1. WARRANTY

ONE YEAR LIMITED WARRANTY

A.W. Sperry Instruments, Inc., warrants that this AWS instrument has been carefully tested, inspected, and warranted for one (1) year from the date of purchase by the original end user, provided the instrument has not been misused, damaged due to negligence, neglect or unauthorized repair, abused or used contrary to the operating instructions. Instruments and proof of purchase in the form of a legible copy or original of the sales receipt clearly identifying the distributor, model number and date of purchase must be returned to A.W. Sperry Instruments Inc., Attention: Customer Service Center, 245 Marcus Boulevard, Hauppauge, New York 11788, postage prepaid for examination and verification of manufacturing defect under warranty. A.W. Sperry Instruments Inc., shall be the sole judge of such defect. The liability of A.W. Sperry Instruments Inc., shall be limited to the repair or replacement at its sole option of any defective product.

THIS WARRANTY AND THE OBLIGATIONS AND LIABILITIES OF SELLER THEREUNDER ARE EXCLUSIVE AND IN LIEU OF AND BUYER HEREBY WAIVES ALL OTHER REMEDIES, EXPRESS WARRANTIES, GUARANTEES OR LIABILITIES, OF AND FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR WHETHER OR NOT OCCASIONED BY SELLER'S NEGLIGENCE. THIS WARRANTY SHALL NOT BE EXTENDED, ALTERED OR VARIED EXCEPT BY A WRITTEN INSTRUMENT SIGNED BY SELLER AND BUYER. SOME STATES ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIED LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

WARRANTY RETURN

Refer to section "Return for Repairs" for complete instructions. All warranty returns must include a legible copy or original of the sales receipt clearly identifying the model number, serial number and date of purchase.

2. INTRODUCTION

The DM-1A is an innovative concept in digital multimeter design. It is a miniature, ultra-slim DMM which combines the measurement capabilities of a 17 range digital instrument with the handiness and simplicity of a card size pocket calculator.

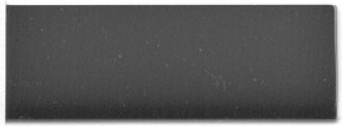
The DM-1A features the latest developments in high-technology construction and design. All the features of larger sized DMMs are to be found in the DM-1A: autoranging, overload protection on all ranges, auto-polarity, audible/visual continuity indication, sturdy ABS plastic case and much more. The DM-1A is extremely easy to use. One rotary switch controls all functions. The test leads are built into the instrument and therefore cannot be accidently lost. A handy "booklet style" carrying case which holds the instrument, test leads and operating instructions is included, and allows the DM-1A to be carried easily in your shirt pocket.

3. FEATURES

- Electronic overload protection on all ranges
- Ultra slim, pocket-size design
- Low cost
- Autoranging
- Simple operation
- Continuity buzzer
- Diode test function
- Data hold button
- Built-in test leads
- "Booklet style" carrying case included
- One year warranty

4. SPECIFICATIONS

Display:	3.5 digit LCD, 0.31" numerals, maximum reading 1999 with automatic sign and function annunciators.
Range Selection:	Autoranging
Data Hold:	On all ranges.
Overrange Indication:	"1" most significant digit blinks.
Sampling Rate:	2 times per second.
Operating Environment:	0° to 40° C (32° to 104° F) at < 80% relative humidity.
Storage Environment:	-25° to 70° C (-13° to 158° F) at < 70% relative humidity.
Power Source:	Two (2) 1.5V button-type batteries, AWS Part #B-6 (IEC #LR-44, NEDA #1166A).
Power Consumption:	3mW typical.
Battery Life:	100 hours typical with LR-44.
Battery Indicator:	" [B] " symbol appears in display to indicate low battery voltage.
Dimensions:	4.4"H x 2.0"W x 0.4"D (111 x 52 x 10 mm)
Weight:	Approximately 3.5 oz. (100g) including Batteries and Case.



