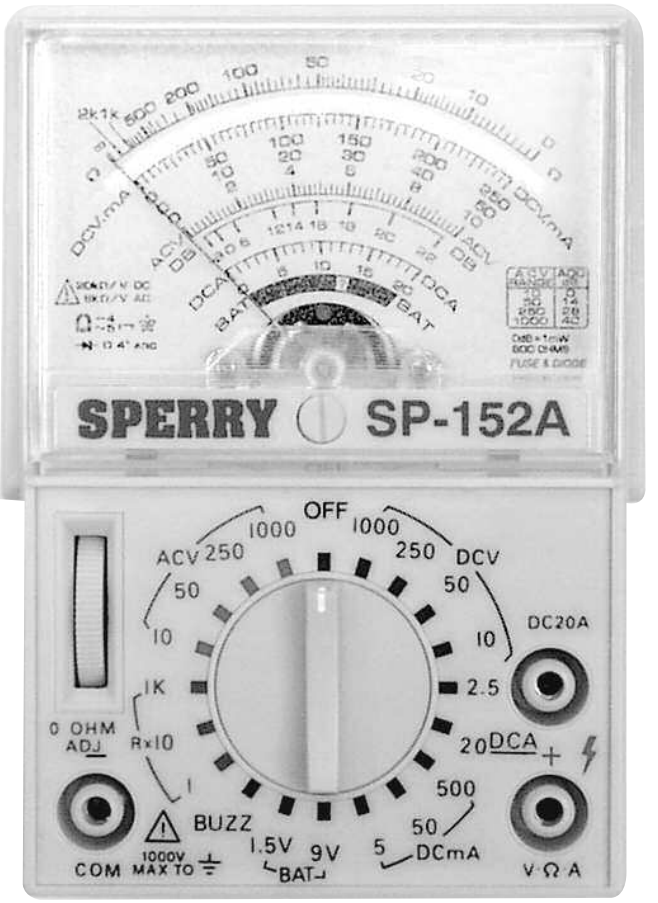
OPERATING INSTRUCTIONS
Model SP-152A
POCKET SIZE MULTLTESTER



PLEASE READ THESE OPERATING INSTRUCTIONS CAREFULLY
Misuse and or abuse of these instruments cannot be prevented by any printed word and may cause injury and or equipment damage. Please follow all these instructions and measurement procedures faithfully and adhere to all standard industry safety rules and practices.

A.W. SPERRY INSTRUMENTS INC.

245 MARCUS BLVD., HAUPPAUGE, NEW YORK 11788
Phone: 800-645-5398 Toll Free (N.Y. and Alaska call collect 516-231-7050)
Fax: 516-434-3128

CONTENTS

ONE YEAR LIMITED WARRANTY

A.W. Sperry Instruments, Inc., warrants that this A.W. Sperry 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.

Sec. 1 INTRODUCTION

Congratulations. You have purchased an A.W. SPERRY Analog Multimeter manufactured to the highest quality standards. A minimum amount of maintenance and an understanding of these operating instructions is all that is needed to keep this instrument in excellent working condition. If you should have any questions regarding this product or would like a catalog on our other products please write to us at:

A.W. Sperry Instruments, Inc.
P.O. Box 9300
Smithtown, NY 11787

or call us Toll-Free at

800-645-5398 or 516-231-7050

Please take the time to read these operating instructions thoroughly and completely. Failure to follow these instructions may result in electrical shock, instrument damage and/or damage to the equipment under test. Always use extreme caution when working on or around electrically operated equipment.

Sec. 2 SAFETY PRECAUTIONS

Always inspect the instrument, test leads and other accessories for damage prior to every use.

Always consider electrical and electronic equipment to be energized (live). Never assume any equipment is de-energized.

Never ground yourself when taking electrical measurements. Isolate yourself from ground by using dry rubber insulation mats to cover all exposed grounded metal. Stand on rubber mats and wear dry clothing.

