LOW BATTERY INDICATION

Replace the battery when the decimal point at the left end of the ACD-1/2 digital display comes on (See Fig. 5) or "BT" appears in the ACD-3/4 display (Fig. 6) or the display digits do not light up.

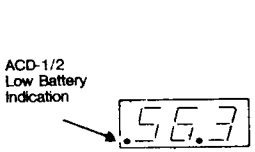


Figure 5

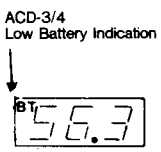


Figure 6

OVER-RANGE INDICATION

If you attempt to measure a voltage, current or resistance greater than the instrument's capability, the instrument will signal over-ranging as follows:

ACD-1/ACD-2:

a) With C/P Selector Switch in "P" (Peak) position, the two right-hand decimals will light up and remain on; balance of display will be dark.
b) With C/P Selector Switch in "C" (Continuous) position, the two right-hand decimals will light up and remain on and the three digits will flash on and off.
Immediately remove instrument from the circuit.

ACD-3/ACD-4:
Flashing digits

HOW TO MEASURE AC CURRENT

See Precautions for Personal and Instrument Safety.

1) Disconnect voltage test leads and ohmmeter test lead from instrument.
2) Position the C/P Selector Switch (See Continuous or Peak Operation).
3) Press trigger to open transformer jaws.
4) Encircle **single** conductor with jaws.
5) Release finger pressure on trigger and allow jaws to close around the conductor.
6) Press the "Press-to-Read" button and read the display.

Replaceable probe tips Cat. No. VPT

HOW TO MEASURE AC VOLTAGE

See Precautions for Personal and Instrument Safety.

NOTE: Because the ACD-1/2/3/4 is a high impedance voltmeter (10 Megohms), and RF signals exist almost everywhere, it is possible to get a voltage reading even when the instrument is not connected to a circuit. This will not, however, affect your actual voltage measurements.

Figure 7

1) Disconnect ohmmeter test lead from instrument and/or remove transformer jaws from around any conductors.
2) Position the C/P Selector Switch (See Continuous or Peak Operation).
3) Insert insulated voltage test lead connectors into voltage receptacles in bottom of instrument. (See Fig. 1) Push in against receptacle spring and twist clock-wise to lock in place.
4) Clamp on voltage test lead probe between jaws (See Fig. 7).
5) With instrument in one hand and the other voltage test lead probe in the other hand, apply test probes to the test points of the circuit.
6) Press the "Press-to-Read" button and read the display.

HOW TO MEASURE RESISTANCE

See Precautions for Personal and Instrument Safety.

(Ohmmeter Test Voltage ACD-1/2 1.2V Max. 6 ma low range. 0.6 ma high range; ACD-3/4 1.7V Max.)

CAUTION: Make certain no voltage is present in circuit before connecting ohmmeter to circuit. If ohmmeter is applied to a live line, the ohmmeter fuse may blow or incorrect readings may be obtained. Also make certain any capacitors in circuit are discharged.

1) Insert one insulated voltage test lead connector into the right hand voltage receptacle (viewing instrument from front) in the bottom of the instrument. Looking at the back of the instrument, this voltage receptacle is marked "COM". (See Fig 4).
2) Clamp voltage test lead probe between jaws (See Fig. 7).
3) Plug ohmmeter lead into jack on the right side of the instrument. (See Fig. 1).
4) Position C/P Selector Switch in the "C" position.
5) Short ohmmeter test probe tip to voltage test lead probe tip and press the "Press-to-Read" button.
   a) If fuse is good, reading should be below one ohm
   b) If fuse is blown, the two right-hand decimal points will light up and remain on and the three digits will flash on and off.
6) With instrument in one hand and ohmmeter test probe in the other hand, apply probe tips to circuit or device. Press the "Press-to-Read" button and read the display, NOTE: When measuring low resistances, subtract the resistance value obtained in 5(a) above from the reading obtained in the actual test. Instrument measures its own lead resistance at the same time it measures circuit or device resistance. Subtracting the test lead resistance gives a more accurate resistance measurement. Also, make certain good electrical contact is made with test points. Because of the sensitivity of the instrument, even slight corrosion on probe tips or test points may cause erroneous readings. To clean probe tips, use fine steel wool.

