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FIVE YEAR LIMITED WARRANTY

A.W. Sperry Instruments, Inc., warrants that this Technmaster Series instrument has been carefully tested, inspected, and warranted for five (5) years from the date of purchase by the original end user, provided the instruments have 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 as 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.

NOTE: Recommended calibration should not exceed one year. Calibration service charges are not covered under terms and conditions of warranty.

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.

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.

MODELS DM-8100, DM-8200 AND DM-8300

Sec. 1 DESCRIPTION

These exceptional 3-1/2 digit, handheld, digital multimeters have the capacity of reading up to 10 functions on up to 36 ranges. These DMM's offer a powerhouse of measurement capability in a self-contained housing. It is designed for the professional at work in the field or in the laboratory, yet simple enough to operate making it perfect for the hobbyist too.

Safety was a prime consideration in the design of these DMM's. Housed in shock resistant ABS plastic, these instruments stand up to the use and abuse of everyday service, and electrically insulates the user from potential shock hazards. Electronic overload protection against accidental application of voltage to resistance and continuity circuits, combined with rugged construction make it a durable and reliable instrument.

Sec. 2 FEATURES

DM-8100

- 32 Ranges, 12 Functions
- Drop Proof to 10 feet
- Water Resistant
- Autoranging/Manual Ranging
- 20A DC/AC Range
- Auto Power Off
- Meets IEC-348, UL-1244 standards
- Overload Protection on all Ranges
- Hi and Lo Power Ohms
- Logic Indicator
- Relative Readings
- Data Hold
- Built-in Hanger and Tilt Stand
- Large 3 1/2 Digit LCD Display with Annunciators
- 5 Year Limited Warranty
- Safety Yellow

DM-8200

- 32 Ranges, 12 Functions
- Drop Proof to 10 feet
- Water Resistant
- Autoranging/Manual Ranging
- 20A DC/AC Range
- Auto Power Off
- Meets IEC-348, UL-1244 standards
- Overload Protection on all Ranges
- Analog Bar Display
- Hi and Lo Power Ohms
- Logic Indicator
- Relative Readings
- Data Hold
- Built-in Hanger and Tilt Stand
- Large 3 1/2 Digit LCD Display with Annunciators
- 5 Year Limited Warranty
- Safety Yellow

DM-8300

- 36 Ranges, 14 Functions
- Drop Proof to 10 feet
- Autoranging/Manual Ranging
- 20A DC/AC Range
- Auto Power Off
- Meets IEC-348, UL-1244 standards
- Overload Protection on all Ranges
- Analog Bar Display
- Temperature Ranges (probe included)
- Hi and Lo Power Ohms
- Logic Indicator
- Relative Readings
- Data Hold
- Built-in Hanger and Tilt Stand
- Large 3 1/2 Digit LCD Display with Annunciators
- 5 Year Limited Warranty
- Safety Yellow

Sec. 3 SPECIFICATIONS

Display:

3-1/2 digits, 17mm large LCD maximum reading

Polarity:


1999 or -1999 and units sign annunciators.

Overrange:

Automatic, (-) negative polarity indication. "1000" most significant digit blinks.

Low Battery

Indication:

The "  " is displayed when the battery voltage drops below the operation voltage. 2.5 times per second nominal.

Sampling Rate:

2.5 times per second nominal.

Operating Environment:

0° C to 50° C (32° to 120° F) at 70% RH

Storage Environment: -20° C to 60° C (-4° F to 140° F) 0-80% RH without battery.

Power: Single standard 9-volt battery, NEDA 1604, JIS006P IEC6F22.

Power Consumption: 14mW typical.

Battery Life: 300 hours typical with zinc carbon.

Fuse: 20A, 600V 10.3 x 38mm fast acting AWS Part #F-20 0.5A, 600V 6.3 x 25mm fast acting AWS Part #F-21.

Dimensions: 7.5"H x 3.4"W x 1.5"D (189H x 87W x 37D mm).

Weight: 12.9 oz. (370g) including battery.

