

**CAUTION:**

DO NOT exceed 15,000 volts AC or DC. This probe is for low energy high impedance sources only. DO NOT use on power distribution lines or any other high energy sources.

**PARTS LIST**

**Test leads:** MTL-18 for AM-16, AM-17, AM-18

**Fuse:** 6.3x25-2-12 for AM-18

6.3x25-10-12 for AM-18

**Battery:** 9 volt, MN-1604 for AM-17, AM-18.

2-AAA for AM-16, Part #912

**Optional Carrying Case:** SV-1

**H-16Y - Holster:** for AM-16 & AM-17

**H-18Y - Holster:** for AM-18

**SERVICE**

If the instrument fails to operate, check battery, fuse(s), leads, etc. and replace as necessary. If the instrument still does not operate, double check operating procedure as described in the instruction manual. If the instrument still malfunctions, place it with packing slip along with a brief description of the problem in sufficient cushioning material in a shipping carton. Be sure to indicate the serial number located on the back of the instrument. Amprobe is not responsible for damage in transit. Make certain your name and address also appears on the box as well as packing slip; ship prepaid via U.P.S. (where available) or Air Parcel Post insured to:

Service Division  
AMPROBE INSTRUMENT  
630 Merrick Road (use for U.P.S.)  
P.O. Box 329 (use for Parcel Post)  
Lynbrook, NY 11563-0329

Outside the USA, the local Amprobe representative will assist you.

Page 24

Ptd in Taiwan



Pt. No. 973751  
1/94

**OPERATING  
INSTRUCTIONS**

for

**AMPROBE®**

**Digital Multimeters**

**Models**

**AM-16**

**AM-17**

**AM-18**

---

**See "Precautions for Personal and  
Instrument Protection" on Page 3**

---

---

**See "Limited Warranty" on Page 2**

---

ISO-9002 SYSTEM CERTIFIED



**AMPROBE INSTRUMENT®**  
DIVISION OF CORE INDUSTRIES INC., LYNBROOK, NEW YORK 11563

## LIMITED WARRANTY

Congratulations! You are now the owner of an AMPROBE® instrument. It has been crafted according to the highest standards of quality 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 the seal is unbroken or, in the opinion of the factory, the instrument has not been opened, 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 the instrument by model number and serial number.***

**IMPORTANT:** For your protection, please use the instrument as soon as possible. If damaged, or should the need arise to return your instrument, place it in a shipping carton packed with sufficient cushioning material. It must be securely wrapped. Amprobe is not responsible for damage in transit. Be sure to include a packing slip (indicating model and serial number) along with a brief description of the problem. Make certain your name and address appears on the box as well as packing slip.

Ship prepaid via Air Parcel Post insured or U.P.S. (where available) to:

Service Division  
AMPROBE INSTRUMENT  
630 Merrick Road (use for U.P.S.)  
P.O. Box 329 (use for Parcel Post)  
Lynbrook, NY 11563-0329

Outside the U.S.A. the local Amprobe representative will assist you. Above limited warranty covers repair and replacement only and no other obligation is stated or implied.

## 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, clothing and eye protection should be worn.
- 3) To avoid electrical shock to the user and/or damage to the instrument, do not apply more than 1000V between any terminal and ground.
- 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) When measuring current using the mA or 10A input: Before connecting or disconnecting the meter to or from the circuit to be tested, turn off all power to the circuit.
- 7) Do not attempt to measure a voltage unless you are already certain that the voltage is below 600 VAC or 1000 VDC. Do not use the 200 mV range unless you are already certain that the voltage is below 500V (AC or DC).
- 8) 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.
- 9) Make certain no voltage is present in circuit before connecting ohmmeter to circuit.

**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.

## SAFETY

This Instruction Manual has warnings and safety precaution information which must be followed in order to ensure safe operating conditions.

### CAUTION

To avoid damage to the meter:

- 1) Disconnect the test leads from circuit under test before changing functions.
- 2) Never connect instrument to a voltage source with the rotary switch in the Ohms position.
- 3) Always use the correct replacement fuse. Check manual for proper fuse rating.

## INTRODUCTION

Amprobe's Model's AM-16, AM-17 and AM-18 Digital Multimeters are designed for use in the field, laboratory and the home. These compact instruments give the user all the job rated functions to get the job done.

