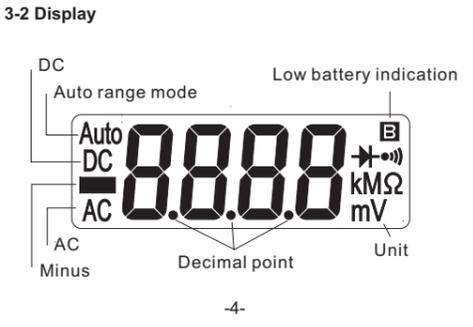
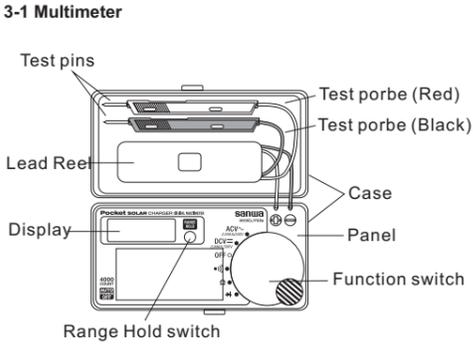




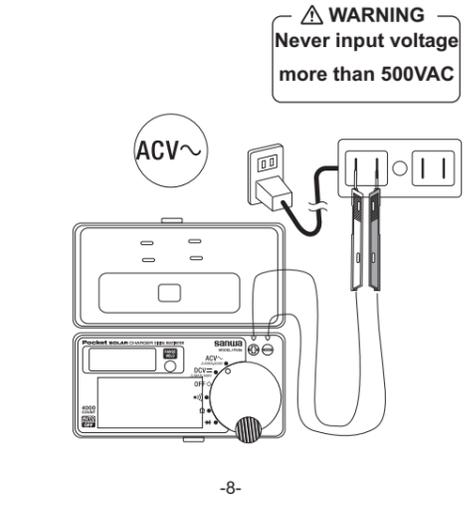
PS8a DIGITAL MULTIMETER

三和電気計器株式会社
SANWA ELECTRIC INSTRUMENT CO., LTD.
Dempa Bldg, Sotokanda 2-Chrome Chiyoda-ku, Tokyo, Japan

[3] NAMES OF COMPONENT UNITS



5-2-2 ACV measurement: Maximum rating input value AC500V
Range: 4.000V, 40.00V, 400.0V, 500V
● Accuracy is guaranteed in the case of sine wave (Bandwidth 40Hz ~ 400Hz)
● In the AC4V range, the reading does not become 0 when no input signal. But this does not bring about the influence to measurement.



[6] MAINTENANCE

6-1 Maintenance and inspection
1. Appearance: Is the appearance not damaged by falling?
2. Test leads: Is the cord of the test leads not damaged? Or is the core wire not exposed at any place of the test leads?
If your meter falls in any of the above items, do not use it and have it repaired or replace it with a new one.

6-2 Calibration
The manufacturer may conduct the calibration and inspection. For more information, please contact the dealers.

6-3 Storage
CAUTION
1. The meter are not resistant to volatile solvent and must not be cleaned with thinner or alcohol. For cleaning, use dry, soft cloth and wipe it lightly.
2. The meter are not resistant to heat. Do not place the instrument near heat-generating devices (such as a soldering iron).
3. Do not store the instrument, in a place where it may be subjected to vibration or from where it may fall.
4. For storing the instrument, avoid hot, cold or humid places or places under direct sunlight or where condensation is anticipated.

[1] SAFETY PRECAUTIONS
This instruction manual explains how to use your new digital multimeter PS8a safely. Before use, please read this manual thoroughly. After reading it, keep it together with the product for reference to it when necessary.
The instruction manual given under the heading of must be followed to prevent accidental burn or electrical shock.

1-1 Explanation of Warning Symbols
The meaning of the symbols used in this manual and attached to the product is as follows.
⚠ : Very important instruction for safe use.
The **WARNING** messages are intended to prevent accidents to operating personnel such as burn and electrical shock.
The **CAUTION** message are intended to prevent damage to the instrument.