Never take resistance measurements on energized(live) electrical or electronic equipment.

Use one hand, instead of two, whenever possible to take measurements. If two hands must be used, use extreme caution not to contact any energized conductors with your hands. Be certain test lead probes are dry and clean.

Do not hold the instrument when taking measurements. Place the instrument on a clean, insulating surface prior to taking any measurement.

Don't become part of the circuit. Think Safety.
Act Safely.

Sec. 3 INSTRUMENT DATA

3-1) Description

The A.W. SPERRY SP-152A is an Analog Multimeter capable of:

Measuring 7 functions on 20 ranges. A mirror scale is provided to reduce the possibility of parallax errors. Small, light weight and rugged construction. This meter was designed for the amateur, hobbyist and professional needing to make electrical and electronic equipment measurements.

3-2) Features

1. 7 Functions - 20 Ranges
2. Limited One Year Warranty
3. Ruggedized, Impact Resistant
4. Industry Standard Safety Recessed Input Terminals and Shielded Banana Plugs
5. Mirrored Scale Plate
6. Safety Fuse Protected
7. Diode Protected Meter Movement

8. Battery Test Function
9. Handy Tiltstand/ Carry Handle
10. Perfect for the Homeowner, Hobbyist and Professional

3-3) Specifications

Sensitivity:	20KΩ/VDC, 9KΩ/VAC
Accuracy:	DC ± 3% Full Scale AC ± 4% Full Scale Ω ± 3% Arc Length
Fuse:	One (1) 1/2 Amp. 250V, 1/4" X 11/4", A.W. SPERRY Part #F-1
Power Source:	Two (1) 1.5V AA size batteries A.W. SPERRY part No. B-1
Size:	5.4"H x 3.7"W x 1.8"D (137 x 95 x 45mm)
Weight:	9.5 oz. (270 g)
Ranges and Accuracy	
DC Voltage:	0-2.5/10/50/250/1000 Vdc
AC Voltage:	0-10/50/250/1000 Vac
DC Current:	0-5m/50m/500mA/20Adc
Resistance:	0-10K/100K/10MΩ (50/500/50KΩ Mid-Scale)
Battery:	1.5V/9Vdc
Continuity Buzzer	
Decibels:	-8 to +62dB

3-4) Packaging

Comes complete with one set TL-56 Test Leads, two B-1 “AA” type Batteries (installed in the instrument), one F-1 Fuse (Installed) and Form #245 Operating Instructions.

Sec. 4 PREPARATION FOR USE

This procedure should be followed before each and every use.

CAUTION

Before attempting to use this meter be certain to read this operating instruction thoroughly and completely. Failure to follow these instructions may result in electrical shock, instrument damage and/or damage to equipment under test.

1. Inspect the SP-152A Analog Multimeter for any signs of damage to the thermoplastic case. Do not use if cracked, distorted, excessively dirty or any other abnormal condition exists. Refer to sec. 7.

2.Rotate the selector switch one full turn. Check that the switch clicks into each of the 20 positions and has no excessive play in each position. Do not use if the switch is loose. Refer to sec. 7.

3. Inspect the TL-56 test leads for any signs of damage. Check for cracks in the insulation, broken or damaged probes, loose probe pins or bent probe pins. Do not use if any abnormal conditions exist. Refer to sec. 7.

4. Place the SP-152A Analog Multimeter on a flat horizontal surface. Using a small screw driver adjust the “zero adjust” screw until the meter movement pointer lines up with the “0” reading on the left side of the scale plate.

5. Insert the black test lead into the “-” (Com) terminal of the SP-152A and the red test lead into the “+” (V-Ω-A) terminal. Make certain that the leads are seated all the way into the SP-152A and fit snugly. If the fit feels loose do not use the SP-152A or the test leads. Refer to sec. 7.