In addition to measuring Volts, Ohms and Amps, etc. some models can measure capacitance, perform diode and continuity tests.

The units are equipped with a tilt stand for ease of readability and a protective holster with built in test probe holders.

Model	DCV	ACV	DCA	ACA	CAP	+	-	Ohms
AM-16	✓	✓				✓	✓	✓
AM-17	✓	✓			✓	✓	✓	✓
AM-18	✓	✓	✓	✓	✓	✓	✓	✓

## Unpacking and Inspection of Contents

Included with each Multimeter should be the following items:

1. Two test leads; one black and one red.
2. Instruction booklet.
3. Protective holster.

## SPECIFICATIONS

Type of Display: 3 1/2 digit, 2000 count

Ranging: Autoranging/Manual

Automatic Polarity Indication: "—" display for negative input.

Overload Indication: LCD displays "1" or "-1" blinks

Auto Zero on all Ranges

Low Battery Indication: Battery replacement is required when LCD displays 

Sampling Rate: 2 times/sec.

Operating Temperature & Humidity: 0° to 50°C  
(32°F to 122°F) @ 80%RH

Storage Temperature & Humidity: -20°C to 60°C  
(-4°F to 140°F) @ 80% RH

Dimensions with Holster: (W x L x H)

AM-16 – 3.15" x 6.50" x 1.42"  
(8.0cm x 16.5cm x 3.6cm)

AM-17 – 3.15" x 6.50" x 1.42"  
(8.0cm x 16.5cm x 3.6cm)

AM-18 – 3.40" x 6.50" x 1.57"  
(8.7cm x 16.5cm x 4.0cm)

Weight with Holster:

AM-16 – 10.6 oz (300 gms)

AM-17 – 10.6 oz (300 gms)

AM-18 – 10.6 oz (300 gms)

**Battery Life:** Greater than 400 Hrs.  
**Power Source:** 9V battery. P/N (MN1604) AM-17,  
AM-18, 2 (AAA) AM-16 P/N (S912)  
**Auto-Power Off:** Model AM-17, AM-18 approximately  
30 minutes  
**Temp. Coefficient:**  $0.15 \times (\text{Spec. Acc'y}) / ^\circ\text{C}$ ,  
<18°C or >28°C  
**Case Breakdown Voltage:** 3000 VAC

**Circuit Protection:**

Micro-amp ( $\mu\text{A}$ ) and milliamp (mA) ranges are fuse protected up to 600 volts AC/DC maximum with a 6.3x25-2-12 two amp fuse. Do not use substitute fuses.

All resistance ranges are overload protected against momentary misapplication of up to maximum of 500 volts AC/DC for no longer than ten seconds.

The 10 ampere range is fuse protected up to 600 volts AC/DC maximum with an AMPROBE fuse Pt. No. 6.3x25-10-12, ten amp fuse. Do not substitute fuse.

**IMPORTANT: Use of instrument and/or accessories on circuits with higher voltages and/or currents than the indicated overload limits may result in personal injury and/or damage to the instrument and/or accessories.**

**DC Voltage:**

**AM-16**

200 mV Range:  $\pm 1.2\%$  rdg + 3 digits.  
2V, 20V, 200V, and 600V Ranges:  $\pm 0.8\%$  rdg + 2 digits.

**AM-17 & AM-18**

200 mV Range:  $\pm 0.8\%$  rdg + 2 digits.  
2V, 20V, 200V and 600V Ranges:  $\pm 0.5\%$  rdg + 2 digits.

**Resolution:** 0.1 mV to 1 V  
**Overload Protection:** 600 V  
**Input Impedance:** 10 M $\Omega$

**AC Voltage:** 50 Hz to 400 Hz  
**Ranges:** 2V, 20V, 200V, and 600V  
AM-16:  $\pm 1.9\%$  rdg + 6 digits  
AM-17, AM-18:  $\pm 1.5\%$  rdg + 4 digits  
**Resolution:** 1mV to 1 V  
**Input Impedance:** 10 M $\Omega$   
**Conversion Type:** Average Sensing, RMS calibrated  
**Overload Protection:** 600 VAC

**DC Current: AM-18 ONLY**

2mA, 200mA Ranges:  $\pm 1.0\%$  rdg + 2 digits,  
600mV RMS Burden  
**Resolution:** 1 $\mu\text{A}$ , 100 $\mu\text{A}$ .  
10A Range:  $\pm 2.5\%$  rdg + 3 digits, 900mV RMS Burden  
**Resolution:** 10mA

