

INSTRUCTION MANUAL

DIGITAL MULTI METER

2230A/2230B

We thank you very much for your purchasing our POCKET PERSONAL DIGITAL MULTIETER, This model is a most Reliable, high-precision instrument, designed by our excellent technology.

Before you use your new instrument, please read this Operators Manual completely and familiarize yourself Thoroughly with all functions and connections, With proper use and care your Digital Multimeter will give you years of satisfactory service.

SAFETY RULES

- Always check to make sure that the function switch is set to the proper position.
- When making measurements, CAUTION as dangerous voltages may be present in normally safe areas.
- Always disconnect the circuit under test prior to attaching test leads, as voltages may be present in capacitors even when the main power is disconnected
- To avoid electrical shock,use CAUTION when working above 60V DC or 25V AC rms.
- Make sure all power (AC or DC) is disconnected (OFF) when making resistance (OHMS) measurement.
- Never make measurement with the battery cover of battery case OFF.
- Never fail to keep the maximum tolerable input.
- The POCKET PERSONAL DMM is designed for low voltage applications. The measurement should be limited to the circuit under 500V (AC/DC)
- NEVER use this meter if it is WET, DAMP or has con-densation on it or the probes.
- When making measurements MAKE SURE your hands NEVER touch anything xecrpt the plastic part of the probes.

SPECIFICATIONS

Measuring method: Dual integration mode
 Display: 3 -3/4 digital LCD reading of approx 3260.
 Range: Auto ranging
 Polarity Automatic no indication for positive polarity, minus(-) sign for negative polarity.
 Overrange indication: "OL" mark indication (Except AC/DC)
 Sampling: 2 times/s
 Low Battery indication "⎓" mark is displayed when the battery voltage drops below operating voltage
 Auto power off :The meter is powered off 15 minute later after the last operation was made to bring back display ,please return the function switch to the OFF.
 Bar graph display



Operational temperat Bar graph display

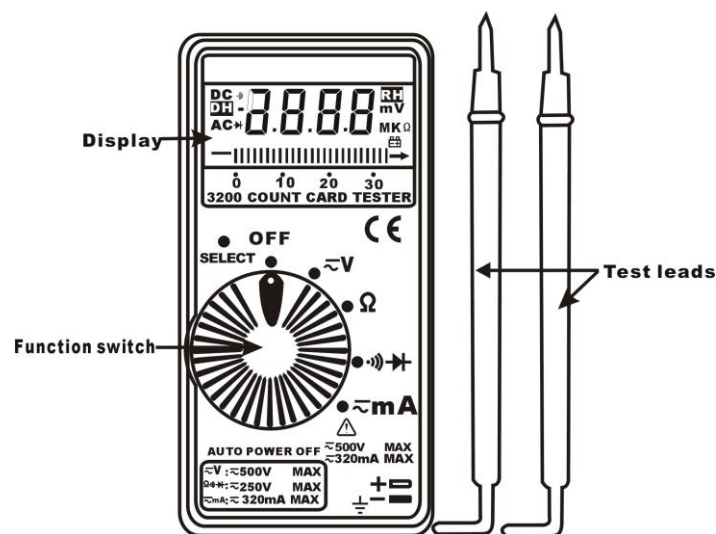
Storage temperature :-20°C ~ 60°C, 70%RH (max)
 Power consumption: 6Mw(TYP)
 Size: 54(W)×108(H)×12(D)mm
 Weight: Approx 110g (include batteries and case)
 Accessoires: Batteris ,LR-44(1.55V) 2
 Hard cover case 1
 Instrument manual 1

MEASUREMENT RANGES

Note/Accuracy specified for temperature range of 23°C±5°C, 80%RH(max)

function	range		resolution	accuracy
	2230A	2230B		
DCV	300mV	300mV	0.1 mV	±(1.3% of rdg +2 digits)
	3V	3V	1 mV	±(0.7% of rdg +2 digits)
	30V	30V	10 mV	±(1.3% of rdg +2 digits)
	300V	300V	100 mV	
	500V	500V	1 mV	
ACV	3V	3V	1 mV	±(2.3% of rdg +5 digits)
	30V	30V	10 mV	
	300V	300V	100 mV	
	500V	500V	1 mV	
OHM	300 Ω	300 Ω	0.1 Ω	±(2.0% of rdg +4 digits)
	3K Ω	3K Ω	1 Ω	±(2.0% of rdg +2 digits)
	30K Ω	30K Ω	10 Ω	
	300K Ω	300K Ω	100 Ω	
	3M Ω	3M Ω	1K Ω	±(6.0% of rdg +2 digits)
30M Ω	30M Ω	10K Ω	±(10.0% of rdg +5 digits)	
☞	300 Ω	300 Ω	0.1 Ω	
⚡	0~2.000V	0~2.000V	1 mV	±(10.0% of rdg +2 digits)
DCmA	30mA	※	10 μ A	±(2.0% of rdg +2 digits)
	300mA	※	100 μ A	
ACmA	30mA	※	10 μ A	±(2.5% of rdg +5digits)
	300mA	※	100 μ A	

