OPERATING INSTRUCTIONS MODEL DM-12

AUTORANGING MULTIMETER



FEATURES

- 20 Ranges, 6 Functions
- Limited Five Years Warranty
- Pocket size
- Simple Operation
- Auto Power Off
- Ergonomically contoured for your hand
- 200 Hour Battery Life
- Recessed Safety Designed Input Terminals
- Overload Protection on All Ranges
- Diode Test Function
- Capacitance Test Function

ACCESSORIES

The DM-12 comes packed complete with one (1) set TL-58 Test Leads (1 black, 1 red), one (1) B-4 Battery, one (1) F-2 Fuse, one (1) spare, one (1) C-72 Rubber Holster, Form # 240 operating instructions and warranty card.

 When servicing, use only specified replacement parts.

SAFETY RULES

1. Reading these operating instructions thoroughly and completely before operating your DMM. Pay particular attention to WARNINGS and CAUTIONS which will inform you of potentially dangerous procedures. These instructions must be followed.
2. Always inspect your DMM, test leads 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.
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. Never touch exposed wiring, connections or any live circuits conductors when attempting to take measurements.
5. Never replace the protective fuse inside the DMM with any other than the AWS part number specified or approved equal.
6. Remember: Think Safety and Act Safely.

7. When testing for the presence of voltage make sure the voltage function is operating properly by reading a known voltage in that range before assuming that a zero reading indicates a no-voltage condition.
8. Calibration and repair should be performed by qualified maintenance personnel only.
9. Do not attempt calibration or service unless another person, capable of rendering first aid and resuscitation is present.
10. Do not install substitute parts of perform any unauthorized modification of the instrument. Return the instrument to A.W. Sperry Instruments for service and repair to insure that safety features are maintained.
11. To avoid electric shock use CAUTION when working with voltages above 40Vdc or 20Vac. Such voltages pose a shock hazard.
12. Do not operate this instrument in an explosive atmosphere (i.e. in the presence of flammable gases or fumes, vapor or dust).

SPECIFICATIONS

Display: 3½ digit liquid crystal display (LCD) with maximum reading of 3200.

Analog bar graph: 34 segments with measurements 12 times per second.

Polarity: Automatic, (-) negative polarity indication.

Overrange: "OL" mark indication.

Low Battery indication: The "  " is displayed when the battery voltage drops below the operating level.

Measurement rate: 2 times per second, nominal.

Auto power off: Meter automatically shuts down after approx. 10 minutes of inactivity.

Operating environment: 0°C to 50°C at <70% relative humidity.

Storage temperature: -20°C to 60°C at <80% relative humidity.

Power: Single standard 9V battery, NEDA 1604, JIS 006P, IEC 6F22 A.W. Sperry Part #B-4

Battery life: 200 hours typical with carbon-zinc

Fuse: Miniature glass type, 0.1A/250V, 5 x 20mm, Fast Acting.

Dimensions: 147mm (H) x 70mm (W) x 39mm (D)

Weight: Approx. 327g including holster.

	Range	DC Accuracy	AC Accuracy	Input impedance	Maximum input
Voltage (50/60 Hz)	320mV	±1,2% rdg + 1d	N / A	> 1000MΩ	600VDC or 600VAC rms
	3,2V	±0,8% rdg + 1d	± 2,0% rdg + 4d	11MΩ	
	32V	±1,2% rdg + 1d		10MΩ	
	320V				
	600V				
Capacitance	**Range**	**Resolution**	**Accuracy**	**Test Condition**	**Input Protection**
	32µF	10nF	±5,0% rdg + 10d	3,0Vdc 10,7Hz	0,1A/250V fuse
	320µF	100nF			
	32mF	10µF			
OHM	**Range**	**Resolution**	**Accuracy**	**Test current**	**Input Protection**
	320Ω	100mΩ	±2,0% rdg + 3d	< 0,7 mA	500VDC or 500VAC rms
	3,2KΩ	1Ω	±1,5% rdg + 3d	< 0,13mA	
	32KΩ	10Ω		< 13 µaA	
	320KΩ	100Ω		< 1,3 µA	
	3,2MΩ	1KΩ	± 2,5% rdg + 3d	< 0,13 µA	
	32MΩ	10KΩ	± 5,0% rdg + 5d		
Diode Test	0-2000	1mV	±10% rdg + 2d	0,5mA (Vf = 0,6V)	500V DC or AC rms
Continuity Check	**Range**	**Resolution**	**Audible indication**	**Test Current**	**Input Protection**
	320Ω	100mΩ	< approx. 20Ω	< 0,7mA	500V DC or AC rms

OPERATION

Before taking any measurements, read the Safety Information Section. Always examine the instrument for damage, contamination (excessive dirt, grase, etc) and defects. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do no attempt to make any measurements.