**AC Current: AM-18 ONLY**

50 Hz to 400 Hz  
2mA, 200mA Ranges:  $\pm 1.5\%$  rdg + 4 digits, 600mV  
RMS Burden  
**Resolution:** 1 $\mu\text{A}$ , 100 $\mu\text{A}$   
10A Range:  $\pm 2.9\%$  rdg + 5 digits, 900mV RMS  
Burden  
**Conversion Type:** Average sensing, RMS calibrated

**Resistance:**

Range: 200 $\Omega$ , 2K $\Omega$ , 20K $\Omega$ , 200K $\Omega$ , 2M $\Omega$ , 20M $\Omega$ .  
**Resolution:** 0.1 $\Omega$ , 1 $\Omega$ , 10 $\Omega$ , 100 $\Omega$ , 1K $\Omega$ , 10K $\Omega$ .  
**Accuracy:** 200 $\Omega$  range  $\pm 1.2\%$  rdg + 4 digits (AM-16)  
 $\pm 1.0\%$  rdg + 4 digits (AM-17, AM-18)  
2K $\Omega$ , 20K $\Omega$ , 200K $\Omega$ , 2M $\Omega$  ranges:  $\pm 1.0\%$  rdg + 2 digits (AM-16),  $\pm 0.8\%$  rdg + 2 digits (AM-17, AM-18)  
20 M $\Omega$  range:  $\pm 2.9\%$  rdg + 5 digits (AM-16),  $\pm 1.9\%$  rdg + 5 digits (AM-17, AM-18)  
200 $\Omega$  Range Open Circuit Test Voltage: 400 mV (AM-16), 3.3V (AM-17, AM-18)

2K $\Omega$  thru 20M $\Omega$  Ranges Open Circuit Test Voltage:  
 400mV (AM-16), 350 mV (AM-17, AM-18 low power),  
 660mV (AM-17, AM-18 high power).  
 Overload Protection: 600 VDC or RMS AC (AM-16),  
 550 VDC or RMS AC (AM-17, AM-18)  
 AM-17, AM-18 20 M $\Omega$  range - to measure resistance  
 from 2M $\Omega$  - 20M $\Omega$  ONLY.

#### Diode Check and Continuity Test:

AM-16: Diode Check -Max test current 0.5mA,  
 Max Open Circuit Voltage 1.5V  
 Continuity Check - <380 $\Omega$  buzzer will sound  
 Overload Protection - 600VDC/RMS AC max.  
 AM-17, AM-18: Diode Check - Max test current  
 1.5mA, Max Open Circuit  
 Voltage 3.3V  
 Continuity Check - <25 $\Omega$  to >200 $\Omega$   
 buzzer will sound  
 Overload Protection - 500VDC/RMS  
 AC max

#### Capacitance: (AM-17, AM-18 ONLY)

Ranges: 2 $\mu$ f, 20 $\mu$ f, 1000 $\mu$ F.  
 Resolution: 1nf, 10nf, 1 $\mu$ f.  
 Accuracy: (2 & 20 $\mu$ f ranges)  $\pm 1.9\%$  rdg + 5 digits at  
 >10% full scale  
 (1000  $\mu$ f)  $\pm 2.9\%$  rdg + 20 digits  
 Test Frequency: 2 $\mu$ f range - 320 Hz, 20 $\mu$ f range -  
 32Hz, 1000 $\mu$ f range - 16Hz.  
 Max. Test Voltage: 3.3V peak  
 Overload Protection: 500 VDC or RMS AC.