See PRECAUTIONS FOR PERSONAL AND INSTRUMENT SAFETY INSIDE

Pt. No. 920750
6/85

OPERATING INSTRUCTIONS

AMPROBE®

Digital Clamp-on Volt/Amp/Ohmmeter Models ACD-1, ACD-2, ACD-3 and ACD-4

Specifications

Ranges: ACD-1 and ACD-3 0.1-99.9/999
Volts* AC, Amps AC, ohms
ACD-2 and ACD-4 0.1-99.9/999
Volts*, Ohms, Amps AC Peak
0.1-300 Amps AC Continuous
*Input Impedance 10 megohms

Ohmmeter Test Voltage: ACD-1/2 1.2V max.
ACD-3/4 1.7V max.

Accuracy: Models ACD1 & 2
Amps ± 2% of reading ± 1 LSD*
Based on sinusoidal waveforms from 25-400 Hz.
Volts ± 2% of reading ± 1 LSD*
Based on sinusoidal waveforms from 25-400 Hz.
Ohms ± 2% of reading ± 1 LSD*

Models ACD3 & 4
Amps ± 2% of reading ± 2 LSD*
Based on sinusoidal waveforms from 40-400 Hz.
Volts ± 2% of reading ± 1 LSD*
Ohms ± 2% of reading ± 1 LSD*

See instructions for low resistance measurements

*Least Significant Digit

Power: 1 No. MN1604, 9V Alkaline Battery (not supplied)

Fuse: 1 No. 8AG-361, 1 Amp Fast Blow Supplied

Operating Temperature and Humidity:
+32°F to 120F; 0°C to 49°C
ACD-1/2 Up to 95% RH; ACD-3/4 Up to 80%RH

Over-Range Protection: 50% overload for a maximum of one minute when measuring voltage or current. Ohmmeter is fused. ACD-3/4 are circuit protected up to 600 volts.

Case Voltage Breakdown Test: 3000 volts AC

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

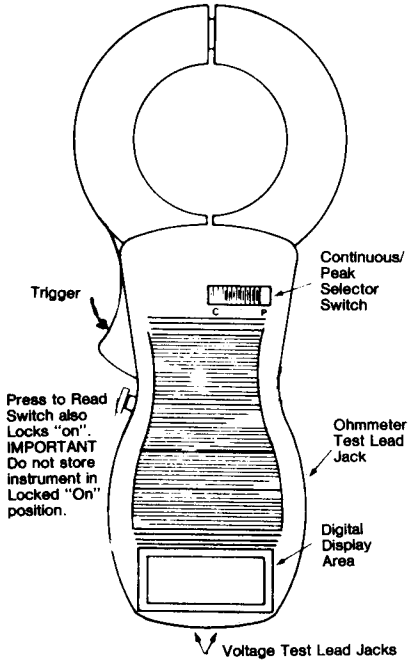


Figure 1

DESCRIPTION

The Model ACD-1/2/3/4 will directly measure AC current, AC voltage and resistance and provide a digital readout of the value. ACD-1/2 are "Peak-sensing, RMS calibrated", ACD-3/4 are "Average-sensing RMS calibrated" except in the "Peak" mode where they are Peak-sensing, RMS calibrated. The instrument is auto-ranging which means that it changes ranges automatically. Below 100, it provides reading to the nearest 0.1 up to 99.9. At 100 and above, it provides readings to the nearest whole digit up to 999.

Helpful Hints for Getting Top Performance From Your Digital Clamp-On

Make certain the C/P (Continuous/Peak) Selector Switch is moved completely into either the C or P position.

When measuring resistance, make certain the voltage test lead that is being used is inserted into the jack marked "COM" on the back of the instrument.

When measuring currents of widely varying values, start with the conductor in which you expect to find the lowest current, then the next highest, etc. To reduce the possibility of retained magnetism in the jaws, open and close the jaws a few times between measurements.

When using the Peak Mode to take and lock in a low current measurement that is to be read away from the conductor, open the jaws slowly and slowly remove them from around the conductor.

When measuring resistance, the "C/P" Selector Switch should be in the "C" position. In the "P" position, any accidental opening of the circuit will cause a locked-in, over-range indication unless the Press-to-Read button is released.

The temperature operating range of your ACD-1/2/3/4 is +32°F to +120°F. If the instrument has been in a location where the temperature was lower than 32°F or higher than 120°F, allow the instrument to adjust to within the operating temperature range.

LIMITED WARRANTY

Congratulations. You are now the owner of an AMPROBE® instrument. It has been union 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 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 instrument by model number and serial number (located on back of instrument).

