**⚠ Read First****⚠ Safety Information**

Understand and follow operating instructions carefully. Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

⚠ WARNING

Identifies hazardous conditions and actions that could cause **BODILY HARM** or **DEATH**

⚠ CAUTION

Identifies conditions and actions that could **DAMAGE** the meter or equipment under test











⚠ WARNING

- When using test leads or probes, keep your fingers behind the finger guards.
- Remove test lead from Meter before opening the battery door or Meter case.
- Use the Meter only as specified in this manual or the protection by the Meter might be impaired.
- Always use proper terminals, switch position, and range for measurements.
- Verify the Meter's operation by measuring a known voltage. If in doubt, have the Meter serviced.
- Do not apply more than the rated voltage, as marked on Meter, between terminals or between any terminal and earth ground.
- Only replace the blown fuse with the proper rating as specified in this manual.
- Use caution with voltages above 30 Vac rms, 42 Vac peak, or 60 Vdc. These voltages pose a shock hazard.
- To avoid false readings that can lead to electric shock and injury, replace battery as soon as low battery indicator.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes, or capacitance.
- Do not use Meter around explosive gas or vapor.
- To reduce the risk of fire or electric shock do not expose this product to rain or moisture.
- Wear suitable personal protective equipment when working around or near hazardous live conductors which could be accessible.

⚠ CAUTION

- Disconnect the test leads from the test points before changing the position of the function rotary switch.
- Do not expose Meter to extremes in temperature or high humidity.
- Never set the meter in Ω , μ , mA , A function to measure the voltage of a power supply circuit in equipment that could result in damage the meter and the equipment under test.

Symbols as marked on the Meter and Instruction manual

	Risk of electric shock
	See instruction manual
	DC measurement
	Equipment protected by double or reinforced insulation
	Battery
	Fuse
	Earth
	AC measurement
	Conforms to EU directives
	Do not discard this product or throw away.

Unsafe Voltage

To alert you to the presence of a potentially hazardous voltage, when the Tester detects a voltage ≥ 30 V or a voltage overload (OL) in V, mV. The "⚠" symbol is displayed.

Maintenance

Do not attempt to repair this Meter. It contains no user serviceable parts. Repair or servicing should only be performed by qualified personnel.

Cleaning

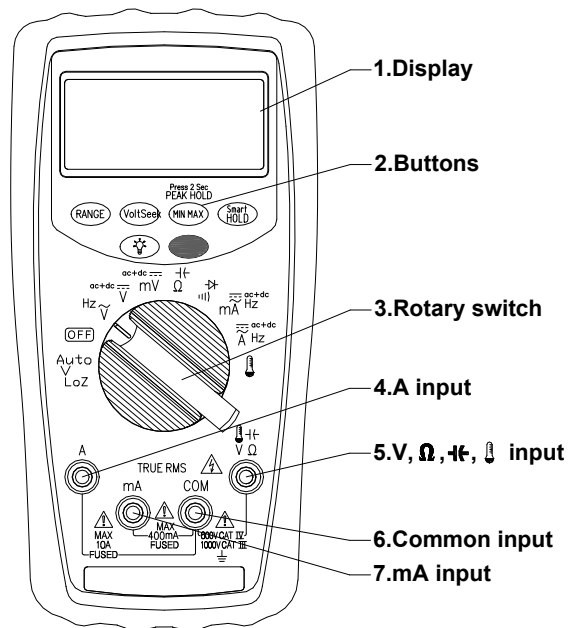
Periodically wipe the case with a dry cloth and detergent. Do not use abrasives or solvents.

Introduction

The Meter Description

Front Panel Illustration

1. LCD display : 6000 counts
2. Push-buttons.
3. Rotary switch for turn the Power On / Off and select the function.
4. Input Terminal for A.
5. Input Terminal for V, Ω , μC , μI functions.
6. Common Input Terminal.
7. Input Terminal for mA.





Feature

- 6000 count digital display.
- 62 segment bar graph .
- Extra Large scale display and white backlit
- True RMS
- 0.08% basic DCV accuracy
- Automatic AC/DC Voltage detect with low impedance (Auto-V LoZ)
- VoltSeek (Non-Contact Voltage detect)
- Smart Data Hold
- Peak Hold (1ms) (for 99IV only)
- Min/ Max function
- AC+DC function
- Frequency Counter on AC mode
- Capacitance Measurement
- Temperature (for 99IV only)
- Low battery indicator with segments
- Auto Power Off (20 minutes)
- Shock proof from 4 feet drops
- CAT.IV 600V/CAT. III 1000V Safety standard

Unpacking and Inspection

Upon removing the meter from its packing, you should have the following items.