## INPUT TERMINALS AND CONTROLS

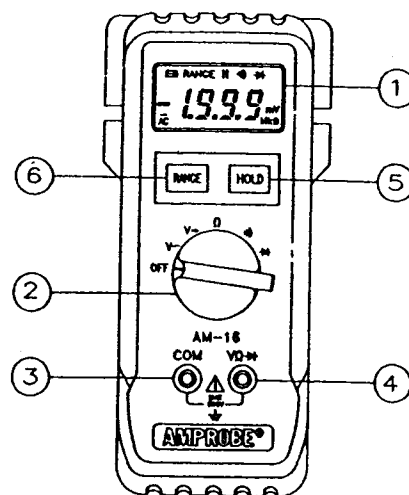


Fig. A. AM-16

- Digital Display** - The digital display has a 3½ digit LCD readout (maximum reading 1999), auto polarity, decimal point,  $\overline{\sim}$  AC, Hold and other annunciators.
- Rotary Switch** - Select the function and range as desired.
- COM Input Terminal** - Return terminal for all measurements.
- V $\Omega$ ~ Input Terminal** - Positive input connector for volts, ohms and diode.
- Hold Switch** - This switch is used to hold a measured value for all functions, the "H" annunciator will be displayed.
- Range Switch (Manual Range)** - "Range" switch is pushed to select manual ranging and to change ranges. Push "Range" switch to select appropriate range to be used. Push "Range" switch and hold for 2 seconds to return to autoranging.

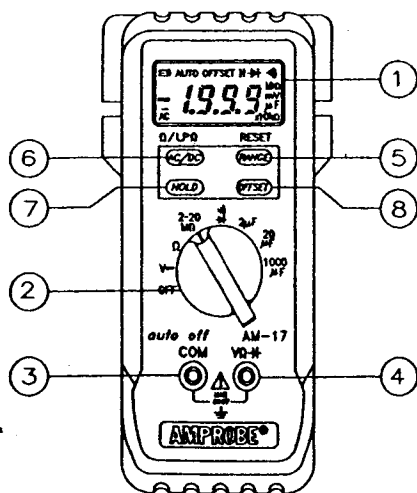


Fig. B. AM-17

1. **Digital Display** - The digital display has a 3 1/2 digit LCD readout (maximum reading 1999) autopolarity, decimal point,  $\square$  OFFSET,  $\sim$  AC, LO $\Omega$ , AUTO, HOLD and other annunciators
2. **Rotary Switch** - Select the function and range desired.
3. **COM INPUT Terminal** - Return terminal for all measurements.
4. **V $\Omega$  + Input Terminal** - Positive input connector for volts, ohms, diode and capacitor
5. **Range Switch (Manual Range)** - "Range" switch is pushed to select manual ranging and to change ranges. When "Range" switch is pushed once, "Auto" annunciator on LCD disappears. Push "Range" switch to select appropriate range to be used. Push "Range" switch and hold 2 seconds to return to autoranging.

6. **AC/DC  $\Omega$ /LP $\Omega$  Switch** - when the rotary switch is in the V $\sim$  mode, by pushing the "AC/DC" switch once, the  $\sim$  AC annunciator will be displayed in the LCD window. When the rotary switch is in the OHMS mode, pushing the AC/DC switch will display in LCD window "LO $\Omega$ " (Low Power Ohms). Push it again to cancel.
7. **Hold Switch** - This switch is used to hold a measured value on any function, the "H" annunciator is displayed in the LCD window.
8. **Offset Switch** - when the "OFFSET" switch is pushed, the "OFFSET" annunciator is displayed and the last two significant digits are stored and subtracted from all the following input conversions. Push the "offset" switch again to cancel. The "OFFSET" mode is also cancelled whenever the measurement type or range selection is changed. In autorange operation, if the following input signal cannot be converted on the same range as the stored value, the "OFFSET" mode is cancelled and the "OFFSET" annunciator is turned off. The "OFFSET" operation mode can be very useful in resistance/capacitance measurements when lead length resistance or stray capacitance would cause measurement errors, and can also be used to measure deviation on voltage measurement.

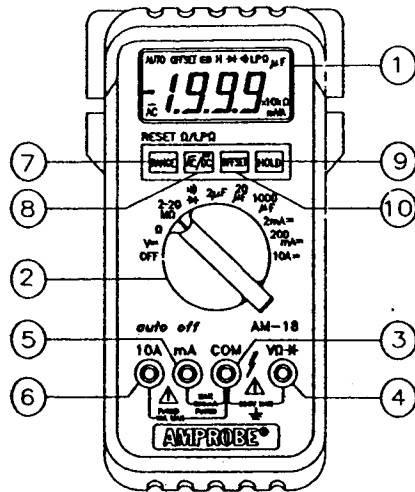
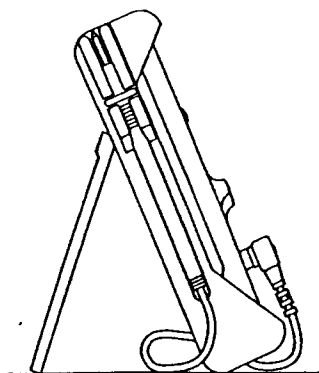