RANGES:

DC Volts (Autorange) DM-8100 DM-8200 DM-8300

Range	Resolution	Accuracy 1R To 2RC	Accuracy 1R To 2RC	Accuracy 1R To 2RC	Input Impedance
200mV	100µV	±(0.5% rdg+1d)	±(0.5% rdg+1d)	±(0.5% rdg+1d)	100MΩ
2V	1mV	-	-	-	11MΩ
20V	10mV	-	-	-	10MΩ
200V	100mV	-	-	-	-
1000V	1V	-	-	-	-

NOTE: Greater than 50dB at 50Hz or 60Hz.
CRS: Greater than 100dB at 50Hz or 60Hz.
Overload Protection: 1200VDC or Peak AC

AC Volts (Autorange) DM-8100 DM-8200 DM-8300

Range	Resolution	Accuracy 1R To 2RC (50Hz to 500Hz)	Accuracy 1R To 2RC (50Hz to 500Hz)	Accuracy 1R To 2RC (50Hz to 500Hz)	Input Impedance
2V	1mV	±(1.2% rdg+3d)	±(1.2% rdg+3d)	±(1.2% rdg+3d)	11MΩ
20V	10mV	-	-	-	10MΩ
200V	100mV	-	-	-	-
750V	1V	-	-	-	-

Response: Average responding calibrated in RMS of sine wave.
Overload Protection: 1200VDC or Peak AC

DC Current DM-8100 DM-8200 DM-8300

Range	Resolution	Accuracy 1R To 2RC	Accuracy 1R To 2RC	Accuracy 1R To 2RC	Full Scale Burden Voltage
200µA	0.1µA	±(1.0% rdg+1d)	±(1.0% rdg+1d)	±(1.0% rdg+1d)	400mV
20mA	10µA	-	-	-	-
200mA	100µA	-	-	-	-
20A	10mA	±(2.0% rdg+3d)	±(2.0% rdg+3d)	±(2.0% rdg+3d)	900mV

Overload Protection: 500mA/600V fuse on mA inputs (fast blow fuse)
 20A/600V fuse on 20A inputs (fast blow fuse)
 • 10A continuous, 20A for 60 seconds maximum

AC Current DM-8100 DM-8200 DM-8300

Range	Resolution	Accuracy 1R To 2RC (50Hz to 500Hz)	Accuracy 1R To 2RC (50Hz to 500Hz)	Accuracy 1R To 2RC (50Hz to 500Hz)	Full Scale Burden Voltage
200µA	0.1µA	±(1.5% rdg+1d)	±(1.5% rdg+1d)	±(1.5% rdg+1d)	400mV
20mA	10µA	-	-	-	-
200mA	100µA	-	-	-	-
20A	10mA	±(2.5% rdg+1d)	±(2.0% rdg+3d)	±(2.5% rdg+1d)	900mV

Overload Protection: 500mA/600V fuse on mA inputs (fast blow fuse)
 20A/600V fuse on 20A inputs (fast blow fuse)
 • 10A continuous, 20A for 60 seconds maximum

Resistance HiΩ (Autorange) DM-8100 DM-8200 DM-8300

Range	Resolution	Accuracy 1R To 2RC	Accuracy 1R To 2RC	Accuracy 1R To 2RC	Open Circuit
200Ω	0.1Ω	±(0.75% rdg+1d)	±(0.75% rdg+1d)	±(0.75% rdg+1d)	3.3Vdc
2kΩ	1Ω	-	-	-	1.0Vdc
20kΩ	10Ω	-	-	-	-
200kΩ	100Ω	-	-	-	-
2000kΩ	1kΩ	-	-	-	-
20MΩ (2000k x10)	10kΩ	±(1.5% rdg+5d)	±(1.5% rdg+5d)	±(1.5% rdg+5d)	1.0Vdc

Overload Protection: 500VDC or peak AC-Bi-electronic (NO FUSE BLOW)

Resistance
LoΩ (Autorange) DM-8100 DM-8200 DM-8300

Range	Resolution	Accuracy 1Ω To 20Ω	Open Circuit
2Ω	10	±(0.75% rdg+4d)	±(0.75% rdg+4d)
30kΩ	100	-	-
200kΩ	1000	-	-
2000kΩ	1kΩ	-	-
20MΩ (2000k x10)	10kΩ	±(2.0% rdg+5d)	±(2.0% rdg+5d)
			0.5Vdc

Overload Protection: 500VDC or peak AC-Electronic (NO FUSE BLOW)

Continuity

Range	Resolution	Audible Indication	Response Time	Open Circuit Volts
HiΩ	0.1Ω			3.3V
200			Approx. 100ms	
LoΩ	1Ω	Less than 19 digits		0.8Vdc
2kΩ				

Overload Protection: 500VDC or peak AC-Electronic (NO FUSE BLOW)

Diode Test

Range	Resolution	Accuracy	Test Current	Open Circuit Volts
2V	1mV	±(1.0% rdg+1d)	1.0mA	3.3V