Ranges

Function	Range	Accuracy (18°-28° C)	Input Impedance	Overload Protection
DC Voltage	200mV 2V 20V 200V 500V	1% rdg ± 4dgt	100MΩ 11MΩ 10MΩ	700Vac/dc
AC Voltage	2V 20V 200V 500V	2% rdg ± 8dgt on all ranges.	11MΩ 10MΩ	700Vac/dc
Resistance	200Ω 2KΩ 20KΩ 200KΩ 2MΩ 20MΩ	2% rdg ± 4dgt 5% rdg ± 4 dgt	N/A	250Vac/dc
Continuity	2KΩ	Audible and visual Indication at < 450Ω		250Vac/dc
Diode Test	Indicates approximate forward voltage drop.			250Vac/dc

5. DM-1A FRONT PANEL CONTROLS AND INDICATORS

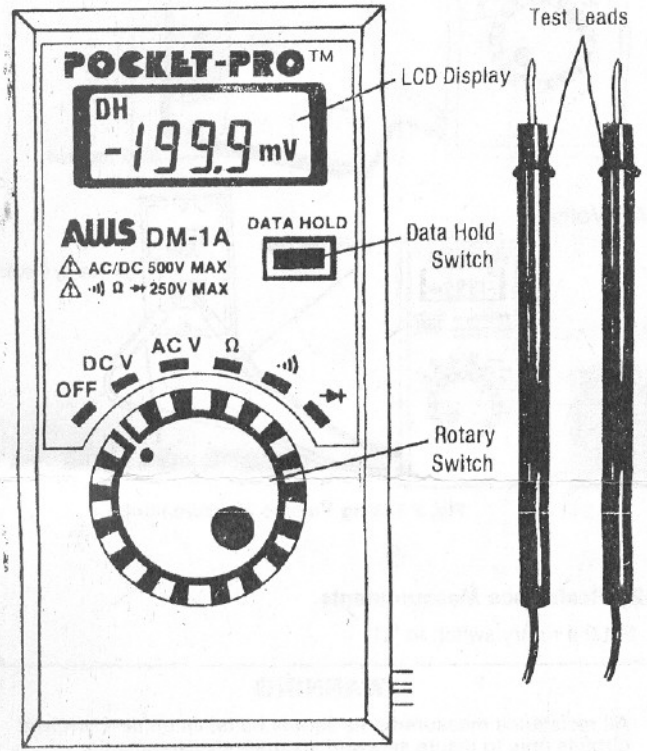


Fig. 1 DM-1A Front Panel

6. PACKAGING

The DM-1A comes complete with two B-6 Batteries, C-51A Carrying Case and Form #168-2 Operating Instructions.

7. SAFETY PRECAUTIONS

The following safety precautions must be observed to insure maximum personal safety during the operation of this meter:

1. Read these operating instructions thoroughly and completely before operating your Pocket Pro. Pay particular attention to **WARNINGS** which will inform you of potentially dangerous procedures. The instructions in these warnings must be followed.
2. Always inspect your meter, test leads and accessories for any sign of damage or abnormality before every use. If any abnormal conditions exist (e.g. broken test leads, cracked cases, display not reading, etc.), do not attempt to take any measurements. Refer to Return for Repair section.
3. Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, etc., which might be at ground potential. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material.
4. To avoid electric shock use CAUTION when working with voltages above 40Vdc or 20Vac. Such voltages pose a shock hazard.
5. Never exceed the maximum allowable input value of any function when taking a measurement. Refer to the chart above for maximum inputs.
6. Never touch exposed wiring, connections or any live circuit when attempting to take measurements.
7. Do not attmept to operate this instrument in an explosive atmosphere (i.e. in the presence of flammable gases or fumes, vapor or dust).
8. When testing for the presence of voltage, make sure the voltage function is operating properly by reading a known voltage in that function before assuming that a zero reading indicates a no-voltage condition.

