



RS 216-7408 = DM78A

SPECIFICATIONS (23 ± 5°C, 80% RH Max)

DISPLAY
Numerical display, 3 1/2 digit LCD, 10mm high, maximum reading 3200.
Units and signs: AC, \rightarrow , B, mV, V, Ω , K Ω , M Ω , \rightarrow , H, minus, and decimal point.

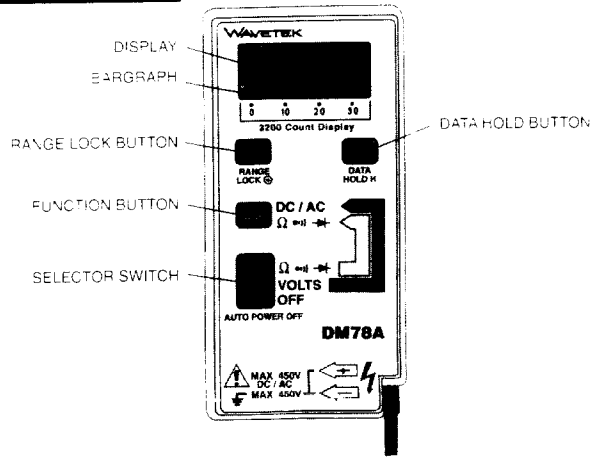
RANGE SELECTION: Autoranging and manual.
OVERRRANGE INDICATION: O.L.
POLARITY: Autopolarity, (-) sign when minus.
BATTERY WARNING: B is displayed when battery voltage goes below 1.25V ± 0.1V.
SAMPLING RATE: 2/sec display, 20/sec bargraph.
TEMPERATURE & HUMIDITY
Operation: 0° to 40°C (32° to 104°F), <70% RH noncondensing.
Storage: -20° to 60°C (-4° to 140°F), <80% RH noncondensing
BATTERY TYPE: Two 1.5V (LR-44 or NEDA#1166A) batteries.
BATTERY LIFE: 70 hours continuous operation.
CONTINUITY TEST: Buzzer alert.
DIODE CHECK: Good or bad judged by the displayed value
BATTERY SAVER: Automatic turn-off after 10 minutes of non-use.
DIMENSIONS (HxWxD) & WEIGHT: 4.3in. (111.5mm) H x 2.2in. (56mm) W x 0.40in. (10.5mm) D, and 3oz (8.6g) including case.
INCLUDED WITH METER: Two 1.5V (LR-44) batteries, operator's manual, and carrying case.
SAFETY: Designed to UL1244.

DM78A SPECIFICATIONS*

	Range	Resolution	Accuracy	Input Impedance	Maximum Input
DCV	320mV	100 μ V	$\pm 2.0\%$ rdg + 2 dgts	>1000M Ω	450VDC or 450VAC rms
	3.2V	1mV	$\pm 1.0\%$ rdg + 2 dgts	11M Ω	
	32V	10mV	$\pm 2.0\%$ rdg + 2 dgts	10M Ω	
	320V	100mV			
	450V	1V			
ACV (50/60Hz)	3.2V	1mV	$\pm 4.0\%$ rdg + 5 dgts	11M Ω	
	32V	10mV			
	320V	100mV			
	450V	1V			
Ohm	32 Ω	100m Ω	$\pm 2.0\%$ rdg + 4 dgts	<0.7mA	450VDC or 450VAC rms
	3.2K Ω	1 Ω	$\pm 2.0\%$ rdg + 2 dgts	<0.13mA	
	32K Ω	10 Ω		<13 μ A	
	320k Ω	100 Ω		<1.3 μ A	
	3.2M Ω	1k Ω	$\pm 6.0\%$ rdg + 2 dgts	<0.13 μ A	
	32M Ω	10k Ω	$\pm 10\%$ rdg + 2 dgts	0.6mA (Vf = 0.6V)	
Diode Test	3.2V	1mV	$\pm 10\%$ rdg + 2 dgts	0.6mA (Vf = 0.6V)	
Continuity Check	Range	Resolution	Audible Indication	Test Current	
	32 Ω	100m Ω	<Approx 20 Ω	<0.7mA	

*Specifications are subject to change without notice

FUNCTION INDICATIONS



SELECTOR SWITCH: Three positions — 1) Ω \rightarrow \rightarrow (ohms, continuity test, and diode test), 2) Volt, and 3) Off.