6. Please the selector switch on the SP-152A into the "X1K" position, hold the tips of the Red and Black test leads together and adjust the "OHMS adjust knob" until the meter movement pointer reads "0" on the OHMS scale located at the extreme right side of the scale plate. If a "0" reading cannot be obtained a weak battery is the most probable cause. Follow the battery replacement procedure in sec. 6-1.

Note: The battery is only used for resistance measurements with the selector switch in the "X1","X10" or "X1K" positions. The SP-152A can be used in all other ranges with a weak, dead or missing battery.

7. The SP-152A is now ready for use. Follow the Measurement procedures in this manual for all measurements. Read all Safety Precautions in sec. 2 before proceeding.

Sec. 5 OPERATION

5-1) Voltage Measurements

1. Follow the Preparation for Use procedure in sec. 4.
2. Read all Safety Precautions in sec. 2.

CAUTION

1000 Vac/dc is the maximum voltage that can be measured using this meter. Attempting to measure higher voltages may result in electrical shock, instrument damage and/or damage to equipment under test.

3. Select an AC or DC voltage range using the selector switch that is higher than the maximum voltage to be measured. If the maximum voltage may be higher than 1000 Vac/dc, do not attempt to take a measurement.

4. Apply the test leads to the two points in the circuit at which the voltage is to be measured. When measuring DC voltage the black lead should be connected to the more negative point of measurement. When measuring AC voltage the polarity does not matter.

5. To read DC voltage use the black “DC” arc directly below the mirrored arc. Use the numbers whose full scale reading matches the range selected by the “selector switch”.

6. To read AC voltage use the red “AC” arc. Use the numbers whose full scale reading matches the range selected by the “selector switch”.

7. The dB scales can be used to measure the milliwatt power dissipation in a 600 load by measuring the AC voltage across a 600 OHM load. An AC voltage of 0.775 Vrms across 600 OHMS is equal to 1mW or “0” dB. When converting an AC voltage measurement to dB take the dB readings from the lowest arc on the scale plate and then add the appropriate dB correction as listed in the chart printed in the lower right corner of the instrument scale plate.

5-2) DC Current Measurements

1. Follow the Preparation for Use procedure in sec. 4.

2. Read all Safety Precautions in sec. 2.

3. Place the function switch to the 20A position, always start with the highest range.

4. Place the red test lead in the “DC20A” terminal, and the black test lead in the “COM” terminal.

CAUTION

The 20A range is unprotected and has a very low internal resistance. Do not attempt to take a current measurement if the current is unknown or above 20Adc.

WARNING

The instrument must be connected in series with the circuit to be measured. Do not impress voltages across the "COM" and "V-Ω-mA" terminals when set to the mADC ranges. Doing so may result in electric shock, instrument damage and/or damage to equipment under test.

5. Remove power from the circuit to be tested and discharge all capacitors and inductors.

6. Connect the test leads into the circuit so that the meter is in series with the circuit where current is to be measured. The current should enter through the red lead and leave through the black lead in order for the meter to indicate in an "up-scale" direction.

7. Turn on power to the circuit under test. Read the current on the black DC scale and use the full scale numbers which correspond to the range selected (in the case for the 20A range 0-20).

WARNING

Before changing ranges always de-energize the circuit completely. An open circuit exists between the test leads during range change.

8. If the reading is less than 1/2 amp, repeat steps 5 and 6 with the switch set on the 500mA range and the test leads in the V-Ω-A terminal. Repeat the above procedures until the reading is in the upper half of the scaleplate.

9. Turn off the power to the circuit under test. Discharge all capacitors and inductors. Remove

the test leads from the circuit under test, then remove the test leads from the instrument.

5-3) Resistance Measurements

1. Follow the Preparation for Use procedure in sec. 4.

2. Read all safety precautions in sec. 2.

CAUTION

Resistance measurements must be made on de-energized (dead) circuits only. Impressing a voltage across the instrument terminals while set to any resistance range may result in electric shock, instrument damage and/or damage to equipment under test. Be certain equipment is completely de-energized.

