



保証書 table with columns: 氏名, 住所, TEL, 保証期間, ご購入日, 製品名, 製造No, 型式

【1】安全に関する項目 はじめに必ずお読みください。このたびはデジタル・マルチメータCD800a型をお買い上げいただき、誠にありがとうございます。

Table with columns: ファンクション, 入力端子, 最大定格入力値, 最大過負荷保護入力値

CD800a DIGITAL MULTIMETER

取扱説明書



三和電気計器株式会社

本社=東京都千代田区外神田2-4-4・電波ビル
大阪営業所=大阪市浪速区恵美須西2-7-2

保証規定

保証期間中に正常な使用状態のもとで、万一故障が発生した場合には無償で修理いたします。

Table for warranty registration with columns: 年 月 日, 修理内書をご記入ください

無償の認定は当社において行われています。

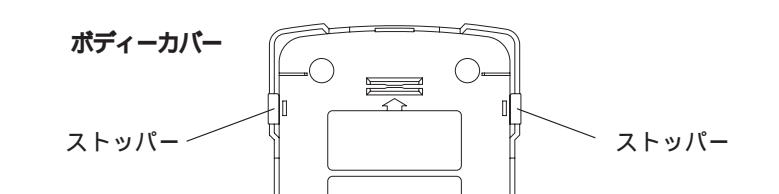
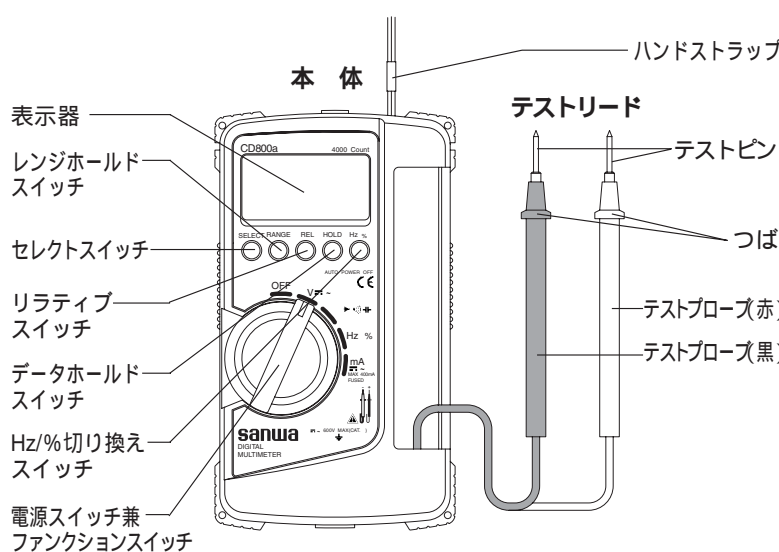
安全使用のための警告文