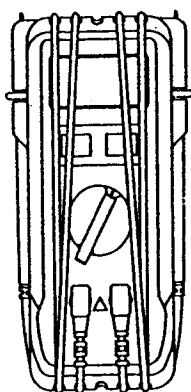
Fig. C. AM-18

1. **Digital Display** - The digital display has a 3 1/2 digit LCD readout (maximum reading 1999) autopolarity, decimal point,  $\square$  OFFSET,  $\overline{AC}$ ,  $\Omega$ , AUTO, HOLD and other annunciators
2. **Rotary Switch** - Select desired function and range.
3. **COM INPUT Terminal** - Return terminal for all measurements.
4. **V $\Omega$  + Input Terminal** - Positive input jack for volts, ohms, diode and capacitance ranges.
5. **mA Input Terminal** - input connector for current measurements up to 200 mA.
6. **10A Input Terminal** - Positive input terminal for current measurements up to 10A.

7. **Range Switch (Manual Range)** - "Range" switch is pushed to manually select and change ranges. When "Range" switch is pushed once, "Auto" annunciator on LCD disappears. Continue to push "Range" switch to select appropriate range. Push "Range" switch and hold for 2 seconds to return to autoranging.
8.  **$\overline{AC}$  /  $\overline{DC}$   $\Omega$  / LP  $\Omega$  Switch** - when the rotary switch is in the V mode, by pushing the " $\overline{AC}$  /  $\overline{DC}$ " switch once, the  $\overline{AC}$  annunciator will be displayed in the LCD window. When the rotary switch is in the OHMS mode, pushing the " $\overline{AC}$  /  $\overline{DC}$ " switch will display in LCD window "LP  $\Omega$ " (Low Power Ohms). Push it again to cancel.
9. **Hold Switch** - This switch is used to hold a measured value on all functions. When Pressed, the "H" annunciator will be displayed.
10. **Offset Switch** - when the "OFFSET" switch is pushed, the "OFFSET" annunciator is displayed and the last two significant digits are stored and subtracted from all the following input conversions. Push the "offset" switch again to cancel. The "OFFSET" mode is also cancelled whenever the measurement type or range selection is changed. In autorange operation, if the following input signal cannot be converted on the same range as the stored value, the "OFFSET" mode is cancelled and the "OFFSET" annunciator is turned off. The "OFFSET" operation mode can be very useful in resistance/capacitance measurements when lead length resistance or stray capacitance would cause measurement errors, and can also be used to measure deviation on voltage measurement.



**Fig. D.**  
Side view showing probe holders and tilt stand



**Fig. E.**  
Front view showing test leads in storage position

## BATTERY REPLACEMENT

To install a new battery:

1. Disconnect the test leads from any circuit under test and turn off the meter.
2. Remove the test leads and holster from the meter.
3. Lay the meter face down on a work surface that will not damage its' face.
4. Remove the screw on the case bottom.
5. Gently lift the end of the case bottom from which the screw was removed.
6. Remove the old 9 volt battery in models AM-17, and AM-18, AAA in model AM-16 and replace with a new one.
7. Replace the case bottom, secure screws.

## FUSE REPLACEMENT (AM-18 ONLY)

1. Follow steps 1 through 5 from the "Battery Replacement" procedure.
2. Carefully lift the circuit board assembly from the top case, turn circuit board over, revealing fuses.
3. Remove the defective fuse and replace it with a new one as noted in the parts list on Page 24.
4. Install circuit board into top case. Position the battery in its location.
5. Replace bottom case and secure screw.

## MAKING MEASUREMENTS

### Preparation & Caution Before Measurement

1. Wait 10 seconds after turning on the meter before making a measurement.
2. The rotary switch should be set to the function which you want to use before connecting the probes to the device being tested. Be sure to remove the test leads from the equipment being measured before switching the rotary switch to a new function.



3. If the meter is used near equipment that generates electro-magnetic interference, the display may be unstable or indicate incorrect measurement values.
4. Inspect the test leads periodically for breaks in the insulation or the wire. Make a continuity check whenever in doubt. Replace leads if found defective.

