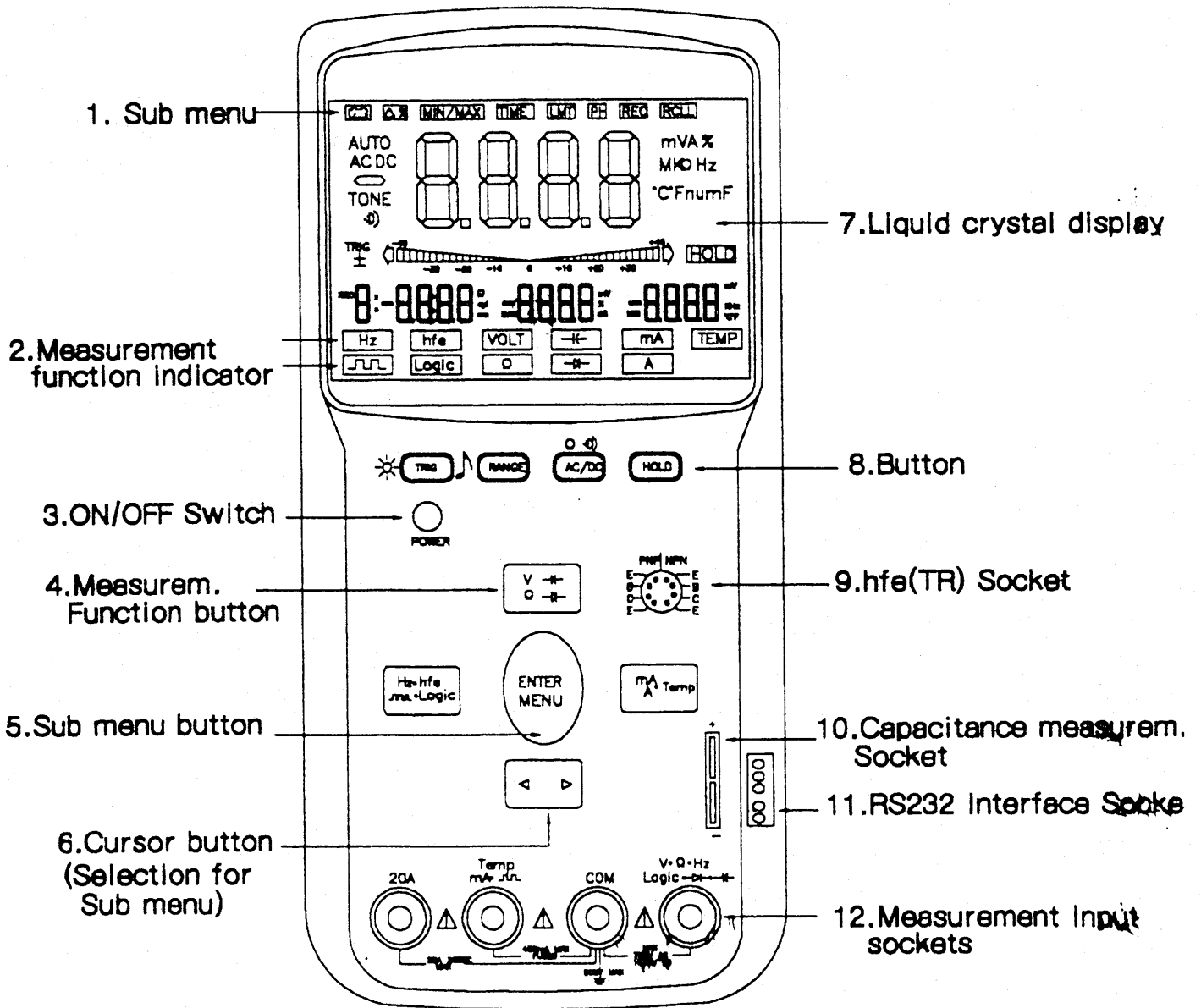


# 5. Description of Controls

## 5.1 Front and back view

### WENS HANDHELD DIGITAL MULTIMETER

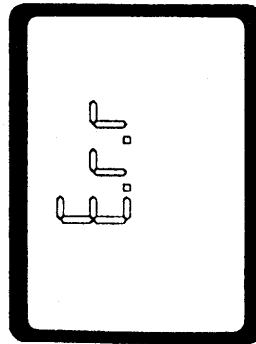


FRONT VIEW


## 8. SPECIFICATIONS

### 8.1 General specifications.

- Display
- 3% Digit (4000 count) with BAR-GRAPH+3 sub display. (Quad)+1  
(Model 53 only)
- 3% Digit (4000 count) with BAR-GRAPH+2 sub display. (Tripple)+1  
(Model 51, 52 only)
- RANGE : AUTO
- INPUT IMPEDANCE : Greater than 10MOhm
- CONVERSION TIME
- Numeric : 3~5 / sec.
- BAR-GRAPH : 7 / sec.
- BACK LIGHT (Optional Item for model 53)
- Time : 60 sec.
- LED drive. ( DC 5V Out— Current Consumption approx. 30mA)
- AUTO POWER OFF TIME : 30 min.  
(Reset if press any function key or button on front face of meter.)
- 20A WRONG POSITION DETECTOR.