以下の項目は、やけどや感電などの人身事故を防止するためのものです。本器をご使用する際には必ずお守りください。

【2】用途と特長

2-1 用途
本器は弱電回路の測定用に設計された、携帯用デジタル・マルチメータです。

【3】各部の名称



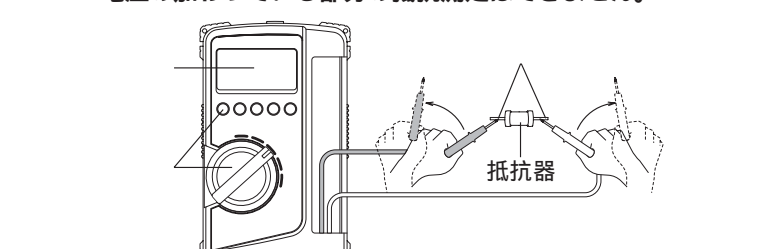
【4】機能説明

- 4-1 ファンクションスイッチ
このスイッチを回して電源のON/OFFおよびV、-/▶/◀/◂/⊕、Hz、mA、---を切り換えます。

5-3 抵抗(Ω)測定 最大測定抵抗 40M

入力端子には外部よりの電圧を絶対に加えないこと。

- 1) 測定対象
抵抗器や回路の抵抗を測ります。



5-4 ダイオード(▶)テスト

測定端子には外部よりの電圧を絶対に加えないこと

- 1) 使用対象
ダイオードの良否をテストします。

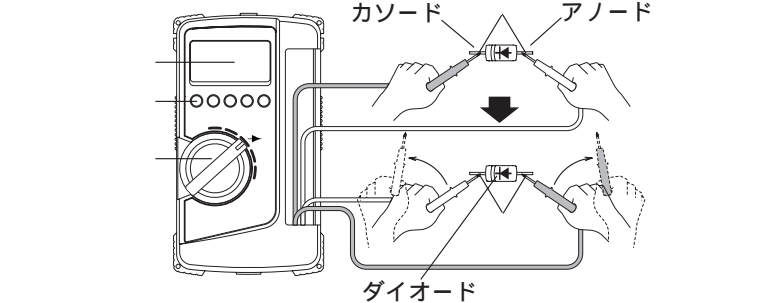
直流電流 DCmA 最大定格入力電流DC400mA
交流電流 ACmA 最大定格入力電流AC400mA

- 1) 測定対象
DCA : 直流回路の電流を測ります。

【6】保守管理について

- 1. この項目は安全上重要ですが、本説明書をよく理解して管理を行なうこと。

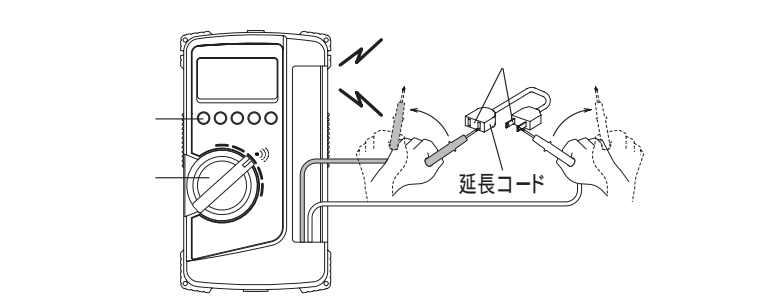
ダイオードのアノード、カソードを入れ替えて接続します。逆方向電圧降下を測定したとき"OL"表示が出ます。