1. IDM 98IV or IDM 99IV Digital Multimeter.
2. Test leads. set (one black, one red)
3. Temperature Probe (for 99IV only)
4. User Manual
5. Protective Holster
6. Battery (installed)

Making Basic Measurements

Preparation and Caution Before Measurement

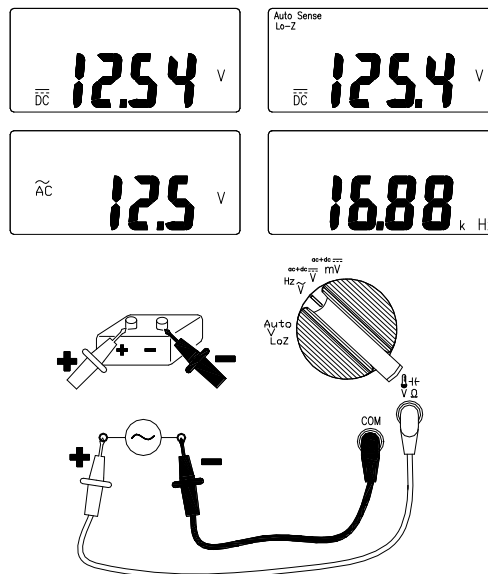
⚠ : **Observe the rules** of **⚠** Warnings and **⚠** Cautions

The figures on the following pages show how to make basic measurements.

⚠ Caution

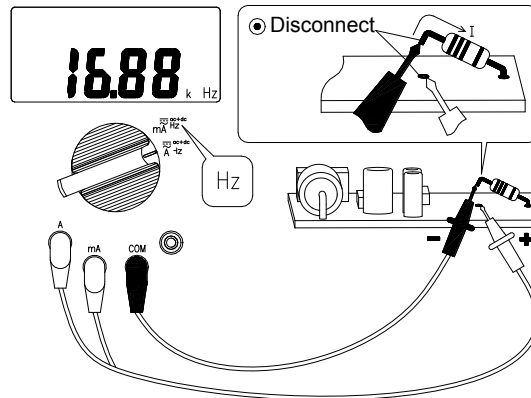
When connecting the test leads to the DUT (Device Under Test) connect the common test leads before connecting the live test leads ; when removing the test leads, remove the live test leads before removing the common test leads.

Measuring AC / DC Voltage and Frequency



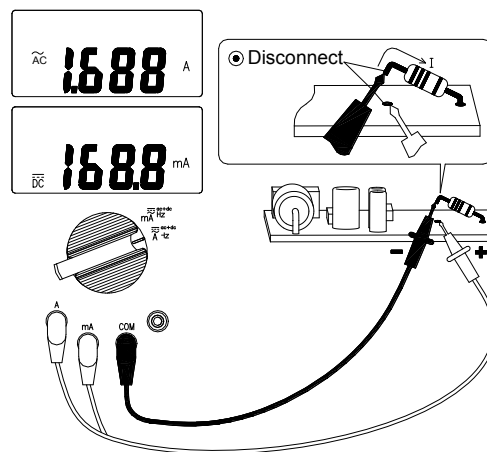
Rotate the switch and press the Function button to select the measuring function.
See "Using the Function Button"

Measuring AC/DC Current Frequency



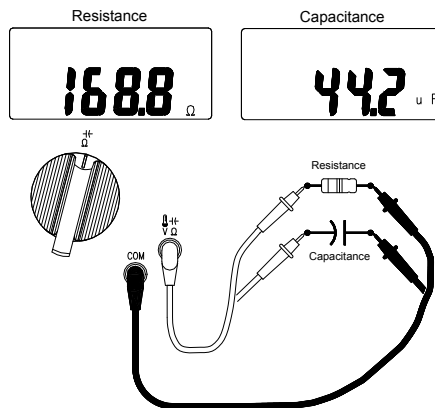
Rotate the switch and press the Function button to select the measuring function.
See "Using the Function Button"