Overload Protection: 500VDC or peak AC-Electronic (NO FUSE BLOW)

Logic Indicator

Threshold		Pulse Width (min.)	Pulse Rep (max.)	Pulse Rise (max.)
Logic Hi ▲	Logic Low ▼			
2.8V±0.0V	0.8V±0.5V	25nsec	1 Mpps	10 usec

Detector: AC coupled
Impedance: 120k ohms//100pF
Indication: 40 msec beep at logic low
Overload protection: 500VDC or peak AC-Electronic(No FUSE BLOW)

Temperature (DM-8300 Only)

Range	Resolution	Accuracy	Sensor Type
-50°C to 200°C	0.1°C	±(0.5%rdg + 2°C)	
1300°C	1°C	±(0.8%rdg + 2°C)	Thermocouple K type

Sec. 4 SAFETY RULES

- Read 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.
- Always inspect your DMM, 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 section 14 Return for Repair.
- 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.
- Never touch exposed wiring, connections or any live circuit conductors when attempting to take measurements.
- Never replace the protective fuse inside the DMM with any other than the AWS Part number specified or approved equal.
- Remember: Think Safety and Act Safely.
- 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.
- Calibration and repair should be performed by qualified maintenance personnel only.
- Do not attempt calibration or service unless another person, capable of rendering first aid and resuscitation is present.
- Do not install substitute parts or 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.
- To avoid electric shock use **CAUTION** when working with voltages above 40Vdc or 20Vac. Such voltages pose a shock hazard.
- Do not operate this instrument in an explosive atmosphere (i.e. in the presence of flammable gases or fumes, vapor or dust).

Sec. 5 UNPACKING AND CONTENTS CHECK

The TECHMASTER™ DM-8000 series come complete and ready to use. Check the following contents list when unpacking. If any pieces are missing notify the distributor you purchased the instrument from or A.W. Sperry Instruments, Inc.

- Operating Instructions #205
- TL-58 Test Leads, 1 red, 1 black heavy duty with prod tips connected to 90° shielded banana plugs. Use with TECHMASTER™ DM-8000 series.
- 9V Transistor Type Battery (AWS Part #B-4) - See Battery Replacement section 10.2 for proper installation.
- Two Fuses installed, One F-20 Fuse, fast acting, high interrupting capacity Bussman KTK 20 Amp, 600Vac rating 13/32 x 1½. One F-21 Fuse, ceramic type, fast acting, 5A 600Vac rating 6.3mm x 25mm. One spare F-21 Fuse included.
- See Fuse Replacement section 10.3.
- One TP-800K K-Type Thermocouple Probe (DM-8300 only).

Sec. 6 BATTERY REPLACEMENT

These DMM's have a self-contained power supply consisting of One 9V Transistor Type Battery (NEDA #1604, AWS Part #B-4).

When the multimeter displays the , the battery must be replaced to maintain proper operation.

WARNING

TO PREVENT ELECTRICAL SHOCK HAZARD, TURN OFF THE MULTIMETER AND DISCONNECT TEST LEADS BEFORE REMOVING THE BACK COVER.


1. After disconnecting test leads and turning off the multimeter, remove back cover by removing the three screws; then lift off the back cover.
2. Replace the battery.
3. Replace the main seal O-ring.
4. Replace the back cover.

CAUTION

Failure to correctly install back cover may damage O-ring, which in turn will reduce or absorb the water resistant nature of applicable meter.

Sec. 7 FUSE TEST AND REPLACEMENT

Use the following steps to test the internal fuses of the meter:

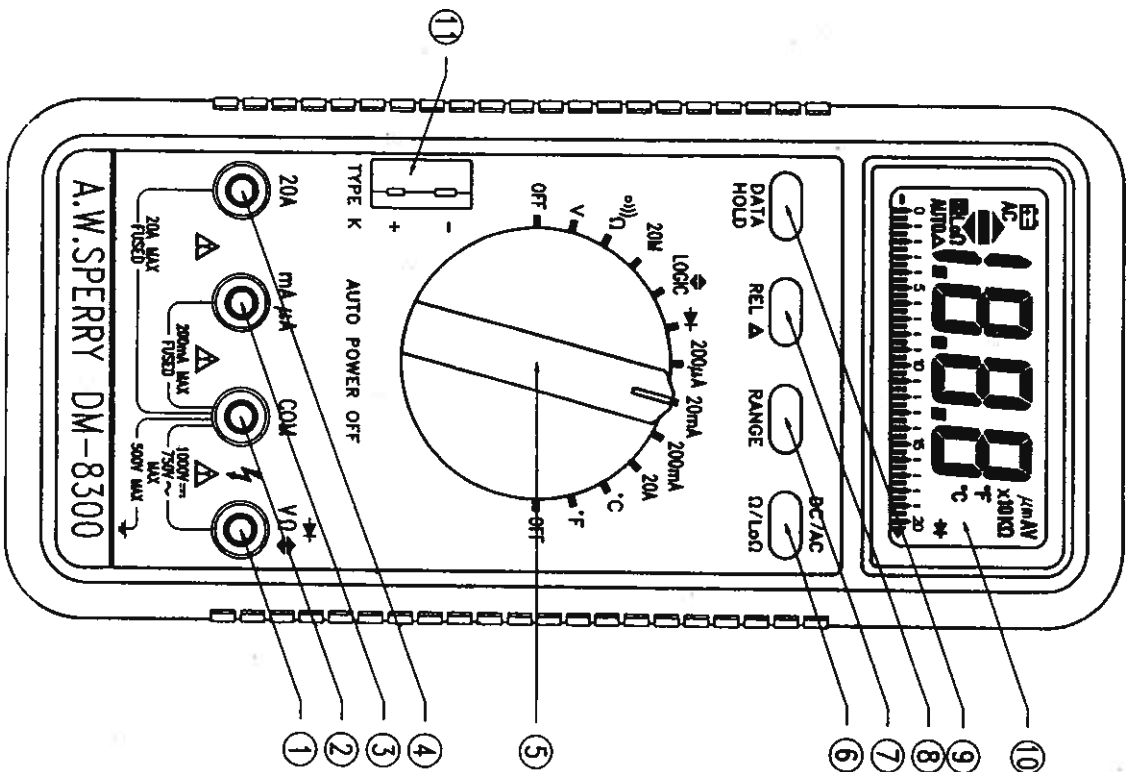
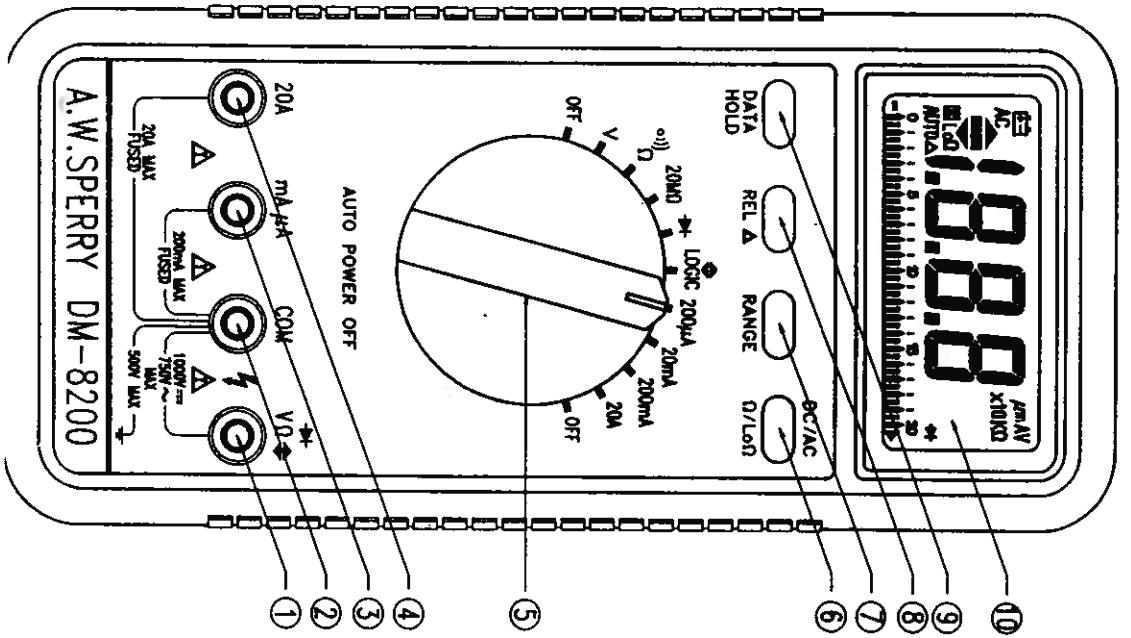
1. Turn the function/range switch to the () position. Plug a test lead into the V Ω input terminal.
2. Touch the probe to the μ A, mA input terminal. The display should indicate, 700 or less, otherwise the fuse is probably bad.
3. Touch the probe to the 20A input terminal. The display should indicate .001 or less, otherwise the 20A fuse is probably bad.