5-5 導通(◂)チェック

測定端子には外部よりの電圧を絶対に加えないこと。

- 1) 測定対象
配線の導通確認や導定に用います。



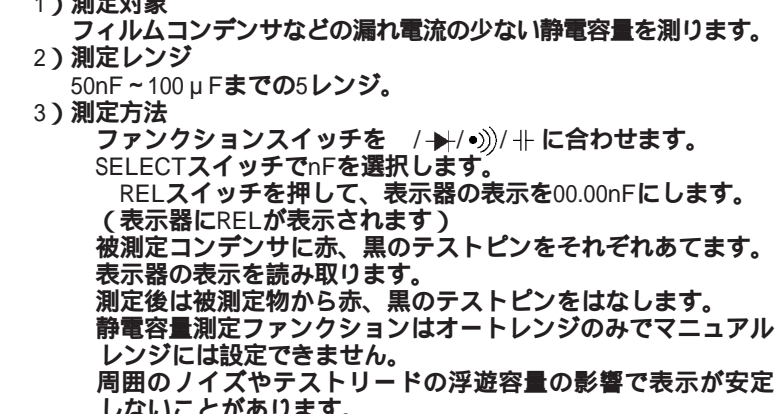
【7】アフターサービス

- 7-1 保証期間について
本品の保証期間は、お買い上げ日より3年間です。

5-6 静電容量(±)測定

測定端子には外部よりの電圧を絶対に加えないこと。

- 1) 測定対象
フィルムコンデンサなどの漏れ電流の少ない静電容量を測ります。



5-7 周波数(Hz)・デューティー比(%)測定

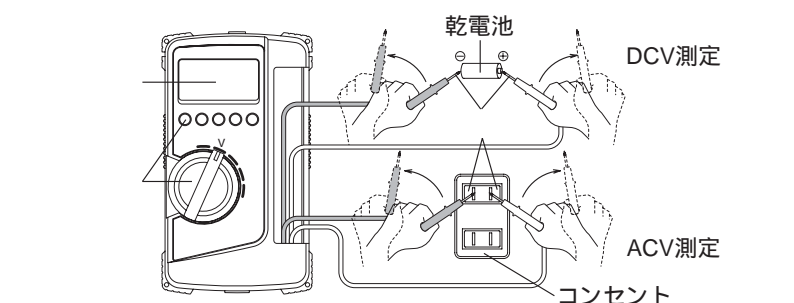
最大定格入力電圧を超えた入力信号を加えないこと。

5-2 電圧(V)測定

- 1. 最大定格入力電圧を超えた入力信号を加えないこと。

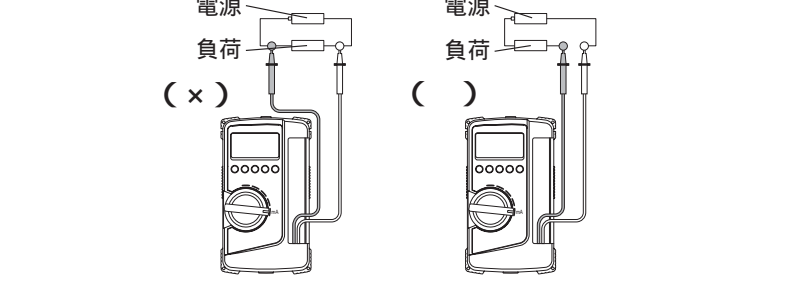
DCV : 最大定格入力電圧DC600V
ACV : 最大定格入力電圧AC600V

- 1) 測定対象
DCV : 電池や直流回路の電圧を測ります。



5-8 電流(mA)測定

- 1. 入力端子には電圧を絶対に加えないこと。



【8】仕様

Table with columns: 動作方法, 表示, サンプルレート, レンジ切り換え, 極性表示, 電池消費警告, 動作温度, 保存温度, 電源, 交流検波方式, オートパワーオフ, 安全規格, E.M.C, 寸法, 重量, 消費電力, 電池寿命, 付属品



CD800a DIGITAL MULTIMETER INSTRUCTION MANUAL

SANWA ELECTRIC INSTRUMENT CO., LTD.
Dempa Bldg., 4-4 Sotokanda 2-Chome
Chiyoda-Ku, Tokyo, Japan



[1] SAFETY PRECAUTIONS

Before use, read the following safety precautions. This instruction manual explains how to use your new digital multimeter CD800a 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 given under the heading of "WARNING" 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.

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 3kVA.
2. Never apply an input signal exceeding the maximum rating input value.
3. Never use meter if the meter or test leads are damaged or broken.

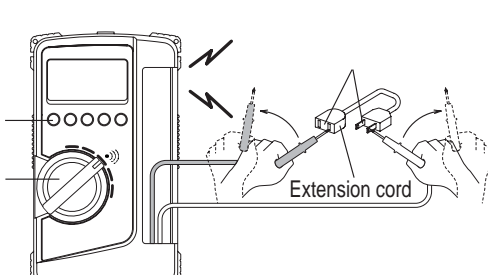
[4] DESCRIPTION OF FUNCTIONS

WARNING
In the case of action or cancel that function as follows, do not turn the function switch in the condition applied input.

- 4-1 Function Switch
Turn this switch, to turn on and off the power and to select the functions of V, Hz, Hz%, mA, Hz%, mA, Hz%, mA, Hz%, mA.
4-2 SELECT : Measurement Function Select
When the SELECT button is pressed, the functions change as follows.
4-3 RANGE : Range Hold
Press the RANGE button momentarily to set the manual range mode, then 'AUTO' disappears in the display.
4-4 REL : Relative Mode
Relative zero allows the user to offset the meter consecutive measurements with the displaying reading as the reference value.
4-5 HOLD : Data Hold
When the HOLD button is pressed, the display is hold ('DH' is shown on the display).
4-6 Hz% : Frequency and duty cycle select button
Frequency and duty cycle measurement functions are activated alternately by pressing the button.
4-7 Auto Power Off

5-5 Checking Continuity ()
WARNING
Never apply voltage to the input terminals.