3. Completely de-energize the circuit or device which is to be measured. Set the selector switch to the range desired. Hold the test lead tips together and adjust for a “0” ohm reading using the “0Ω adj” knob. If a zero reading cannot be obtained, a weak battery is the most probable cause. See section 6.1 (Battery Replacement).

4. Connect the instrument to the points between which the resistance is to be measured. Read the resistance on the uppermost “OHMS” scale. Multiply the reading by the range the selector switch is set to. For example a reading of 10 on the “x1K” range equals 10K ohm (1K = 1000Ω).

NOTE: When reading resistors in circuit, there may exist more than one conductive path. When this condition exists, the reading taken is a combination of the circuit paths. When trying to read one resistor, it is advisable to remove that resistor from the circuit before measurement to avoid reading multiply conductive paths.

5-4) Battery Measurements

1. Follow the Preparation for use procedure in sec. 4.
2. Read all safety precautions in sec. 2.
3. The SP-152A comes with two separate battery check ranges that enable you to test 1.5Vdc or 9Vdc batteries.
4. Connect red probe to + Jack, black to - Jack.
5. Set the range selector switch to 9V battery check range.
6. Connect the test leads to the 9Vdc battery under test. A good 9Vdc battery will read in the green portion of the Arc.
7. To check 1.5Vdc batteries follow the above procedures with the range selector switch set to the 1.5Vdc range.
8. The "?" section on the scale plate shows that the battery may be starting to decay.

SYMBOLS

V⎓ DIRECT VOLTAGE (DCV)

V~ ALERATIVE VOLTAGE (ACV)

MA⎓ DIRECT CURRENT (DcmA)

EARTH (GROUND) TERMINAL

DOUBLE INSULATION

Sec. 6 MAINTENANCE

6-1) Battery Replacement

⚠ **WARNING:** To avoid electric shock, disconnect measuring terminals before removing cover.

1. Disconnect test leads form any circuit and then disconnect test leads from the instrument.

2. Turn instrument upside down and lay on a soft flat surface which will not scratch the scale window.

3. Remove the phillips head screw and lift off the back case.

4. Remove the battery by prying up near the center of the battery using a coin.

5. Replace the battery with a new 1.5 Vdc, AA size battery, A.W. SPERRY part B-1. When installing the battery make sure the polarity matches that indicated in the battery compartment.

6. Replace the back cover by sliding the end with the small tab in first. Then replace the phillips head screw and tighten to a snug fit. Do not over tighten screw.

6-2) Fuse Replacement

1. Follow steps 1-3 in Section 6-1.

2. Remove the fuse and replace with a miniature glass type fuse, 1/2 Amp, 250V, 1/4" X 11/4", A.W. SPERRY Part #F-1 or approved equal.

CAUTION

Do not short fuse out of the circuit, or use a fuse with higher rating than 1/2 Amp, or alter circuit to eliminate the fuse. These actions negate the safety purpose of the fuse, can cause extensive damage to the instrument and/or injury to the user.

6-3) Cleaning

The exterior of the instrument can be cleaned with a soft dry cloth to remove any oil, grease or grime. Never use any liquid solvents or detergents. Do not polish the instrument. If the instrument gets wet for any reason, dry the inside and outside of the instrument using low pressure air, less than 25 PSI.

Sec. 7 RETURN FOR REPAIR

Before returning your Analog Multimeter for repair be certain that the failure to operate is not caused by:

1. weak battery
2. open test leads.

If these conditions do not exist and the instrument still fails to operate properly or is damaged, return the instrument and accessories prepaid to:

A.W. Sperry Instruments, Inc.
Attn: Customer Service Dept.
245 Marcus Boulevard
Hauppauge, NY 11788

State in writing what is wrong with the instrument. If the warranty period is still in effect you must include your name, address and phone number. Repair estimates will be furnished if requested for out of warranty instruments.

Note: Subsequent revisions to this document may exist. Use for general references only.

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