FUNCTION BUTTON

- When Selector Switch is in Ω \rightarrow \rightarrow position, button steps among resistance (0-32M in 6 ranges: Ω on display), continuity test (\rightarrow) and Ω on display), and diode test (\rightarrow or display).
- When Selector Switch is in Volt position, button steps between AC voltage (0 to 450VDC in 5 ranges), and DC voltage (0 to 450 VAC in 4 ranges).

RANGE LOCK BUTTON: Selects specific ranges or selects autoranging.

BARGRAPH: Full width (32 increments) is proportional to the maximum reading in the range shown (mV, Ω , K Ω , etc.). Can be used to spot intermittences or for peaking or nulling circuits.

DISPLAY: 3 1/2-digit readout with decimal point, minus polarity, overrange, unit of measure, bargraph, and mode and low battery annunciators.

DATA HOLD BUTTON: Holds last reading on display. Toggles on and off.

TEST LEADS: One pair of test leads consisting of a red test lead and a black test lead. Black test lead is touched to negative side of the circuit and red test lead to positive side.

BUZZER ALERT: Buzzer sounds in the following usage — Function change, Range Lock, Data Hold and Continuity Test.

METER SAFETY INFORMATION

- Before each use of the multimeter, inspect test leads, connectors, case, and probes for cracks, or breaks in the insulation. If any defects are found, replace defective item immediately. Make sure that the meter and test leads are free of dust, grease, and moisture.
- Before measuring, make certain that Selector Switch and Function Button are set on correct position. Before changing functions, always disconnect test leads from the circuit being measured.
- Maximum rated input voltage is 450VAC or 450VDC on Volt range. Do not attempt to take any voltage measurement that might exceed 450VAC or 450VDC to avoid electrical shock hazard and/or damage to the instrument.
- Measuring voltage that exceeds the limits of the multimeter may damage the meter and expose you to a shock hazard. Always recognize the meter voltage limits as stated on the front of the meter.
- Do not use instrument to measure high energy circuits such as 480VAC generators where electrical transients greater than 700V may occur.
- Do not polish the tester case, or attempt to clean it with any cleaning fluid, gasoline, benzene, etc. If necessary, use silicon oil or antistatic fluid.

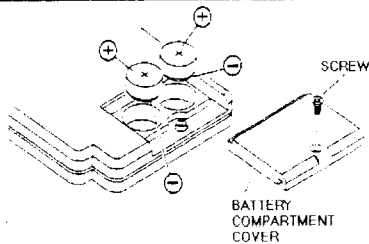
GENERAL SAFETY INFORMATION The following safety information must be observed to insure maximum personal safety during the operation of this meter.

- 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.
- To avoid electrical shock hazard, do not touch test leads, tips, or the circuit being tested while power is applied to the circuit being measured.
- Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.
- Use caution when working above 60VDC or 30VACrms. Such voltages pose a shock hazard.
- Avoid severe mechanical shock or vibration, extreme temperature or very strong magnetic fields.
- Measurement of high voltages can be lethal. Use extreme caution when working with high-voltage sources. High-voltage transients may occur in nearly any defective electronic equipment.

BATTERY REPLACEMENT

Power is supplied by two button-type batteries (NEDA 1166A or IEC LR-44). "B" appears on the LCD display when replacement is needed.

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 Function Switch to Off.
3. Remove battery cover screw.
4. Slide off battery cover, note polarity, and change batteries.
5. Replace battery cover and screw.

MEASUREMENT PROCEDURES

Autoranging: The meter defaults to autorange when you turn it on. In autorange, the meter selects the range automatically.

Manually Selecting a Range

1. To manually select a range, press Range Lock Button to hold the selected range (⊖ appears on the display.) Pressing the Range Lock Button again will step to the next range.
2. Hold the button for 2 seconds to return to the Autorange mode.

Data Hold Button

1. Press Data Hold Button to toggle in ("H" is displayed) and out of the data hold mode. In the data hold mode the last reading is held on the display.
2. Press Data Hold Button again to release the hold and present readings are once again displayed.