WARNING

TO PREVENT ELECTRICAL SHOCK HAZARD, TURN OFF THE MULTIMETER AND DISCONNECT TEST LEADS BEFORE REMOVING THE BACK COVER.

mA μ A Input Terminal

1. After disconnecting test leads and turning off the multimeter, remove back cover by removing the three screws; then lift off the back cover.
2. Remove the battery from the battery compartment, disconnect the battery from the battery connector and set the battery aside.
3. Carefully remove the fuse (1x0.25") from the fuse holder. Replace with a 500mA/600V replacement fuse, AWS Part #F-21 or approved equal.
4. Re-connect the battery and replace it in the battery compartment.
5. Replace the main seal O-ring.
6. Replace the back cover by reversing the procedure used to remove it.



- ① **Volt, Ohms, Diode, Logic Input Terminal**
This is the positive input terminal for all functions except current measurements. Connection is made here using the accessory red test lead.
- ② **COM Common Terminal**
This is the negative (ground) input terminal for all measurement modes. Connection is made to it using the accessory black test lead.
- ③ **mAµA Milliamp/Microamp Input Terminal**
This is the positive input terminal for current measurement (AC or DC) up to 200mA. Connection is made to it using the accessory red test lead.
- ④ **20A 20 Amperes Input Terminal**
This is the positive input terminal for current measurement (AC or DC) up to 20A. Connection is made to using the accessory red test lead.
- ⑤ **Function Selector Rotary Switch**
This rotary switch selects the measurement function when aligned with function symbols on the panel.
- ⑥ **DC/AC, Ω/Lo Ω**
Press this button to enter the DC or AC mode, when the rotary switch is set to measuring volt or current. Press this button to enter the Ohms or Low-power ohms (for in-circuit resistance measurements) mode, when the rotary switch is set to measuring resistance.
- ⑦ **RANGE Manual Ranging**
Press this button to select the Manual Range mode and turn off the AUTO annunciator. In the Manual Range mode, each time you press this button, the range and the input range annunciator increments, and a new value is displayed. To exit the Manual Range mode and return to auto-ranging, Press and hold down this button for 2 seconds. The AUTO annunciator turns back on.
- ⑧ **REL Δ Relative Readings**
Press this button to enter the Relative mode, zero the display, and store the displayed reading as a reference value. The relative mode annunciator (Δ) is displayed. Press this button again to exit the relative mode.
In the Relative mode, the value shown on the LCD is always the difference between the stored reference value and the present

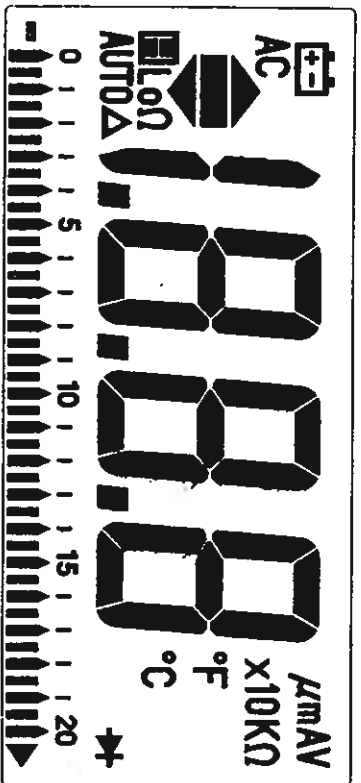
reading is 18.20V, the display will indicate -0.80V. If the new reading is the same as the reference value, the display will be zero.

- ⑨ **HOLD Data Hold**
This switch is used to hold data for all functions during a measurement.
Pressing this button once, freezes the value and "H" appears in the display. Press this button again to clear the display and allows a new measurement to be carried out.
- ⑩ **Liquid Crystal Display (LCD)**
This liquid crystal provides a 3-½ digit measurement data display having a maximum count of 2000, a bar graph display, as well as unit and function annunciators.
- ⑪ **Temperature Jack**
The temperature jack is located in the lower left-hand corner of the front panel. To measure a wide range of temperature (-50°C to +1300°C) plug in a K-type thermocouple and take the reading from the digital display.
- ⑫ **Other Functions**
 - **Bar Graph Display**



The major feature of this multimeter is the provision of an analog display. The analog display is easy to use and interpret. It functions much the same as the needle on an analog meter without the mechanical overshoot inherent in needle movements. This is a 41 segment display which corresponds to a full count of 2000 on the numerical display, so that one segment corresponds to 50 counts. This enables it to quickly track fast changing analog signals, greatly simplifying adjustment of such signals.