Measuring AC/DC Current



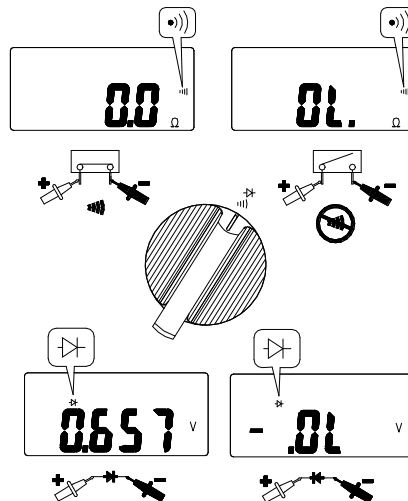
Rotate the switch and press the Function button to select the measuring function.
See "Using the Function Button"

Measuring Resistance/Capacitance

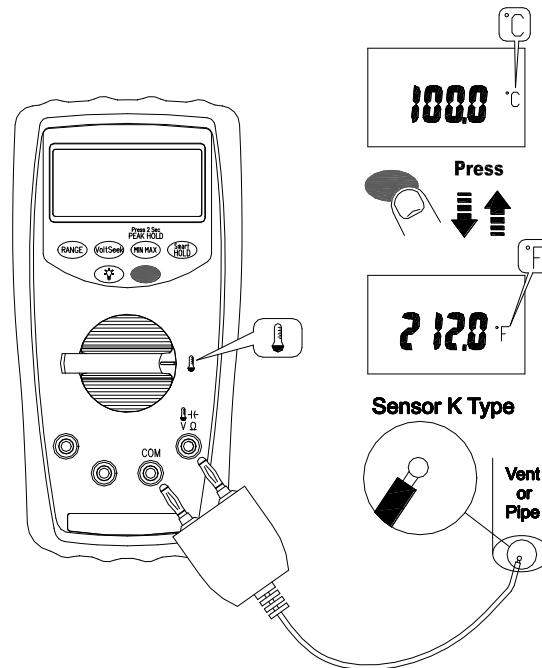


Rotate the switch and press the Function button to select the measuring function.
See "Using the Function Button"

Measuring Continuity / Diode



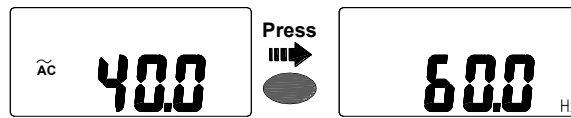
Rotate the switch and press the Function button to select the measuring function.
See "Using the Function Button"

Measuring Temperature °C / °F (for 99IV only)

Rotate the switch and press the Function button to select the measuring function. (°C / °F)
See "Using the Function Button"

Using The Function Buttons

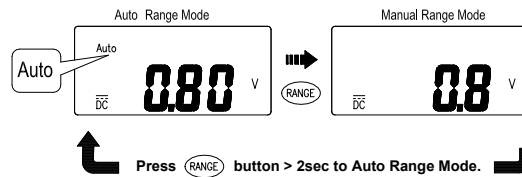
Function Button

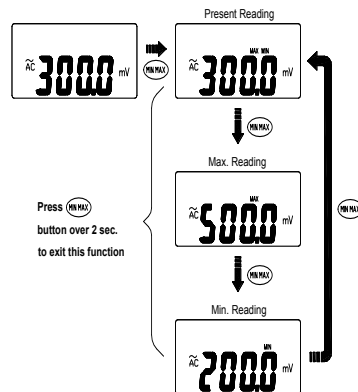


Switch Position	Function
Hz \tilde{V}	$\tilde{V} \rightarrow$ Hz
ac+dc $\overline{\overline{V}}$	$\overline{\overline{V}} \rightarrow$ ac+dc
ac+dc $\overline{\overline{mV}}$	$\overline{\overline{mV}} \rightarrow$ ac+dc
Ω	$\Omega \rightarrow$ Ω
$\overline{\overline{\Omega}}$	$\overline{\overline{\Omega}} \rightarrow$ $\overline{\overline{\Omega}}$
$\overline{\overline{mA}}$ Hz	$\overline{\overline{mA}} \rightarrow \overline{\overline{mA}} \rightarrow$ ac+dc \rightarrow Hz
\tilde{A} Hz	$\tilde{A} \rightarrow \overline{\overline{A}} \rightarrow$ ac+dc \rightarrow Hz
$\overline{\overline{C}}$	$\overline{\overline{C}} \rightarrow$ $\overline{\overline{F}}$

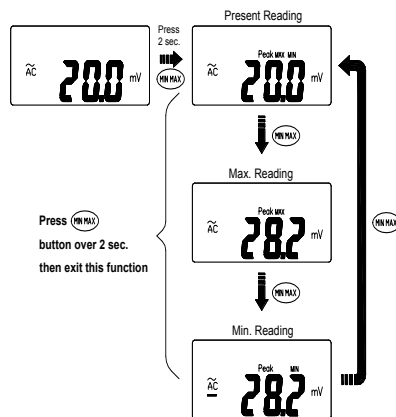
Press the Function button to change the function on the same switch position.