Function Button (DC/AC and Ω \rightarrow) \rightarrow

- When Selector Switch is in Ω \rightarrow) \rightarrow position, button steps among resistance, continuity test (\rightarrow) and Ω are displayed, and diode test (\rightarrow) is displayed).
- When Group Switch is in Volt position, button steps between AC voltage and DC voltage.

DC Voltage

For safety, do not attempt to measure voltages greater than 450VDC.

1. Set Selector Switch to Volt.
2. If "AC" appears in the display, press Function Button to remove it.; select DC.
3. Connect black test lead to the negative side of the circuit being measured and red test lead to the positive side.
4. Read the value on the display.

AC Voltage

For safety, do not attempt to measure voltages greater than 450VAC.

1. Set Group Switch to Volt.
2. Push Selector Button so "AC" appears in display.
3. Connect black test lead to the negative side of the circuit being measured and red test lead to the positive side. The connection should be in parallel with the circuit being measured.
4. Read the value on the display.

Resistance

Before taking any in-circuit resistance measurements, remove power to the circuit being tested and discharge all capacitors in the circuit.

1. Set Selector Switch to Ω \rightarrow) \rightarrow
2. Press Function Button until O.L and M Ω appear on the display.
3. Connect test leads to the circuit being measured.
4. Read the value on the display.

Continuity Check

1. Set Group Switch to Ω \rightarrow) \rightarrow
2. Push Function Button until \rightarrow) appears in the display.
3. Connect test leads to the circuit to be tested. Buzzer sounds when continuity resistance is less than 20 Ω .

Diode Check

Diode check should be done with the diode disconnected from the circuit or the other devices. This tester cannot check the diodes requiring a forward voltage higher than 1V.

1. Set Selector Switch to Ω \rightarrow) \rightarrow
2. Push Function Button until \rightarrow) appears in the display.
3. Connect black test lead to anode and red test lead to cathode of the diode being measured and note the reading.
4. Reverse test lead connections on the diode being checked. If the diode is good, the display will read half the value in step 3.

WARRANTY

Wavetek warrants that all Products manufactured or procured by Wavetek conform to Wavetek's published specifications and are free from defects in materials and workmanship for a period of one (1) year from the date of delivery to the original Buyer, when used under normal operating conditions and within the service conditions for which they were designed. This warranty is not transferrable and does not apply to used or demonstration products.

The obligation of Wavetek arising from a Warranty claim shall be limited to repairing, or at its option, replacing without charge, any assembly or component (except batteries) which in Wavetek's sole opinion proves to be defective within the scope of the Warranty. In the event Wavetek is not able to modify, repair or replace nonconforming defective parts or components to a condition as warranted within a reasonable time after receipt thereof, Buyers shall receive credit in the amount of the original invoiced price of the product.

Wavetek must be notified in writing of the defect or nonconformity within the Warranty period and the affected Product returned to Wavetek's factory, designated Service Provider, or Authorized Service Center within thirty (30) days after discovery of such defect or nonconformity. Buyer shall prepay shipping charges and insurance for Products returned to Wavetek or its designated Service Provider for warranty service. Wavetek or its designated Service Provider shall pay costs for return of Products to Buyer.

Wavetek shall have no responsibility for any defect or damage caused by improper storage, improper installation, unauthorized modification, misuse, neglect, inadequate maintenance, accident or for any Product which has been repaired or altered by anyone other than Wavetek or its authorized representative or not in accordance with instructions furnished by Wavetek.

The Warranty described above is Buyer's sole and exclusive remedy and no other warranty, whether written or oral, expressed or implied by statute or course of dealing shall apply. Wavetek specifically disclaims the implied warranties of merchantability and fitness for a particular purpose. No statement, representation, agreement, or understanding, oral or written, made by an agent, distributor, or employee of Wavetek, which is not contained in the foregoing Warranty will be binding upon Wavetek, unless made in writing and executed by an authorized representative of Wavetek. Under no circumstances shall Wavetek be liable for any direct, indirect, special, incidental, or consequential damages, expenses, or losses, including loss of profits, based on contract, tort, or any other legal theory.

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