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 Service Division, AMPROBE INSTRUMENT, 630 Merrick Rd., (use for U.P.S.), P.O. Box 329, (use for P.P.), Lynbrook, New York 11563 U.S.A. Outside of U.S.A. your AMPROBE representative will assist you.

Above limited warranty covers repair and replacement of instrument only and no other obligation is stated or implied.

PRECAUTIONS FOR PERSONAL AND INSTRUMENT PROTECTION

IMPORTANT:

1. Before using any electrical instrument or tester for actual testing, the unit should be checked on a known live line to make certain it is operating properly.
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. The jaws of clamp-on instruments should not, under any circumstances, be used as a device to hold the instrument when taking other than a current reading. When using a clamp-on as a voltmeter or ohmmeter never clamp the jaws around or onto a conductor, box or anything else—conducting or non-conducting—except a test lead. (See Fig. 7).
4. Before applying test leads to circuit under test, make certain that test leads are plugged into proper instrument jacks.
5. Make certain no voltage is present in circuit, before connecting ohmmeter to circuit.
6. Should the instrument accidentally be used to try to measure a voltage or current beyond the range of the instrument, immediately remove the instrument from the circuit. See Over-Range Indication.
7. When not in use, keep instrument in its carrying case.
8. When instrument will not be used for a period of time, remove the battery from instrument.

ACCURACY

The accuracy is ±2% of reading ± one Least Significant Digit (LSD) based on sinusoidal waveform.

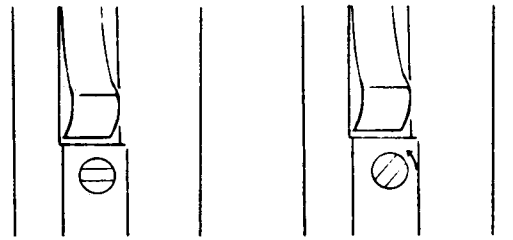
Example 1: Instrument reading is 850 amperes. ±2% equals ±17 amps or 833 to 867. Taking ±1 LSD into consideration, actual current value is between 832 (833 - 1) and 868 (867 + 1).

Example 2: Instrument reading is 20.0 amperes. ±2% equals ±0.4 or 19.6 to 20.4 Taking ±1 LSD into consideration, actual current value is between 19.5 (19.6 - 0.1) and 20.5 (20.4 + 0.1).

PRESS-TO-READ SWITCH

To take a reading once the instrument has been connected as per the following instructions, push in on the Press-to-Read button. See Fig. 1.

To "lock" the button "On" for a constant readout, gently push in on the Press-to-Read button and while depressed turn it counterclockwise 1/8 turn. See Fig. 2.



Momentary Contact Position **Locked "On" Position**

Figure 2

CONTINUOUS OR PEAK OPERATION

The ACD-1/2/3/4 can be used to continuously monitor a fluctuating variable (current, voltage, resistance) or to measure the peak (surge) value of a variable, such as a motor starting current. Peak must last at least 0.08 seconds. Motor starting currents normally persist for approximately 0.17 seconds.

The Peak Mode can also be used to take and lock in a measurement when the display cannot be read because of instrument position. Lock "On" the Press-to-Read button. Connect instrument for the measurement (volts, amps, ohms). Remove instrument to a position where it can be read. Unlock Press-to-Read button. Note: In the "Peak" mode the ACD-3/ACD-4 lose one least significant digit every 18 seconds.

For continuous operation, move the C/P Selector Switch to the left into the "C" position. For peak measurements, move C/P Selector Switch to the right into the "P" position. See Fig. 3.

IMPORTANT: When changing C/P Selector switch position, release "Press-to-Read" Button before switching.

Figure 3

INSTALLING BATTERY AND FUSE

The ACD-1/2/3/4 uses one No. MN1604 9V Alkaline Battery. To install:

1) loosen screw located toward the bottom on the back of the instrument. (See Fig. 4)
2) lift battery compartment cover.
3) firmly snap connector onto battery terminals.
4) replace cover and tighten screw.

The instrument uses one No. 8AG-361, 1 Amp Fast Blow Fuse which installs in the probe handle of the OHB-4 Ohmmeter Battery Attachment. To install:

1) unscrew the top (probe tip) section from the bottom section of the probe handle.
2) insert fuse into top section.
3) screw two sections together.

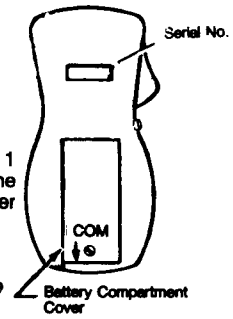


Figure 4