~ Alternating current (AC) — Direct current (DC)
••• Buzzer ▶ Diode Ω Resistor
+ Plus - Minus

1-2 Warning instruction for Safe use
WARNING
To ensure the meter is used safely, be sure to observe the instruction when using the instrument.
1. Never use meter on the electric circuits that Exceed 1kVA.
2. Pay special attention when measuring the voltage of AC33Vrms(46.7V peak) or DC70V or more to avoid injury.
3. Never apply an input signal exceeding the maximum rating input value.
4. Never use meter for measuring the line connected with

[4] DESCRIPTION OF FUNCTIONS

Function switch
Turn this switch, to turn on and off the power and to select the functions of ACV, DCV, •••, Ω, ▶.

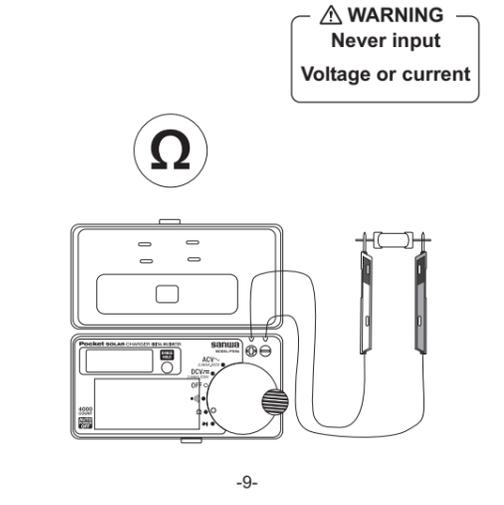
Low battery indication
Mark is indicated when low battery.

Over display
OL indication when input is over maximum rating input value except ACV and DCV functions.

RANGE HOLD switch
Pressing this switch once sets the manual mode and the range is fixed. AUTO on the display disappears. Once the manual mode is set, the range moves each time this switch is pressed. Checking the unit on the display and the place of the decimal point, select a desired range. To return to the auto mode, keep pressing this switch and AUTO on the display appears.

[5] MEASUREMENT PROCEDURE
5-1 Start-up Inspection
WARNING
1. Be sure to pre-check the meter before use.
2. Do not use a damaged meter and test leads.
3. Check continuity of test leads.
4. When a battery exhaust mark appears in the display, recharge battery.

5-3 Resistance measurement: Max. rating input value 40M ohm
Range: 400.0 ohm, 4.000k ohm, 40.00k ohm, 400.0k ohm, 4.000M ohm, 40.00M ohm
● Open voltage is approx. DC 0.4V.
● If a finger touches a test pin during measurement, the reading will be influenced by the resistance in the human body.



6-4 Estimated time of Recharge and usable

Light Power	Time of recharge	Estimate usable time
5,000 LUX (at a window in cloudy)	12 hours	3 hours
10,000 LUX (Approx. 10cm from fluorescent lamps 15W x 2 pcs.)	5 hours	5 hours
30,000 LUX or more (at a window in fine whether)	5 hours	6 hours

[7] AFTER-SALES SERVICE

7-1 Repair
If the meter fails during use, check the following items before sending it for repair.
Is the test lead broken?
Is the battery exhausted? Please recharge the battery.
We repair defective product(s) at cost. When sending it to us for repair, please use appropriate packing material.

7-2 For information or Enquiries
If you need information regarding purchase of repair parts or if you have any other sales related questions, please contact the dealer, selling agent, or maker.