RANGE Button



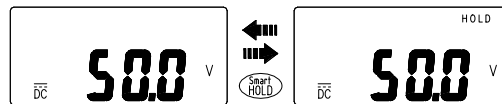
MIN/MAX


The MAX/MIN mode records the min. and max. input values. When the input goes below the recorded min. value or above the recorded max. value, the meter records the new value. Press "HOLD" button to pause the recording.

Peak HOLD (for 99IV only)


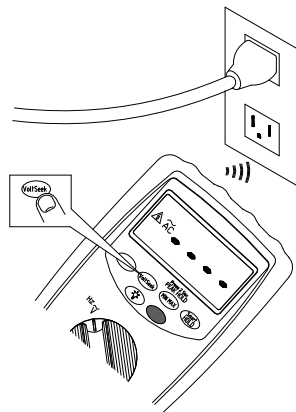
In the Peak "HOLD" function, the meter records the peak min. value and the peak max. value when the inputs goes below the recorded peak min. value or above the recorded peak max. value, the meter records the new value. Press "HOLD" button to pause the recording.

Smart HOLD



The meter will beep continuously and the display will flash if the measured signal is larger than the display reading by 50 counts. (However, it can not detect across the AC and DC Voltage / Current).

VoltSeek



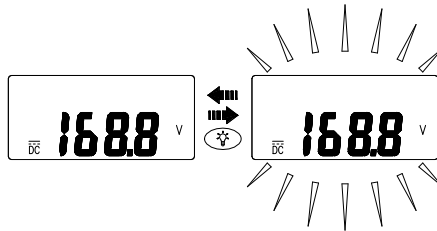
Press the "VoltSeek" button to activate the VoltSeek function.

⚠ Caution

The number of dashes displaying on the display indicates the electric field in intensity.

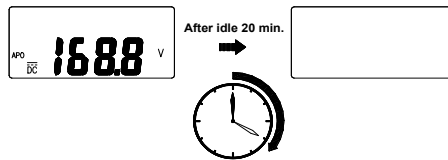
If no indication, voltage could still be present.

Backlight



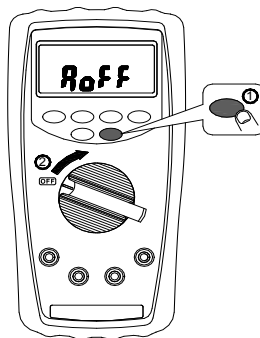
Press the Backlight button to turn the backlight on/off.

Auto Power Off



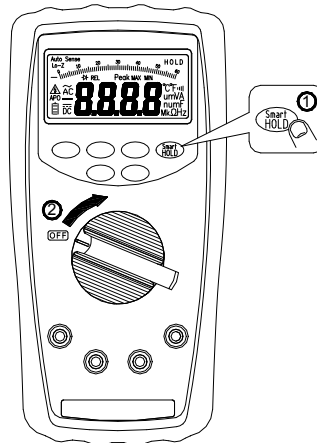
Reactivate the meter by rotating the switch or by pressing any button.

Auto Power Off Disable



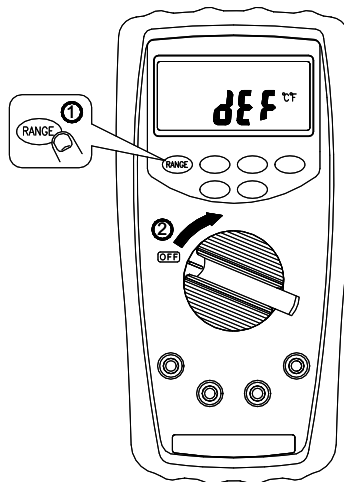
Rotate the switch to the "OFF" position, Press and hold down the Function button and turn the meter on.

Testing the LCD Display



Rotate the switch to the "OFF" position, Press and hold down the "SmartHOLD" button and turn the meter on.