#### Diode and Transistor Test Measurements

The special Diode Test Function  $\rightarrow$  allows relative measurements of forward voltage drops across diode and transistor junctions. This function also permits measurement of in-circuit semiconductor junctions.

#### Diode Check

For models AM-17 and AM-18, make sure the meter is in the "DC" mode. Failure to do this may result in erroneous reading.

1. Set the rotary switch at ( $\rightarrow$  AM-16), ( $\rightarrow$   $\rightarrow$  AM-17, AM-18).
2. Connect black test lead to "COM" terminal and red test lead to ( $V\Omega \rightarrow$  AM-16), ( $V\Omega \rightarrow$  AM-17, AM-18) terminal.
3. Connect test leads to the diode. Red to band end, black to other end. The forward voltage drop of a good silicon diode is typically .400v to .900v. If the diode under test is defective on ".000" (AM-16) or "000" (AM-17 & AM-18) indicates a short circuit. An approximate 1.5v (AM-16) or 2.6v (AM-17 & AM-18) indicates a non conducting or open state. Reverse check of diode (reverse test leads). A good diode will indicate approximately (1.5v on AM-16) or (2.6v on AM-17 & AM-18). If the diode under test is defective, a lower value or zero is displayed.

#### Continuity Test

For models AM-17 and AM-18, make sure the meter is in the "DC" mode. Failure to do this may result in erroneous reading.

1. Connect red test lead to the input terminal ( $V\Omega \rightarrow$  AM-16) or ( $V\Omega \rightarrow$  AM-17 or AM-18). Connect the

black test lead to the "COM" input terminal.

2. Set the rotary function selector to ( $\rightarrow$  for AM-16) or ( $\rightarrow$   $\rightarrow$  for AM-17 or AM-18).
3. Connect the test leads to the circuit to be measured. The continuity buzzer will sound if circuit resistance is less than ( $380\Omega$  AM-16) or ( $25\Omega$  AM-17 & AM-18).

#### Voltage Measurements

**⚠** Do not apply more than 600 VDC or 600 VAC RMS to input. Do not apply more than 600 volts between any input terminal and earth ground. Exceeding these limits creates a shock hazard and may damage the instrument.

1. Connect the red test lead to the ( $V\Omega \rightarrow$  AM-16), ( $V\Omega \rightarrow$  AM-17 & AM-18) input terminal. Connect the black test lead to the "COM" input terminal.
2. Select AC or DC. AM-16, move selector switch to " $V\approx$ " or " $V-$ ". AM-17 and AM-18, move selector switch to " $V\approx$ " and push AC/DC switch. Note: "AC" annunciator is displayed in LCD when AC has been selected.
3. Connect test leads to the device to be measured.
4. When the input is "OVERRANGED" the MSD of the LCD flashes and the three least significant digits (LSD) are set to zero. (AM-16 also buzzes a non continuous 2 kHz tone).
5. **WARNING: DO NOT EXCEED 600VDC or 600V RMS AC limits as stated in specifications.**

#### Current Measurement (AM-18 only)

**⚠** DO NOT exceed current rating of current ranges. If range is not known, start at high range.

1. Connect the red test lead to mA or 10A terminal. Connect the black test lead to "COM" terminal.
2. Set function selector switch to appropriate range. Select AC or DC as required by pushing AC/DC button.
3. Connect the test leads in series to the load.

### Input Jack Alarm (AM-18)

A beep will sound if the test lead is connected to the mA or 10A input terminal. But the rotary switch is not in the mA or 10A positions.

**WARNING:** DO NOT apply voltage between mA/10A and COM terminals.

### Capacitor Measurement (AM-17 & AM-18)

#### CAUTION:

1. Fully discharge any capacitor to be measured.
2. Observe polarity when testing polarized capacitors.

For models AM-17 and AM-18, make sure the meter is in the "DC" mode. Failure to do this may result in erroneous reading.

1. Connect the red test lead to the "V $\Omega$  +-" input terminal. Connect the black test lead to the "COM" input terminal.
2. Select the capacitance range you wish to use.
3. Connect the test leads to the capacitor to be measured.