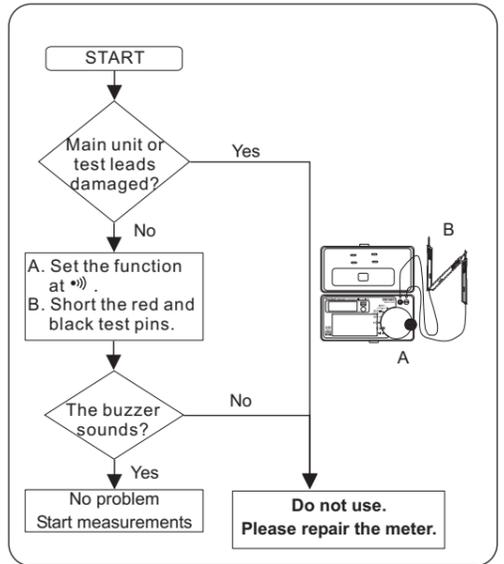
7-3 SANWA web site
Http://www.sanwa-meter.co.jp
Email: exp_sales@sanwa-meter.co.jp

equipment (e.g. motors) that generates induced or surge voltage since it may exceed the maximum allowable voltage.
5. Never use meter if the meter or test leads are damaged or broken.
6. Never use uncased meter.
7. Be sure to disconnect the test pins from the circuit when changing the function.
8. Before starting measurement, make sure that the function and range are properly set in accordance with the measurement.
9. Never use the meter with wet hands or in a damp environment.
10. Be sure to use test leads of the specified type.
11. Never open tester case except when replacing batteries. Do not attempt any alteration of original specifications.
12. Never use the meter near place where there are strong electromagnetic Waves.
13. To ensure safety and maintain accuracy, calibration and check the tester at least once a year.
14. Indoor use only.

1-3 Overload protection

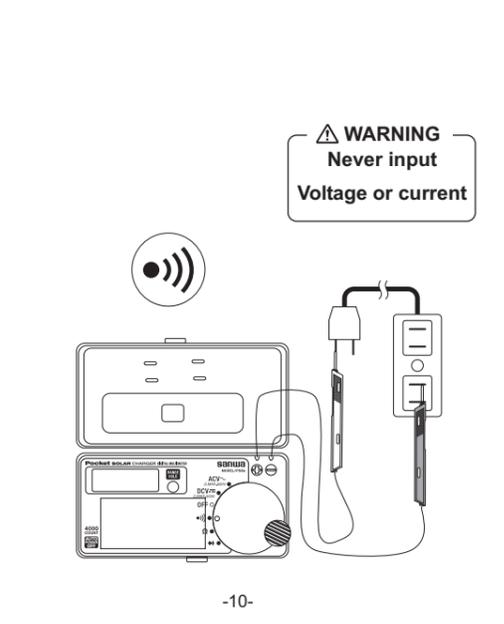
Function	Input Terminals	Max. Rating input value	Max. Overload protection input
DCV		DC500V	DC500V, AC500V
ACV	+, -	AC500V	or Peak 700V
••• Ω ▶		Never apply voltage	AC/DC450V

*AC voltage is regulated by rms of sine wave.



5-4 Checking Continuity (•••)
● Open voltage is approx. DC 0.4V.
● Threshold: approx. 10 ohm to 120 ohm.

5-4 Checking Continuity (•••)
● Open voltage is approx. DC 0.4V.
● Threshold: approx. 10 ohm to 120 ohm.



[8] SPECIFICATIONS

8-1 General Specification
Measuring method: ΔΣ method
Display: 3 3/4 digit, 4000 counts
Range Selection: Auto and Manual ranges
Over indication: "OL" indication (except AC/DC500V ranges)
Polarity indication: Automatic Selection "-" indication
Low battery indication: Below approx. 2.4V, "B" indication appears.
Sampling rate: Approx. 3 times/sec.
AC sensing: Average sensing
Environmental condition: Operation altitude < 2000m
Pollution degree II
Operating temperature: 5°C~40°C, humidity range Max. 80% RH for temperatures up to 31°C decreasing linearly to 50% RH at 40°C
Storage temperature: -10°C~50°C, 70%RH max. No condensation. (Remove batteries)
& humidity
Power supply: Amorphous Solar Battery + Lithium Manganese Dioxide Rechargeable Secondary Battery
Auto power off: 15 min after no operation
Power consumption: Approx. 5mW at DCV
Size.Weight: 115(H) x 57(W) x 18(D)mm, Approx.85g
Accessory: Instruction manual

Note:
It may not make accurate measurement near places that there are high-magnetic field or strong electrical field generated by transformers, large current lines or radio transmissions equipments.