Always Think Safety, Act Safely

8. OPERATION

8.1 Voltage Measurements

1. Place the rotary switch to the VDC position if a DC voltage is to be measured, or to the VAC position if an AC voltage is to be measured.
2. Voltage measurements are taken by connecting the instrument in parallel with the circuit being checked. The long insulated prod handles are used to make contact with circuit.

WARNING

To avoid possible electric shock, instrument damage and/or equipment damage, do not attempt to take any voltage measurements if the voltage is above 500Vac/dc or if the voltage is unknownn. 500Vac/dc is the maximum voltage that this instrument is designed to measure. The "-" test lead potential should not exceed 500Vac/dc measured to ground.

3. Apply the test lead probe tips to the two points where a voltage reading is to be taken. The meter will automatically select the proper range and display the reading (see Fig. 2)

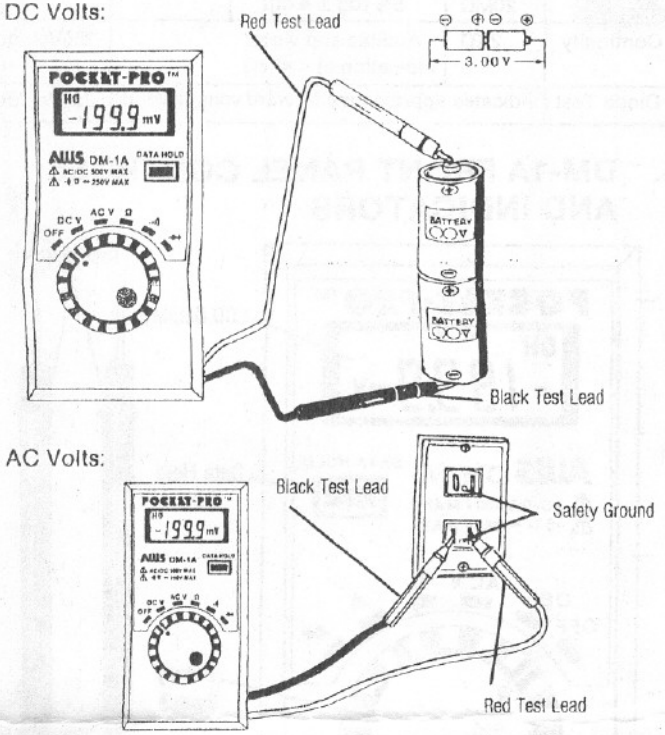


Fig. 2 Taking Voltage Measurements

8.2 Resistance Measurements

1. Set the rotary switch to "Ω"

WARNING

All resistance measurements should be taken on de-energized circuits only to insure safe and accurate measurements.

To avoid possible electric shock, instrument damage and/or equipment damage, do not connect the test leads to circuits having a potential difference greater than 250Vdc/ac. Do not connect the test leads to potential exceeding 250V to ground.

2. Completely de-energize the circuit or device to be measured. Connect the test lead probe tips to the device (see Fig. 3). (The red lead is positive with respect to the black lead).
3. The meter will automatically select the proper range and display the reading.

Note: A reading of 1.000 indicates an overrange condition. This will occur with the test leads open.

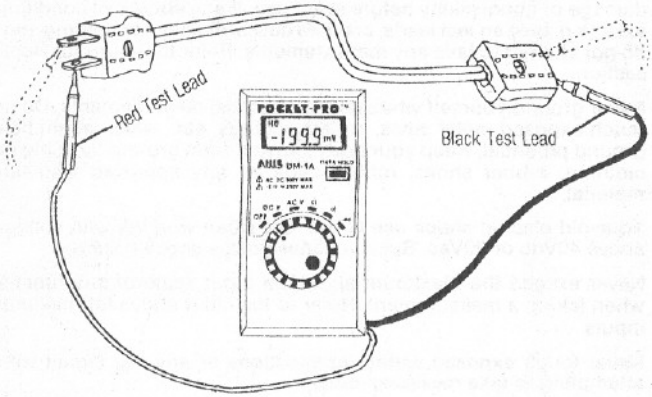


Fig. 3 Taking Resistance/Continuity Measurements

8.3 Continuity Measurements

1. Set the rotary switch to " ·))) ".
2. The >·))) symbol will appear on the display.

WARNING

All continuity measurements should be taken on de-energized circuits only to insure safe and accurate measurements.