- 1) Applications
Checking the continuity of wiring and selecting wires.
2) How to use
Set the FUNTION switch at () and select () by pressing the SELECT button.



5-6 Capacitance Measurement ()
WARNING
Never apply voltage to the input terminals.

- 1. Discharge the capacitance before measurement.
2. This is not suitable for measurement of electrolytic condenser such as a large leakage condenser.
3. It takes a while to measure large capacitance.

- 1) Applications
Measures capacitance of low leakage condenser such as film condenser.
2) Measuring ranges
5 ranges from 50.00nF to 100.0 μF (Auto range).

6-4 Storage CAUTION

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

[7] AFTER-SALE SERVICE

- 7-1 Warranty and Provision
Sanwa offers comprehensive warranty services to its end-users and to its product resellers.
7-2 Repair
Customers are asked to provide the following information when requesting services:
1. Customer name, address, and contact information
2. Description of problem
3. Description of product configuration
4. Model Number
5. Product Serial Number
6. Proof of Date-of-Purchase
7. Where you purchased the product
Please contact Sanwa authorized agent / distributor / service provider, listed in our website, in your country with above information.

1) Prior to requesting repair, please check the following:
Capacity of the built-in battery, polarity of installation and discontinuity of the test leads.

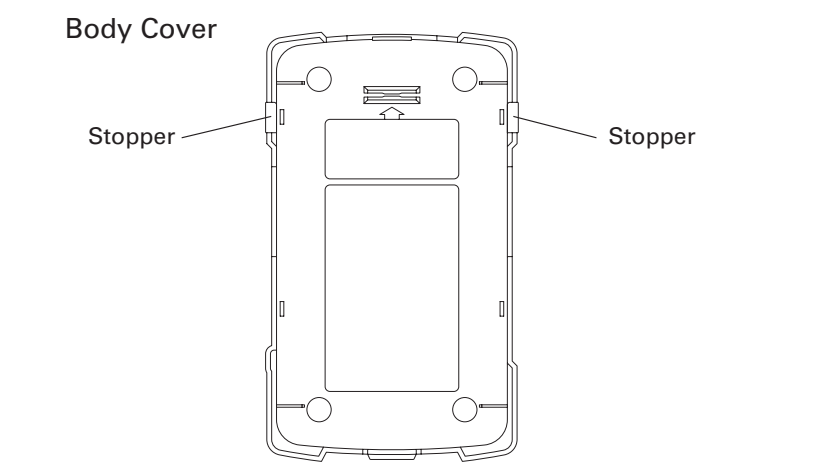
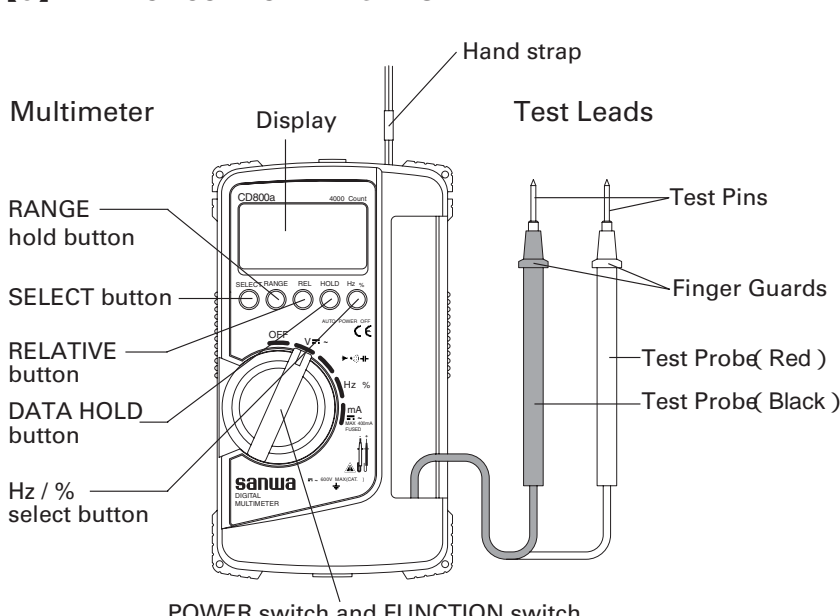
- 10. Be sure to disconnect the test pins from the circuit when changing the function.
11. Before starting measurement, make sure that the function and range are properly set in accordance with the measurement.
12. Never use meter with wet hands or in a damp environment.
13. Never open tester case except when replacing batteries or fuse. Do not attempt any alteration of original specifications.
14. Do not use the device near an item of strong electromagnetic generation or a charged item.
15. To ensure safety and maintain accuracy, calibrate and check the tester at least once a year.
16. The multimeter is for indoor use only.