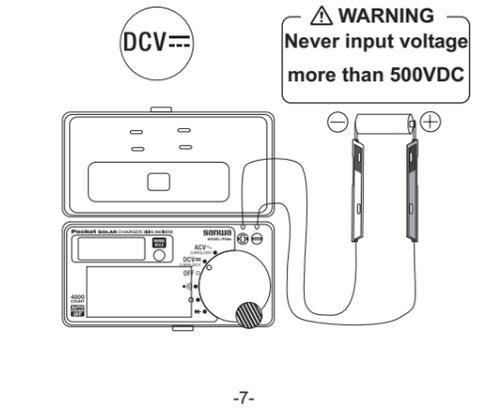
[2] APPLICATIONS AND FEATURES

2-1 Applications
This instrument is portable digital multimeter designed for measurement of weak current circuits.

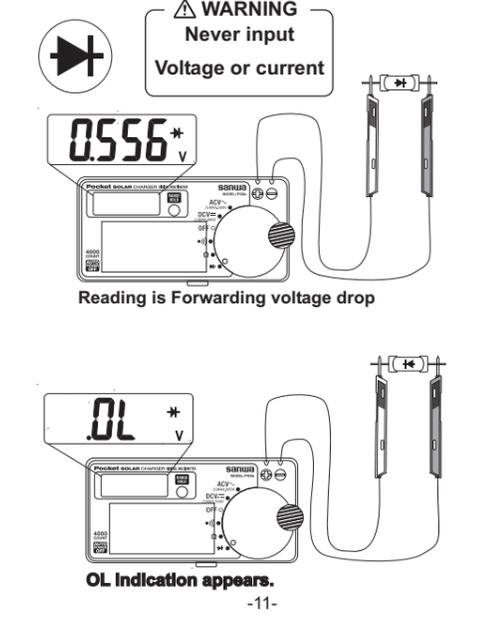
2-2 Features
Auto Power off function (15 mins)
Shell type pocket size multimeter.

when changing the function.
3. Always keep your fingers away from test pins when making measurements.

5-2 Voltage measurement
5-2-1 DCV measurement: Maximum rating input value DC500V
Range: 400.0mV, 4.000V, 40.00V, 400.0V, 500V
● The reading does not become 0 when the input terminal is shorted. But this does not bring about the influence to measurement.
● "-" indication appears when applying test pins reversed.



5-5 Testing Diode (▶)
Diodes is good when following readings appear.
● Open voltage is approx. DC 1.5V.



8-2 Measurement Range and Accuracy

Accuracy assurance range: 23±5°C, 80%RH max. No condensation.

Function	Range	Accuracy(±)	Input Impedance	Remarks
DCV=	400.0mV	(0.7%rdg+3dgt)	≥ 100MΩ	
	4.000V		Approx. 11MΩ	
	40.00V		Approx. 10MΩ	
	400.0V	(1.3%rdg+3dgt)	Approx. 10MΩ	
	500V			
ACV~	4.000V	(2.3%rdg+10dgt)	Approx. 11MΩ	Accuracy in the case of sine wave. Bandwidth: 40~400Hz
	40.00V		Approx. 10MΩ	
	400.0V	(2.3%rdg+5dgt)	Approx. 10MΩ	
	400.0V			
	500V			
Ω	400.0 Ω		Open voltage: Approx DC0.4V	The measuring current changes according to the resistance of the resistor to measure.
	4.000kΩ	(2.0%rdg+5dgt)		
	40.00kΩ			
	400.0kΩ			
	4.000MΩ	(5.0%rdg+5dgt)		
	40.00MΩ	(10%rdg+5dgt)		
•••		Buzzersoundsatleastthen10~120Ω		
		Openvoltage:Approx.0.4V		
▶		Openvoltage:Approx.1.5V		

Specifications and external appearance of the product described above may be revised for modification without prior notice.