**NOTE 1.** Make sure that the display shows DC voltage mode. Not AC voltage mode.

**NOTE 2.** Use "OFFSET" button to subtract any stray capacitance.

### Resistance Measurement (AM-16 ONLY)

See "PRECAUTIONS" and "CAUTIONS" on pages 3 and 4

1. Connect the red test lead to the "V $\Omega$  +-" terminal. Connect the black test lead to the "COM" terminal.
2. Set the rotary selector to " $\Omega$ " position to measure resistance up to 20M $\Omega$ .
3. Connect test leads to circuit. NOTE: Ensure circuit under test contains **NO VOLTAGE**.

### Resistance Measurement (AM-17 & 18)

See "PRECAUTIONS" and "CAUTIONS" on pages 3 and 4

1. Connect the red test lead to the "V $\Omega$  +-" terminal. Connect the black test lead to the "COM" terminal.
2. Set the rotary selector to " $\Omega$ " position to measure the resistance of up to 2M $\Omega$ . Set the rotary selector to 20M $\Omega$  position to measure resistance between 2M $\Omega$  and 20M $\Omega$ .
3. To measure in-circuit resistance shunted by a semiconductor junction, push the " $\Omega$ /LP $\Omega$ " button. "LP $\Omega$ " annunciator should come on in the LCD.
4. Connect test leads to circuit. NOTE: Ensure circuit under test contains **NO VOLTAGE**.
5. When measuring resistance less than 200 $\Omega$ , select 200 $\Omega$  range then short test leads together (before making measurement) and push "OFFSET" button. This will subtract the resistance of the test leads from the actual circuit measurement.

### USING ACCESSORIES WITH THE AM-16, AM-17, and AM-18

#### High Current Measurement with AC Clamp-On Transducers

AC current can be measured using a clamp-on current transducer available as an accessory - Model A663-4B for 0-300 amps AC; model A664-4B for 0-1000 amps AC.

1. Select the 2V AC range.
2. Plug the leads of the transducer into the "COM" and the "V $\Omega$ " jacks of the AM-16, AM-17 and AM-18.
3. Clamp the current transducer around a single conductor.
4. Read the display directly using the conversion of 1mV = 1 amp e.g. If the instrument is in the 2V range and the display is showing 0.976, ignore the

decimal point and interpret the reading as 976 amps.

Transducers are calibrated to give an output of 1mV/1amp AC from 45-500Hz based on sinusoidal waveforms.

**Note:** The AMPTRAN® 50:1 transformers (models CT50-1 and CT50-2), the Deca-Tran® 10:1 transformer (model A50-1) and the Energizer line splitter (model A-47L) may be used with the A663-4B/A664-4B transducers to further expand the current measuring capability of the AM-16, AM-17 and AM-18.

Using A663-4B or  
A664-4B Current  
Transducers with  
Line Splitter (A47-L)  
or Amptran®  
(CT-50-1 or 2)

	To get actual current
2V with CT50-1 or 2	Multiply AM-16, AM-17 or AM-18 reading by 50
2V with A50-1	Multiply AM-16, AM-17 or AM-18 reading by 10
2V with A-47L 1X Loop	Read AM-16, AM-17 or AM-18 display directly
2V with A-47L 10X Loop	Divide AM-16, AM-17 or AM-18 reading by 10
2V with CT-50-1 or 2	Disregard decimal point in AM-16, AM-17 or AM-18 reading and multiply reading by 50*
2V with A50-1	Disregard decimal point in AM-16, AM-17 or AM-18 reading and multiply reading by 10*

\*Example - Reading is .600, drop decimal point and multiply by 50;  $600 \times 50 = 3,000$  amps.

The Amptran® CT50-1 has a maximum rating of 6,000 amperes intermittent duty and 5,000 amperes continuous duty. The CT50-2 has a maximum rating of 3,600 amperes intermittent duty and 3,000 amperes continuous duty.

The Deca-Tran® A50-1 has a maximum rating of 1,200 amperes intermittent duty and 600 amperes continuous duty. The Energizer A-47L has a maximum rating of 20 amperes intermittent duty and 15 amperes continuous duty.