"E r r" display with Continuous "BEEP" sound

- AUDIBLE TONE SWEEP : Select by "j" key. (Model 53 only)
- LOW BAT INDICATION :  7.5V ± 0.3V.
- HIGH VOLTAGE WARNING : BEEP, BEEP, BEEP (Intermittent sound)  
When OVER AC 700 V, DC 1000 V

- RS 232 COMPUTER INTERFACE
- Baud Rate : 4800
- Data bit : 7
- Stop bit : 2
- Parity : none
- Safety
- Voltage or current Input : 1000 V
- Surge Protection : 5 KV
- Maximum Voltage Isolation From Ground : 500 V
- IEC 1010-1, Class II Double Insulation
- Pollution Degree 2
- POWER : 9V Alkaline battery. NEDA 1604 6F22  
or 006P or 6LR61. (battery is not included)
- FUSE : F 5.0x20(0.197" X0.788")Fast acting Glass Fuse 500mA/250V  
F 6.3x32(1/4" X1-1/4")Ceramic Fuse 20A/250V
- GROSS WEIGHT : 315g (0.7LB) - Meter only
- DIMENSIONS : 880(w) X178(l) X330(d) m/m  
3.5" (w) X 7" (l) X 1.3" (d) Inch
- STANDARD ACCESSORIES
- Test Lead (Black, red)
- Alligator Clip Assembly
- Operator Manual
- OPTIONAL ACCESSORIES
- K-type thermocouple wire with temp probe set
- RS 232 Interface cable
- Software PC Diskette
- Holster Carry Case.

COMPARISON TABLE AMONG 3 DMMS

FUNCTION	Model 51	Model 52	Model 53
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General

Display	4,000 (3 1/4 Digit) with Bar-graph.	4,000 (3 1/4 Digit) with Bar-graph.	4,000 (3 1/4 Digit) with Bar-graph.
Sub Display	3	3	4
Range	AUTO	AUTO	AUTO
Auto power off	Yes	Yes	Yes
PC Interface	Yes (option)	Yes (option)	Yes (option)
Wrong position detector	No	Yes	Yes
Beck light	No	No	Yes (option)

Function

DCV(basic accuracy)	Yes(0.5%)	Yes(0.3%)	Yes(0.3%)
ACV	Yes	Yes	Yes (true RMS)
DC Current	Yes	Yes	Yes+400mA range
AC Current	Yes	Yes	Yes (true RMS)
Resistance	Yes	Yes	Yes+400MΩ range
Capacitance	Yes	Yes	Yes+400uF range
Frequency counter	Yes	Yes	Yes
Diode	Yes	Yes	Yes
Continuity	Yes	Yes	Yes

Temperature	No	Yes	Yes
Transister hfe test	Yes	Yes	Yes

Spocial Function

Relative	Yes	Yes	Yes
Storage	Yes	Yes	Yes
Min/Max/Average	Yes	Yes	Yes
Peak Hold	No	Yes	Yes
Data Hold	Yes	Yes	Yes
Compare	No	No	No
Logic	No	Yes	Yes
Stop watch, Timer	Yes	Yes	Yes
Signal out	No	Yes	Yes
Audible Tone Sweep	No	No	No

8.2 Electrical Specifications.

1. DC VOLTAGE (AUTO RANGE)

Range	Resolution	Accuracy	Input Impedance	Overload Protection
400 mV	0.1 mV	$\pm(0.5\% \text{ rdg} + 5 \text{ digits})$	100 M $\Omega$	1,000 V DC or AC Peak Within 10 Seconds.
4 V	1 mV	$\pm(0.3\% \text{ rdg} + 5 \text{ digits})$	10 M $\Omega$	
40 V	10 mV			
400 V	100 mV			
1,000 V	1 V			

(Model 51 only) :  $\pm(0.5\% \text{ rdg} + 5 \text{ digits})$  on all ranges.

2. AC VOLTAGE (Model 51,52 only)

Range	Resolution	Accuracy
400 mV	0.1 mV	50 Hz~500 Hz
4 V	1 mV	Unspecified
40 V	10 mV	1.0% + 10 digits
400 V	100 mV	1.0% + 10 digits
700 V	1 V	1.5% + 10 digits

AC VOLTAGE (TRUE RMS) (Model 53 only)

Range	Resolution	Accuracy		
		20 Hz ~ 50 Hz	50 Hz ~ 1 KHz	1 KHz ~ 10 KHz
400 mV	0.1 mV	2.0% + 10 digits	1.0% + 10 digits	2.5% + 10 digits
4 V	1 mV	2.0% + 10 digits	1.0% + 10 digits	2.5% + 10 digits
40 V	10 mV	2.0% + 10 digits	1.0% + 10 digits	2.5% + 10 digits
400 V	100 mV	2.0% + 10 digits	1.0% + 10 digits	2.5% + 10 digits
700 V	1 V	2.0% + 10 digits	2.0% + 10 digits	na

\* Sub-display (Frequency) : minimum 50 mV required.