- **Auto Power Off**
Automatic power-off extends the life of the battery by turning the meter off. This occurs after approximately forty-five minutes since the last rotary switch operation. The meter turns back on if the rotary switch is turned



Symbols/ Units	Descriptions
	Lights to indicate that battery voltage has dropped excessively.
AC	Appears for the AC current and voltage modes.
	Polarity marks which appears when a DC signal measurement value is negative.
	On the logic test mode, when TTL logic high, (▲) indicator will appear. When TTL logic low, (▼) indicator will appear.
	Indicates that the data hold condition has been enabled.
AUTO	Appears to indicate that autoranging has been selected.
Δ	Indicates that the relative condition has been enabled.
LoΩ	Appears when the Low-power ohms mode (In-circuit resistance measurement) has been selected.
μmAV	Units for current measurements.
mV	Units for voltage measurements.
x10KΩ	Units for resistance measurements.
°C °F	Units for temperature measurements.
	Appears when the diode test mode has been selected.

Sec. 9 OPERATION

Before making any measurements always examine the instrument and accessories used with the instrument for damage, contamination (excessive dirt, grease, etc.) and defects. Examine the test leads for cracked or frayed insulation and make sure the lead plugs fit snugly into the instrument jacks. If any abnormal conditions exist do not attempt to make any measurements. Instead refer to sec. 14 Return for Repairs.

In voltage and resistance measurements, the multimeter normally operates in automatic ranging mode, an audible signal is heard every time the range increases. Ranges can be selected manually by pressing the RANGE button.

Sec. 9.1 VOLTAGE MEASUREMENTS

1. Insert the black and red test leads into the respective "COM" and "V-Ω" jacks.
2. Place the function switch to "V" and press the "AC/DC" button to enter the DC or AC mode, depending upon the level to be measured. If necessary, set the range using the "RANGE" switch.

CAUTION

To avoid possible electric shock, instrument damage and/or equipment damage, do not attempt to take any voltage measurements if the voltage is above 1000Vdc/750Vac or if the voltage is unknown. 1000Vdc and 750Vac is the maximum voltages that this instrument is designed to measure. The "COM" terminal potential should not exceed 500V measured to ground.

3. Apply the test leads to the two points at which the voltage reading is to be taken. Be careful not to touch any energized conductors with any parts of your body.

Sec. 9.2 CURRENT MEASUREMENTS

1. Insert the black and red test leads into the respective "COM" and

2. Place the function switch to the 20A position. Always start with the highest range of the function to be measured.

CAUTION

Do not attempt to measure currents in circuits capable of delivering greater than 600V. Since the fuse is rated at 600V damage or injury could occur. The 20A input terminal is protected by a 20A/600V hi energy, fast blow fuse. The 200 mA input terminal is protected by a 500mA/600V fuse.

3. Completely de-energize the circuit in which the current is to be measured. Place the DMM in series with the conductor carrying the current which is to be measured. Energize the circuit.
4. If the reading is less than 0.20 Amps, you can switch to a lower range for greater accuracy. If not, you have completed your measurement.

CAUTION

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

5. To change to a lower range, move the red test lead to the "mA" jack on the DMM and switch the range selector switch to the "200mA" position.

Sec. 9.3 RESISTANCE AND CONTINUITY MEASUREMENTS

1. Insert the black and red test leads into the respective "COM" and "V- Ω " terminals.
2. Place the function switch to " Ω 1)" and press the " Ω /Lo Ω " button to enter the Ω (Hi-power ohms) or Lo Ω (Lo-power ohms) mode, depending upon which is to be measured. If required, set the range using the "RANGE" switch.
3. If the resistance being measured is connected to a circuit, turn off

press the " Ω /Lo Ω " button to lo Ω mode, connect test leads to circuit being measured.