MODE SWITCH (RANGE) / •)) →

The meter also has a manual range mode. In manual range, you select and lock the meter in a range. To manually select a range:

Press Mode Switch to hold the selected range. Subsequently pressing the Mode Switch will select each range in sequence from the lowest to highest range. Hold the switch for 2 seconds to return to the Autorange Mode. Press Mode Switch to toggle between the continuity/diode modes, if the function switch is set to •)) → position.

Voltage Measurements

1. Connect the red test lead to the "VΩ" jack and the black test lead to the "COM" jack.
2. Set the Function switch to the desired voltage type (DCV) or (ACV) position.
3. Touch the probes to the test points, the range will change automatically to the level that will display the input voltage with best resolution.
4. For dc, a (-) sign is displayed for negative polarity; positive polarity is implied.

Resistance Measurements

1. Set the Function switch to the "Ω" position.
2. Turn off power to the circuit under test. External voltage across the components causes invalid readings.
3. Connect the red test lead to the "VΩ" jack and the black test lead to the "COM" jack.
4. Connect the test leads to the point of measurements and read the value from the display.

Testing Diodes

1. Set the Function switch to  → position.
2. Turn off power to the circuit under test. External voltage across the components causes invalid readings.
3. To toggle between the continuity/diode modes, press Mode Switch.
4. Touch probes to the diode. A forward-voltage drop is about 0.6V (typical for a silicon diode).
5. Reverse probes. If the diode is good, "OL" is displayed. If the diode is shorted, a value near 0Mv will be displayed.
6. If the diode is open, "OL" is displayed in both directions.

CONTINUITY MEASUREMENTS

1. Set the Function switch to  → position.
2. Turn off power to the circuit under test. External voltage across the components causes invalid readings.
3. To toggle between the continuity/diode modes, press Mode Switch.
4. Connect the test leads to the two points at which continuity is to be tested. The buzzer will sound if the resistance is less than approximately 20Ω.

CAPACITANCE MEASUREMENTS

1. Turn off power to the device under test and discharge all capacitors.
2. Discharge all voltage from the capacitor before measuring its capacitance value.

NOTE
A safe way to discharge a capacitor is to connect a 100KΩ resistor across the two capacitor leads.

3. Plug the black test lead into the COM input jack on the DMM and connect the test lead tip to one end of the discharge capacitor. When measuring electrolytic capacitors, observe correct polarity. Connect the COM test lead to the negative capacitor lead.
4. Set the Function/Range switch to the capacitance range that gives the most accurate measurement reading.
5. Plug the red test lead into the VΩ input jack on the DMM and connect the test lead tip to the other end of the discharged capacitor. Read the capacitance value in the display.
6. After completing the measurement, disconnect the DMM test leads.

MAINTANCE

WARNING

To prevent electrical shock hazard, turn off the multimeter and any device or circuit under test and disconnect the test leads before changing battery or fuse or performing any servicing.

BATTERY REPLACEMENT

Power is supplied by a 9 volt “transistor” battery. (NEDA 1604, IEC 6F22). The “  ” appears on the LCD display when replacement is needed.

To replace the battery, remove the three screws from the back of the meter and lift off the front case. Remove the battery from case bottom.

FUSE REPLACEMENT

If no capacitance measurements are possible, check for a blown overload protection fuse. For access to fuses, remove the three screws from the back of the meter and lift off the front case. Replace F1 only with the original type 0.1A/250V, fast acting fuse.

ONE YEAR LIMITED WARRANTY

A.W. Sperry Instruments, Inc., warrants that this AWS Instruments has been carefully tested, inspected, and warranted for one (1) year from the date of purchase by the original end user purchaser provided the completed warranty card is returned within ten (10) days after purchase and 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 LIABILITES OF SELLER THEREUNDER ARE EXCLUSIVE AND IN LIEU OF AND BUYER HEREBY WAIVES ALL OTHER REMEDIES, EXPRESS WARRANTIES, GUARANTEES OR LIABILITES, 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 AND 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 REGISTRATION

To validate warranty, please complete the warranty registration card enclosed with your instrument and return to A.W. Sperry Instruments Inc., 245 Marcus Blvd., Hauppauge, N.Y. 11788 within 10 days of purchase. No postage required.

A.W. Sperry Instruments, Inc.

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