Default Temperature Units (for 99IV only)



Rotate the switch to the "OFF" position, Press and hold down the "RANGE" button and turn the meter on.

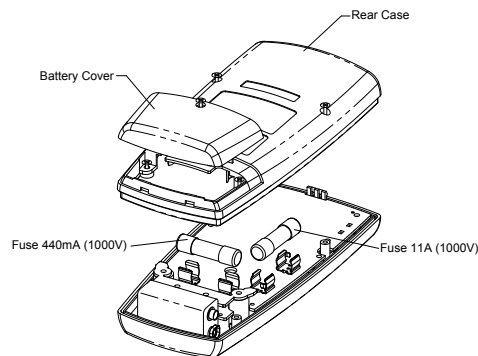
Battery and Fuse Replacement

⚠ Caution

The following safety information must be observed to ensure maximum personal safety during the operation of this instrument.

1. To avoid electric shock, disconnect the test leads before replacing the instrument fuses or batteries.
2. When replacing the instrument batteries, do not mix batteries of different types or old and new batteries.
3. Check the battery polarity carefully when inserting the batteries.
4. Do not short-circuit used batteries, disassemble them, or throw them in a fire. Doing so may cause the batteries to explode.
5. Dispose of the used batteries in accordance with local regulations.

Fuse Replacement



⚠ Caution

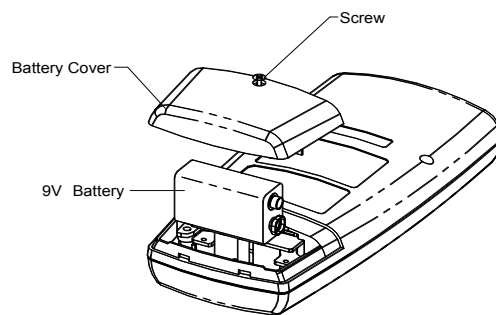
Use only fuses with the following fuse rating:

440mA, 1000V IR 10KA Fast acting fuse (size 35 x 10mm)
 DMM-B-44/100 – 10,000A, 1000 VAC, unity power factor and 10,000A, 1000 VDC with time constant of 2.2ms
 11A, 1000V IR 20KA Fast acting fuse (size 38 x 10mm)
 DMM-B-11A – 20,000A, 1000 VAC, power factor \leq 0.2;
 20,000A, 1000 VDC, time constant \geq 10ms.
 (size 38 x 10mm)

Low Battery and Battery Replacement

Replace the battery as soon as the low battery indicator appears, to avoid false reading.

Refer to the following figure to replace the batteries.



⚠ Caution

Remove test leads from Meter before opening the battery cover or Meter case.



Specifications

General Specifications

Maximum voltage applied to any terminal :

1000 V_{ac} rms or 1000 V_{dc} rms

Display : 6000 counts.

Polarity Indication :

Automatic, positive implied, negative indicated.

Overrange Indication : OL

Batteries Life : 200hours ALKALINE Battery (No Backlight)

Low Batteries Indication :

Voltage drops below operating voltage,  will flash.

Power Requirement : 1xPP3 9V battery

Auto Power Off : 20 minutes.

Operating Temperature : -10 ~10°C

10°C ~ 30°C (≤80% RH),

30°C ~ 40°C (≤75% RH),

40°C ~ 50°C (≤45%RH)

Storage Temperature :

-20°C to 60°C , 0 to 80% R.H. (batteries not fitted)

Temperature Coefficient :

0.15 x (Spec.Accy) / °C, < 18°C or > 28°C .

Measure : Samples 3 times per second .

Altitude : 6561.7 ft (2000m)

Safety : Complies with EN61010-1, UL61010-1, IEC 61010-1,
CAT.IV. 600V, CAT.III. 1000V

Measurement Category	Application
I	Measurements on circuits not directly connected to mains. Examples include: Measurements on battery powered equipment and specially protected (internal) mains-derived circuits.
II	Measurements on circuits directly connected to the low voltage installation. Examples include: Household appliances, portable tools and similar equipment.
III	Measurements performed in the building installation. Examples include measurements on distribution boards, junction boxes, socket-outlets and wiring and cables in the fixed installation.
IV	Measurements performed at the source of the low-voltage installation. Examples include measurements on primary overcurrent protection devices and electricity Instruments



Weight : 460g (including battery)
Dimensions (W x H x D) : 94mm x190mm x 48mm with holster.
Accessories : Battery (installed), Test leads and user manual.
 (The probe assembly provided with the product are for use with this product)
Pollution degree : 2
EMC : EN 61326-1
Shock vibration : Sinusoidal vibration per MIL-PRF- 28800F (5 ~ 55 Hz, 3g max.)
Drop Protection : 4 feet drop to hardwood on concrete floor.
Indoor use only.