4. Most in-circuit resistance measurements can be made without removing diodes and transistors from the circuit and which allow accurate measurements of in-circuit resistance.
5. To perform 20M Ω measurement, note this range will measure resistance value from 2M Ω to 20M Ω with annunciator "x10K Ω " on LCD.
6. The resistance in the test leads can diminish accuracy on the lowest (200-ohm) range. The error is usually 0.1 to 0.2 ohms for a standard pair of test leads. To determine the error, short the test leads together and read the resistance of the leads. Use the Relative (REL) mode to automatically subtract the lead resistance from resistance measurements.
7. Read resistance value on digital display, if a high resistance value is shunted by a large value of capacitance, allow digital display to stabilize.
8. To perform continuity checks, leave the meter in the resistance mode and set the function switch to both " Ω 1)" position. When the resistance of the circuit being measured is less than 19 digits, a beep tone will sound.

Sec. 9.4 DIODE MEASUREMENTS




1. Insert the black and red test leads into the respective "COM" and "V- Ω " terminals.
2. Place the function switch to " \rightarrow ", and connect the test leads across the diode.
3. If the semiconductor junction being measured is connected to a circuit, turn off power to circuit being tested and discharge all capacitors.
4. The voltage is developed across the component by a test current (approximately 1mA with the test leads shorted) from the meter.
5. Read forward voltage drop on digital display for a silicon diode, the typical forward voltage should be about 0.6V.

Sec. 9.5 LOGIC MEASUREMENTS

1. Insert the black and red test leads into the respective "COM" and

CAUTION

To avoid electric shock, instrument damage and/or equipment damage, do not exceed 500Vdc/ac while set to take measurements in the logic test range.

2. Place the function switch to the LOGIC () position.
3. Connect the black probe to the common buss of the logic circuit to be tested; Connect the red probe to the point to be tested; On a TTL logic 1 the logic high () indicator will appear. On a TTL logic 0 the logic low () indicator will appear and the beeper will sound.

Sec. 9-6 TEMPERATURE MEASUREMENT (DM-8300 ONLY)

1. Select desired unit of measurement ($^{\circ}\text{C}$ or $^{\circ}\text{F}$).
2. Connect a K-type thermocouple probe to the input jack on the front panel.
3. Place the thermocouple junction (tip) where it is desired to measure temperature. Place tip at desired point for air temperature measurement, immerse tip for liquid measurement, or hold tip against surface for surface temperature measurement (apply a drop of silicon grease at point of measurement for good heat transfer). Allow reading to stabilize at the new temperature.

CAUTION

Do not allow the probe to contact any point in excess of 60VDC, or 24VAC, with respect to ground.

4. Read measurement from the display.


Sec. 10 MAINTENANCE

Maintenance consists of periodic cleaning, battery replacement, fuse replacement and recalibration.

Sec. 10.1 CLEANING

The exterior of the instrument can be cleaned with a soft clean cloth to remove any oil, grease or grime from the exterior of the instrument. Never use liquid solvents or detergents. If the instrument gets wet for any reason, dry the instrument using low pressure "clean" air at less than 25 PSI. Use care and caution around the LCD display protector and areas where water or air could enter the interior of the instrument while drying.

Sec. 10.2 BATTERY REPLACEMENT

Required when " " appears on display or nothing appears. See BATTERY REPLACEMENT in section 6.

Sec. 10.3 FUSE REPLACEMENT

Required when current ranges do not function. See FUSE REPLACEMENT in section 7.

Sec. 11 ACCESSORIES

The following accessories are available to expand the measurement capabilities of the DM-8000 series. Refer to their respective data sheets or operating instructions for full specifications.

Sec. 11.1 AC CURRENT MEASUREMENT - SJA-870

The Model SJA-870 is a split core current transformer capable of measuring AC currents up to 1200Aac.

Input: 0-1200Aac max.
Output: 0-12V_{ac} at 1V 1M Ω Load
Accuracy: $\pm(3\%/rdg+1A)$ with conductor in center of Jaw
Frequency: 50-400Hz

Sec. 11.2 HIGH VOLTAGE DC MEASUREMENT - HVP-860

The Model HVP-860 is a high voltage probe capable of measuring up to 50,000Vdc.

Input: 0-50,000Vdc
 Output: 0-50Vdc at a 10MΩ load
 Accuracy: ±(1.5% of F.S.)

Sec. 11.3 CARRYING CASE - C-67

Carrying Case for DM-8000 series.

Sec. 11.4 PVC SHOCKGUARD HOLSTER - C-68

Holster for DM-8000 series.

Sec. 11.5 ALLIGATOR CLIPS - AG-940

Two black, Insulated Push-on Alligator Clips.

Sec. 11.6 K-TYPE THERMOCOUPLE PROBE - TP-800K

K-Type Thermocouple Wire Bead Probe 0° to 800° C (32° to 1472°), ±2.2° C (4° F) or 0.75% rdg (whichever is greater). Teflon insulated wire to max. 260° C (500° F).