1-3 Overload protections table with columns: Function, Input terminals, Maximum rating input value, Maximum overload protection input.

[2] APPLICATION AND FEATURES

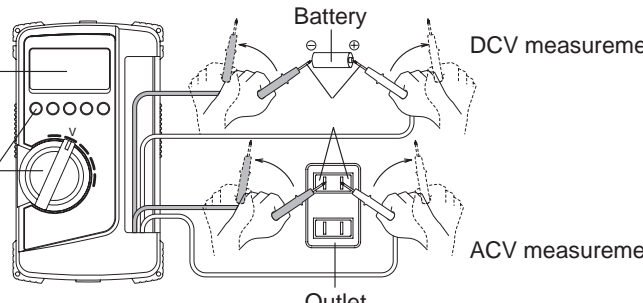
- 2-1 Applications
This instrument is portable digital multimeter designed for measurement of weak current circuits.
2-2 Features
The instrument has been designed in accordance with the safety standard IEC 61010-1.

[3] NEME OF COMPONENT UNITS



3) Measurement procedure

Set the FUNTION switch at "V" and select either DC or AC with the SELECT button. Apply the red and black test pins to the circuit to measure. For measurement of DCV, apply the black test pin to the negative potential side of the circuit to measure and the red test pin to the positive potential side.

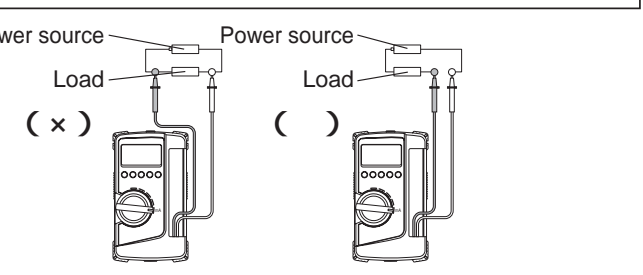


5-3 Resistance Measurement ()
WARNING
Never apply voltage to the input terminals.

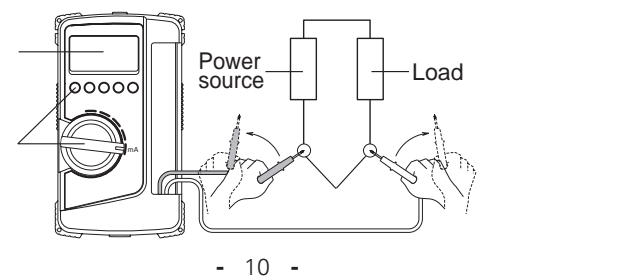
- 1) Applications
Resistance of resistors and circuits are measured.
2) Measuring ranges
DCV : 5 ranges from 400mV to 600V
ACV : 4 ranges from 4V to 600V

5-8 Current Measurement CAUTION

- 1. Never apply voltage to the input terminals.
2. Be sure to make a series connection via load.
3. Do not apply an input exceeding the maximum rated current to the input terminals.
4. Before starting measurement, turn OFF the power switch of the circuit to separate the measuring part, and then connect the test leads firmly.