Electrical Specifications

Accuracy is \pm (% reading + number of digits) at 23°C \pm 5°C < 80%RH.

AC Function

ACV and ACA specifications are ac coupled, true R.M.S.
 The crest factor may be up to 3.0 at 4000 counts.

For non-sinusoidal waveforms, Additional Accuracy by

Crest Factor (C.F.) : Add 3.0% for C.F. 1.0 ~ 2.0.
 Add 5.0% for C.F. 2.0 ~ 2.5.
 Add 7.0% for C.F. 2.5 ~ 3.0.

(1) DC mV Voltage

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
60.00mV _{DC}	0.01mV	\pm (0.1% + 5d)	\pm (0.08% + 5d)
600.0mV _{DC}	0.1mV	\pm (0.1% + 2d)	\pm (0.08% + 2d)

Input Impedance : 10M Ω

Overload Protection : AC/DC1000V

(2) AC Voltage

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy	Frequency Response
600.0mV _{AC}	0.1mV	\pm (1.5% + 10d)	\pm (1.2% + 10d)	45 ~ 500Hz
6.000V _{AC}	0.001V	\pm (1.0% + 5d)	\pm (0.8% + 5d)	
60.00V _{AC}	0.01V	\pm (1.0% + 5d)	\pm (0.8% + 5d)	45 ~ 1KHz
600.0V _{AC}	0.1V	\pm (1.0% + 5d)	\pm (0.8% + 5d)	
1000V _{AC}	1V	\pm (1.0% + 5d)	\pm (0.8% + 5d)	



AC 600.0mV ranges are specified from 1 % of range to 100 % of range.

Input Impedance: 10M Ω // less than 100pF

Overload Protection: AC/DC 1000V

(3) DC Voltage

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
6.000V _{DC}	0.001V	$\pm (0.09\% + 2d)$	$\pm (0.08\% + 2d)$
60.00V _{DC}	0.01V		
600.0V _{DC}	0.1V		
1000V _{DC}	1V		

Input Impedance : 10M Ω

Overload Protection : AC/DC 1000V

(4) Auto-V

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
600.0V _{AC/DC}	0.1V	$\pm (1.0\% + 3d)$	$\pm (0.8\% + 3d)$
1000V _{AC/DC}	1V		

Input Impedance: Approx. 3k Ω .

AC Frequency Response: 45~1kHz(Sine Wave)

Overload Protection: AC/DC 1000V

(5) mA Current

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
60.00mA _{DC}	0.01mA	$\pm (1.0\% + 3d)$	$\pm (0.8\% + 3d)$
600.0mA _{DC}	0.1mA	$\pm (1.0\% + 3d)$	$\pm (0.8\% + 3d)$
60.00mA _{AC}	0.01mA	$\pm (1.5\% + 3d)$	$\pm (1.2\% + 3d)$
600.0mA _{AC}	0.1mA	$\pm (1.5\% + 3d)$	$\pm (1.2\% + 3d)$

Maximum measurement time: 10 minutes at 600mA with at least 20 minutes rest time.

AC Frequency Response : 45 ~ 1kHz (Sine Wave)

Overload Protection: AC/DC 440mA

**(6) A Current**

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
6.000A _{DC}	0.001A	± (1.0% + 3d)	± (0.8% + 3d)
10.00A _{DC}	0.01A	± (1.0% + 3d)	± (0.8% + 3d)
6.000A _{AC}	0.001A	± (1.5% + 3d)	± (1.2% + 3d)
10.00A _{AC}	0.01A	± (1.5% + 3d)	± (1.2% + 3d)

Maximum measurement Current : 20A

Maximum measurement time :

>5A for max.3 minutes with at least 20 minutes rest time.

>10A for max.30 seconds with at least 10 minutes rest time.

AC Frequency Response : 45 ~ 1kHz (Sine Wave)

Overload Protection : AC/DC 11A

(7) Peak Hold (For 99IV only) :

Specified accuracy ± 150 digits for < 6000 counts.