3 AC CURRENT. (Model 51,52 only)

Range	Resolution	Accuracy		Overload Protection
		50 Hz~500 Hz		
400 mA	100 $\mu$ A	1.5% + 10 digits	250 V /500 mA Fused	
20 A	10 mA	1.5% + 10 digits	250 V /20 A Fused	

\* Sub-display (Frequency) : minimum 5mA(400mA range),5A(20A range) is required.

AC CURRENT.(TRUE RMS) (Model 53 only)

Range	Resolution	Accuracy			Overload Protection
		20 Hz ~60 Hz	60 Hz ~1KHz	1 KHz ~10 KHz	
40 mA	10 $\mu$ A	2.0% + 10 digits	1.2% + 10 digits	4% + 10 digits	250 V /400 mA Fused
400 mA	100 $\mu$ A	2.0% + 10 digits	1.2% + 10 digits	4% + 10 digits	
20 A	10 mA	2.5% + 10 digits	1.5% + 10 digits	4% + 10 digits	

\* Sub-display (Frequency) : minimum 5mA (40,400mA range), 5A(20A range) is required.

4. DC CURRENT.

Range	Resolution	Accuracy		Overload Protection
		250 V /500 mA Fused	250 V /20 A Fused	
*40 mA	10 $\mu$ A	$\pm(1.2\% \text{ rdg} + 5 \text{ digits})$	250 V /20 A Fused	
400 mA	100 $\mu$ A			
20 A	10 mA	$\pm(1.5\% \text{ rdg} + 5 \text{ digits})$	250 V /20 A Fused	

\*40mA range (Model 53 only)

5. RESISTANCE.(AUTO RANGE)

Range	Resolution	Accuracy		Overload Protection
		250 V DC or AC Peak Within 10 Seconds.		
400 $\Omega$	0.1 $\Omega$	$\pm(1.0\% \text{ rdg} + 5 \text{ digits})$	250 V DC or AC Peak Within 10 Seconds.	
4 K $\Omega$	1 $\Omega$			
40 K $\Omega$	10 $\Omega$	$\pm(0.75\% \text{ rdg} + 5 \text{ digits})$	250 V DC or AC Peak Within 10 Seconds.	
400 K $\Omega$	100 $\Omega$			
4 M $\Omega$	1 K $\Omega$	$\pm(3\% \text{ rdg} + 5 \text{ digits})$	250 V DC or AC Peak Within 10 Seconds.	
40 M $\Omega$	10 K $\Omega$			
400 M $\Omega$	100 K $\Omega$	$\pm(5\% \text{ rdg} + 20 \text{ digits})$		

\*400 M $\Omega$  range (Model 53 only)

WENS HANDHELD DIGITAL MULTIMETER

12. SIGNAL GENERATOR. (Model 52, Model 53 only)

- TTL Level.
- Manually Adjustable Frequency (Amplitude a fixed 5V)
- 1 / 10 / 100 / 993 / 1986
- 2979 / 3972 / 5041 Hz

Range	Resolution	Accuracy
100 Hz	1 Hz	±(0.5% rdg + 5 digits)
1 KHz	10 Hz	
5 KHz	1 KHz	

- 13. STOP WATCH / TIMER.
- 24 HOUR.

6. CONTINUITY TEST

- BELOW 20Ω

Range	Resolution	Accuracy	Overload Protection
Diode	1 mV	±(2% rdg + 5 digits)	MAX 5.0 V

7. DIODE TEST.

8. CAPACITANCE. (AUTO RANGE)

Range	Resolution	Accuracy
4 nF	1 pF	±(3% rdg + 10 digits)
40 nF	10 pF	
400 nF	100 pF	
4 μF	1 nF	
40 μF	10 nF	
400 μF	100 nF	

• 400 μF range (Model 53 only)

9. TEMPERATURE.

- -20 °C~1370 °C (0 °F~ 2000 °F) : K-TYPE
- With thermocouple Wire + Temp probe set
- ±(3 °C+5d) to 150 °C, ±3%rdg over 150 °C
- ±(3 °F+5d) to 302 °F, ±3%rdg over 302 °F

10. FREQUENCY. (AUTO RANGE)

Range	Resolution	Accuracy
4 KHz	1 Hz	±(0.1% rdg + 10 digits)
40 KHz	10 Hz	
400 KHz	100 Hz	
4 MHz	1 KHz	

- Voltage Sensitivity : 50mV eff ( 1 Hz to 4 MHz)
- Sub-Display(Voltage) Available Range : Min.50 mV- Max.40.00 V