To avoid possible electrical shock, instrument damage and/or equipment damage, do not connect the test leads to circuits having a potential difference exceeding 250Vac/dc. Do not connect the test leads to potentials exceeding 250V to ground.

3. Connect the test leads to the two points at which continuity is to be tested (see Fig. 3). The buzzer will sound if the resistance is approximately less than 450Ω

8.4 Diode Measurements

1. Set the rotary switch to "→|+".

WARNING

All diode measurements should be taken on de-energized circuits only to insure safe and accurate measurements.

To avoid possible electrical shock, instrument damage and/or equipment damage, do not connect the test leads to circuits having a potential difference exceeding greater than 250Vac/dc. Do not connect the test leads to potentials exceeding 250V to ground.

2. If the diode (semiconductor junction) being measured is connected in a circuit. Make sure to de-energize the circuit and discharge all capacitors before attempting any measurements.
3. The diode test range measures the approximate forward voltage drop across a typical silicon diode.
4. Connect test leads to the diode in the forward direction, Red to Anode and Black to Cathode. A reading of 1.200 to 1.600 indicates an overrange condition. This will occur with the test leads open or while indicating a defective open circuit diode. A reading of .470 or less indicates an underrange condition. This will occur with the test leads shorted or while indicating a defective short circuited diode.

   Normally a "good" diode will range from .500 to 1.000. Refer to the manufacturers specifications for proper values on a "good" diode.

9. BATTERY REPLACEMENT

Power is supplied to the DM-1A by two (2) 1.5V button-type batteries, AWS Part #B-6 (IEC #LR-44, NEDA #1166A). " [B] " appears on the LCD display when replacement is needed.

WARNING

Before attempting to replace the battery, first disconnect the Test Leads from any energized circuit.

1. Disconnect the test leads from any energized circuit.
2. Set the rotary switch to OFF.
3. Remove Battery Compartment Cover screw. Slide off cover.
4. Replace the batteries with two (2) 1.5V button-type batteries, AWS Part #B-6 (IEC #LR-44, NEDA #1166A).

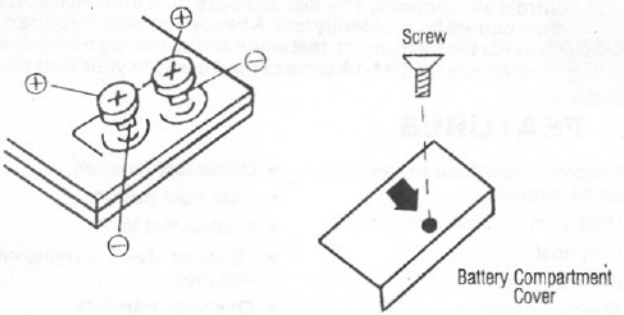


Fig. 4 Battery Replacement

10. RETURN FOR REPAIR

Before returning your Pocket Pro for repair, be sure to check that the failure to operate properly is not due to weak batteries. If this condition does not exist and the instrument fails to operate properly, return the instrument prepaid to:

A.W. Sperry Instruments Inc.
Customer Service Department
245 Marcus Blvd.
Hauppauge, N.Y. 11788

State in writing what is wrong with the instrument. All warranty repairs must include proof of purchase in the form of a legible copy or original of the sales receipt clearly identifying the distributor, model number and date of purchase. See warranty statement for full warranty disclosure. Repair estimate will be furnished if requested for out of warranty instruments. Be sure to include all accessories which may be related to the problem.