CAUTION

The HVP-860 is designed to be used by technicians trained in High Voltage measurement techniques. It is designed for use on high impedance, low energy circuits only. These types of circuits are normally found in electronic equipment. It is not designed to be used on High Voltage electrical distribution equipment and circuits. These type of circuits have essential unlimited energy where special equipment is recommended

Sec. 12 CALIBRATION

Calibration on these meters should be performed every year. This can be done by sending the instruments prepaid to:

A.W. Speery Instruments, Inc.
 Customer Service Department
 245 Marcus Boulevard
 Hauppauge, N.Y. 11788

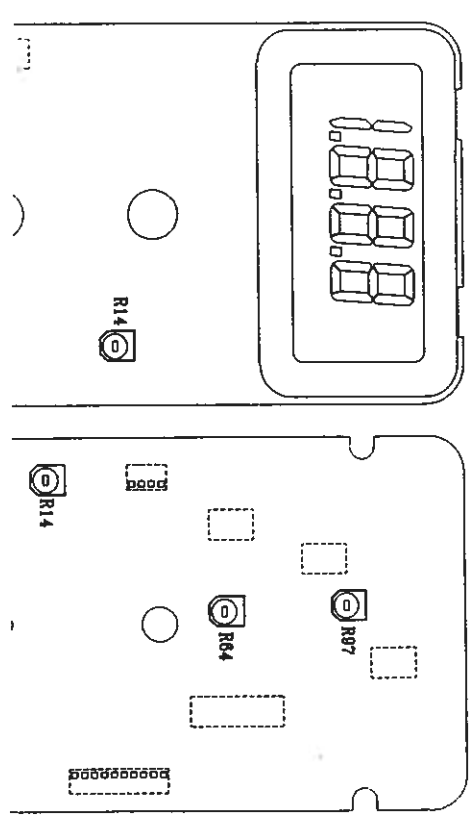
Specify in writing that calibration is necessary. The instrument will be returned to you normally within one week. Estimates will be furnished upon request.

CAUTION

The following procedure should be performed by persons trained and qualified in electronics and electronic equipment service. DO NOT attempt this procedure if not qualified.

WARNING

Do not attempt calibration or service unless another person, capable of rendering first aid and resuscitation is present.



Sec. 12.1 CALIBRATION OF AVERAGING MODELS

- The procedure should be performed at an ambient temperature of $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, and at a relative humidity of less than 80%. Allow the instrument to stabilize at this temperature for a minimum of 30 minutes.
1. Remove the back case screw, carefully pry up the back case.
 2. Set the Function/Range Switch to the DCV position.
 3. Set the output of the DC calibrator for $190.0\text{mV} \pm 0.02\%$ and connect it to the "V- Ω ", and "COM" input terminals.
 4. Adjust R14 until the display reads $190.0\text{mV} \pm 1$ digit.
 5. Carefully inspect the other DCV ranges. Your readings should be within specification $\pm 0.5\% + 1$ digit.
 6. There is no adjustment for ACV. Calibrate DCV first.
 7. Carefully inspect the ACV ranges. Your readings should be within $\pm 1.2\% + 3$ digits of the ACV calibration source.
 8. Set the output of the DC calibrator for $1.9\text{A} \pm 0.02\%$ and connect it to the "20A", and "COM" input terminals.
 9. Adjust R11 (shunt resistor) until the display reads 1.9A.
 10. If the reading is over 1.9A, add solder to R11. If the reading is under 1.9A, shave away lightly some of the solder and metal from R11.
 11. Carefully inspect the other DCA ranges. Your readings should be within specification $\pm 1\% + 1$ digit.
 12. Turn off calibrator and disconnect from the DMM.
 13. Install the back case and insert the back case screw.

Sec. 12.2 CALIBRATION OF DM-8300

1. Use the procedure of section 12.1 through step 12, and then proceed as follows.
2. Set the Function/Range switch to the " $^{\circ}\text{C}$ " position.
3. Connect a K-type T/C probe to the temperature jack, then immerse the probe tip into ice reference cell for 30 seconds.
4. Adjust R64 until the display reads 00.0°C .
5. Set the Function/Range switch to the " $^{\circ}\text{F}$ " position.
6. Adjust R105 until the display reads 32.0°F .
7. Disconnect T/C probe from ice reference cell.

Sec. 13 DIAGRAMS

Sec. 13.1 CIRCUIT DIAGRAM