Specified accuracy ± 250 digits for ≥ 6000 counts

(8) Resistance

Range	Resolution	Accuracy
600.0Ω	0.1Ω	± (0.8% + 5d)
6.000KΩ	0.001KΩ	± (0.8% + 2d)
60.00KΩ	0.01KΩ	
600.0KΩ	0.1KΩ	
6.000MΩ	0.001MΩ	
40.00MΩ*	0.01MΩ	± (1.5% + 5d)

* There is a little rolling less than ±50 digits when measuring > 10.00 MΩ.

Overload Protection : AC/DC 1000V

(9) Continuity

Range	Resolution	Accuracy
600.0Ω	0.1Ω	± (0.8% + 5d)

Continuity : Built-in buzzer sounds when the measured resistance is less than 20Ω and stops when the measured resistance is more than 200Ω, Between 20Ω to 200Ω the buzzer may or may not sound.

Continuity Indicator : 2KHz Tone Buzzer

Response Time of Buzzer : < 500μsec.

Overload Protection : AC/DC 1000V

**(10) Diode Test**

Range	Resolution	Accuracy
1.500V	1mV	$\pm (1.5\% + 2d)$

Open Circuit Voltage : Approx. 1.8V
Overload Protection : AC/DC 1000V.

(11) Capacitance

Range	Resolution	Accuracy
1.000 μ F	0.001 μ F	$\pm (1.2\% + 5d)$
10.00 μ F	0.01 μ F	$\pm (1.2\% + 2d)$
100.0 μ F	0.1 μ F	
1.000mF	0.001mF	
10.00mF	0.01mF	

Overload Protection : AC/DC 1000V.

(12) Frequency Counter

Range	Resolution	Accuracy
100.00 Hz	0.01 Hz	$\pm (0.1\% + 2d)$
1000.0 Hz	0.1 Hz	
10.000 KHz	0.001 KHz	
100.00 KHz	0.01 KHz	

Minimum Sensitivity : > 6V (for ACV 1Hz ~ 10kHz)
> 12V (for ACV 10kHz ~ 50kHz)
unspecified (for 50KHz ~ 100KHz)
> 6.mA (for ACmA)
> 0.6A (for ACA)

Minimum Frequency : 1Hz
Overload Protection : AC/DC 1000V or 11A

(13) Temperature (For 99IV only)

Range	Resolution	Accuracy*
-40.0°C ~ 400°C	0.1°C	$\pm (1.0\% + 20d)$
-40.0°F ~ 752°F	0.1°F	$\pm (1.0\% + 36d)$

Does not include accuracy of the thermocouple probe.
Accuracy specification assumes surrounding temperature stable to $\pm 1^\circ\text{C}$. For surrounding temperature changes of $\pm 2^\circ\text{C}$, rated accuracy applies after 2 hours.

Overload Protection: AC/DC 1000V



"Note : (14)(15)(16)(17) The AC+DC True RMS value might be over the selected range because the AC signal may contain a DC level."

(14) AC+DC Voltage

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
6.000V	0.001V	± (2.5% + 5d)	± (2% + 5d)
60.00V	0.01V		
600.0V	0.1V		
1000V	1V		

Additional specification are same as V voltage function.

(15) AC+DC mV

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
60.00mV	0.01mV	± (2.5% + 5d)	± (2% + 5d)
600.0mV	0.1mV		

Additional specification are same as mV voltage function.

(16) AC+DC mA

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
60.00mA	0.01mA	± (2.5% + 5d)	± (2% + 5d)
600.0mA	0.1mA		

Additional specification are same as mA current function.

(17) AC+DC A

Range	Resolution	For 98IV Accuracy	For 99IV Accuracy
6.000A	0.001A	± (2.5% + 5d)	± (2% + 5d)
10.00A	0.01A		

Additional specification are same as A current function.



Limited Warranty

This meter is warranted to the original purchaser against defects in material and workmanship for 3 years from the date of purchase. During this warranty period, RS Components will, at its option, replace or repair the defective unit, subject to verification of the defect or malfunction.

This warranty does not cover fuses, disposable batteries, or damage from abuse, neglect, accident, unauthorized repair, alteration, contamination, or abnormal conditions of operation or handling.

Any implied warranties arising out of the sale of this product, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the above. RS Components shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expense or economic loss. Some states or countries laws vary, so the above limitations or exclusions may not apply to you. For full terms and conditions, refer to the RS website.

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www.rs-components.com



Instruction Manual
IDM 98IV & IDM 99IV
Digital Multimeter

EN