**Note:** Accuracy of reading on the DMM is the accuracy of the AM-16, AM-17 or AM-18 plus accuracy of each transducer.

#### High Current Measurement with AC/DC Clamp-On Transducer CT-600 and AM-16, AM-17 and AM-18

AC or DC current can be measured using current transducer model CT-600 AC/DC

##### DC

1. Select 2 volt DC range on AM-16, AM-17 or AM-18.
2. Plug the black lead of the CT-600 into the "COM" jack and the red lead into the "VΩ  $\rightarrow$   $\leftarrow$ " jack.
3. Turn the transducer on by sliding the range switch to either the 100 amps or 600 amps position.
4. When measuring DC amps, zero adjust the output of the transducer. Using the AM-16, AM-17 or AM-18 as a readout device, rotate DCA zero adjust until a zero or close to zero reading is achieved.
5. Clamp the jaw of the transducer around conductor, centering it as accurately as possible.
6. Read display on AM-16, AM-17 or AM-18 using the conversion on the front panel of the transducer. i.e. For 100 Amp range, 1 Amp equals 10mV and for 600 Amp range, 1 Amp equals 1mV.

**Note:** The accuracy of the reading on the DMM is the accuracy of the AM-16, AM-17 or AM-18 plus the Accuracy of the CT-600. Refer to instruction booklet of the CT-600 for its accuracy.

AC current can be measured in the same fashion, select the 2V AC range on the AM-16, AM-17 or AM-18 and follow the above steps.

For better resolution, the 200mV DC range can also be selected on models AM-16, AM-17 and AM-18 when using an accessory.

#### Temperature Measurement with AM-16, AM-17 and AM-18

See "PRECAUTIONS" and "CAUTIONS"  
on pages 3 and 4

Temperature from -50°F to 300°F or -55°C to 150°C is possible with the temperature accessory model TMA-1. The following probes available only from Amprobe are used in conjunction with the TMA-1; TPIF – Fahrenheit Immersion Probe; TPSF – Fahrenheit Surface Probe; TPAF – Fahrenheit Air Probe; TPIC – Centigrade Immersion Probe; TPSC – Centigrade Surface Probe; TPAC – Centigrade Air Probe.

1. Install battery and connect appropriate probe to TMA-1 as per its operating instructions.
2. Select either the 200mV DC or 2V DC range on the AM-16, AM-17 or AM-18.
3. Insert banana plugs from model TMA-1 observing polarity into the jacks of AM-16, AM-17 or AM-18. ("+" from TMA-1 to "VΩ ⚡ +" jack. "-" from TMA-1 to "COM" jack.
4. Insert temperature probes into medium to be tested.
5. The AM-16, AM-17 or AM-18 should now be indicating a mV reading equal to the temperature being measured. i.e. 72mV = 72°.

**Note:** For resolution and accuracy, refer to operating instructions of model TMA-1. The accuracy of reading on the DMM is the accuracy of the AM-16, AM-17 or AM-18 plus accuracy of probe.

#### Power Measurements with AW-80/AW-81 and AM-16, AM-17 and AM-18

- Measure kilowatts • Measures AC amperes
- Determine KVA and Power Factor

Power (KW) single phase or AC current can be measured using the model AW-80 or AW-81 Watt/Amp Transducer available separately as an accessory.

Model AW-80 ranges 0-19.99/199.9KW with voltage inputs up to 240 VAC (+10% max) and current inputs of 0-150/1000 Amps AC. Model AW-81 ranges 0-40/400KW with voltage inputs of 208 to 550 VAC (+10% max) and current inputs of 0-150/1000 Amps AC. Both units may also be used to measure current 0-1000 Amps AC (50-60 Hz). For complete instructions, see separate AW-80/81 operating instructions booklet, Pt. No. 981759.

**Note:** Accuracy of reading of DMM is accuracy of AM-16, AM-17 or AM-18 plus the accuracy of the power transducer. Refer to operating instructions of the AW-80/81 for correct accuracy.

#### High Voltage Measurement 15K VAC/DC with AM-16, AM-17 and AM-18

1. To use accessory high voltage probe HV-2 with the AM-16, AM-17 or AM-18, unscrew the handle from the main probe and insert resistor model HVR-4 or HVR-41 (not supplied with probe) with the spring on the resistor towards the handle.
2. Screw handle back onto probe.
3. Move rotary switch to volts position, select AC or DC.
4. Using range key, select 20 volt range.
5. Plug black test lead into "COM" jack on meter, and connect red HV-2 probe in the "V" jack.
6. Take the black lead and ground it.
7. With your hand behind the protective disc on the handle of the probe, touch the probe tip to the circuit under test.
8. Take the reading and multiply by 100.