) Set range switch to 60 DCmV range position.
- 2) Before plugging in the thermocouple, adjust meter pointer to room temperature on the temperature scale. This is done by means of the “Zero” adjust screw.
- 3) Insert thermocouple plug into “TEMP” jack.

- 4) Place metal ferrule of the thermocouple lead in area where temperature is to be measured. Use accessory clip adaptor TCC (not furnished) to fix location of thermocouple, if necessary.
- 5) Read temperature on black temperature scale after meter indication appears to be stabilized.

Battery Test AM-2E, AM-2EDP

- 1) Set selector switch to batt/1.5V position.
- 2) Plug the black test lead into the “-” jack.
- 3) Plug the red test lead into the “+” jack.
- 4) Touch red test lead to “+” terminal of battery and the black test lead to “-” end of battery.
- 5) Take reading on the special “BAT” scale.

Note: *In this test, the instrument puts a 20 ohm load on the battery.*