DECSRIPTION OF PANEL



Function switch

Switch for changing the measurement function (Ω /☞) for resistance,continuity check.
 (VOLT)for voltage measurement
 (mA)for current measurement
 (OFF) for power OFF

Display

3-3/4 digit liquid crystal display from 0 to approx. 3260 count with decimal point, annunciators display

Test leads

Red test lead for plus (+) polarity, Black test lead for minus (-) polarity.

PREPARATION AND CAUTION BEFORE

MEASUREMENT

- Before making measurements install the batteries
TWO LR-44 batteries can be used.
- Avoid using the POCKET PERSONAL D.M.M. in places subject to high temperatures, humidity or excessive vibration.
- Avoid using the POCKET PERSONAL D.M.M. in places with rapid temperature variations
- If the POCKET PERSONAL D.M.M. is used near noise generating equipment, be aware that the display may become unstable or indicate large errors.
- If the function must be switched during a measurement always remove the test leads from the circuit being measured. After measurement, set the function switch to "OFF".

MEASURING METHOD

DC and AC Voltage Measurement

- (1) Set the function switch to " $\sim V$ ".
- (2) Connect the test lead to the circuit to be measured, the range will change automatically to the level that will display the input voltage with the best resolution.
- (3) Press "SELECT" key to choose "DC" or "AC" measurement.
- (4) The value indicated in the display window is the measured value of voltage with proper decimal point and annunciator indication.

DC and AC Current Measurement (only 2230A)

- 1) Set the selector switch to desired " $\sim mA$ " position.
- 2) Connect the test lead to the circuit to be measured, the range will change automatically to the level that will display the input current with the best resolution.
- 3) Press "SELECT" key to choose "DC" or "AC" measurement.
- 4) The value indicated in the display window is the measured value of current with proper decimal point and annunciator indication.

MEASUREMENT OF RESISTANCE (Ω)

- (1) Set the function switch to " Ω ".
- (2) Make sure all power is OFF in the circuit to be measured.
- (3) Connect the test leads to the circuit to be measured, the range will change automatically, and will hold on the range that will display the measured resistance with the best resolution.
- (4) The value indicated in the display is the measured value of resistance with proper decimal point and annunciator indication.

Diode Measurement and audible continuity test

(1) Set the function switch to " \rightarrow/\rightarrow ".

(2) Connect the test leads to the circuit to be measured. Press "SELECT" key to choose " \rightarrow " or " \rightarrow " measurement.

(3) Connect the test leads across the diode under measurement, display shows the approx. forward voltage of this diode.

(4) Connect the test leads to two points of circuit, if the resistance is lower than approx. 20Ω , the buzzer sounds.

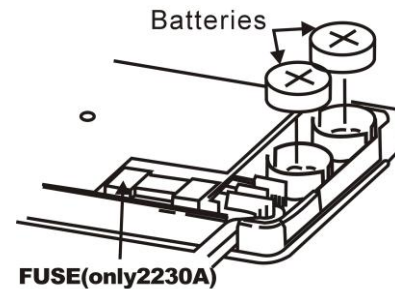
REPLACEMENT OF BATTERY

(1) When the batteries become exhausted or drop below the operating voltage the "E" mark is displayed.

(2) Turn the function switch "OFF" and remove the test leads from all test circuit, prior to installing fresh batteries.

(3) Remove the batteries by using the tip of RED test probe.

(4) Insert the two LR-44 or SR-44 into the battery case making sure that proper polarity is observed.



Caution

Never use the BLACK test probe to avoid the short-circuit

MAINTENANCE

When making requests for repair services, please bring the instrument directly to the dealer, if this is impossible, however, send the instrument directly to our sales office. When mailing this instrument, always pack together with name, address, telephone number and the warranty documentation.

- To ensure speedy and reliable repair, always include information as to the type of failure and cause.
- If required, always return accessories with the instrument.
- When contacting us, provide the model number of your instrument.

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