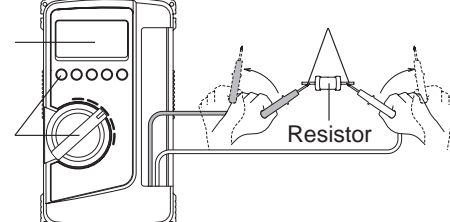


- DCmA : Maximum rating input value 400mADC
ACmA : Maximum rating input value 400mAAC
1) Applications
DCA : Current in batteries and DC circuits is measured.
ACA : Current in AC circuits is measured.
2) Measuring ranges
DC/ACmA : 2 ranges for 400.0mA and 40.00mA.
3) Measurement procedure
Set the function switch at "mA" and select either DC or AC with the SELECT button.



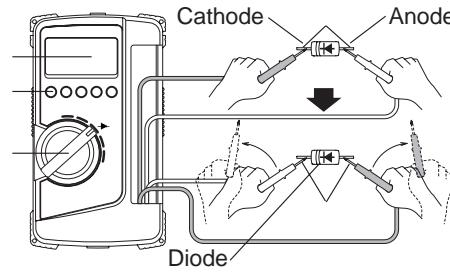
3) Measurement procedure

Set the FUNTION switch at () and select () with the SELECT button. Apply the red and black test pins to an object to measure. The reading is shown in the display. After measurement, release the red and black test pins from the object measured.



5-4 Testing Diode ()
WARNING
Never apply voltage to the input terminals.

- 1) Applications
The quality of diodes is tested.
2) How to use
Set the FUNTION switch at () and select () by pressing the SELECT button. Apply the black test pins to the cathode and the red test pin to the anode.



[6] MAINTENANCE

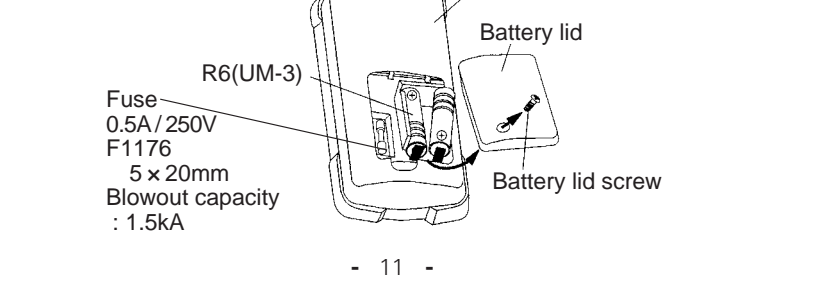
- 1. The section is very important for safety. Read and understand the following instruction fully and maintain your instrument properly.
2. The instrument must be calibrated and inspected at least once a year to maintain the safety and accuracy.

6-1 Maintenance and inspection

- 1) Appearance
Is the appearance not damaged by falling?
Is the cord of the test leads not damaged?
Is the core wire not exposed at any place of the test leads?
2) Before starting the work, be sure to turn OFF the main unit power and release the test leads from the circuit.
3. Be sure to use a fuse of the specified rating or type. Never use a substitute of the fuse or never make a short circuit of the fuse.

Remove the battery lid screw with a screwdriver. Take out the battery or fuse and replace it with a new one. Attach the battery lid and fix with the screw.

CAUTION
Set battery with its polarities facing in the correct directions.



OVERVOLTAGE CATEGORY

- CAT : Secondary electrical circuits connected to an AC electrical outlet through a transformer or similar device.
CAT : Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord.
CAT : Primary electrical circuits of heavy equipment connected directly to the distribution panel, and feeders from the distribution panel to outlets.

8-2 測定範囲及び精度 / Measurement Range and Accuracy

精度保証範囲: 温度23±5 湿度: 80%R.H.以下 結露のないこと
Accuracy assurance range : 23±5 80%RH. No Condensation

Table with columns: Function/Range, Accuracy, Input Impedance, Remarks. Includes rows for DCV, ACV, Resistance, Impedance, Capacitance, and Static Voltage.

Table showing measurement ranges and accuracies for various functions like Frequency, Duty Cycle, DC Current, AC Current, and Checking Continuity.

トランスや大電流回路など強磁界の発生している近く、また無線機など強電界の発生している近くでは正常な測定ができない場合があります。

精度計算方法 / Accuracy calculation
例) 直流電圧測定(DCVmV) For example... Measurement 400mVDC Range.
表示値 / Display value : 100.0[mV]