

**3803**

**DIGITAL HiTESTER**

---

---

**INSTRUCTION MANUAL**



# Contents

Introduction .....	i
Inspection .....	i
Safety Notes .....	ii
Notes on Use .....	viii
Chapter 1 Overview .....	1
1.1 Product Overview .....	1
1.2 Features .....	2
Chapter 2 Names and Functions of Parts ...	3
2.1 Push Buttons .....	4
2.2 Rotary Switch .....	6
2.3 Input Terminal .....	7
2.4 LCD Display Illustration .....	8
Chapter 3 Measurement Procedures .....	9
3.1 Voltage Measurement .....	11
3.1.1 AC Voltage Measurement .....	12
3.1.2 DC Voltage Measurement .....	13
3.2 Diode Check .....	14
3.3 Resistance Measurement .....	16
3.4 Current Measurement .....	18
3.4.1 AC Current Measurement .....	19
3.4.2 DC Current Measurement .....	20
Chapter 4 Special Functions Instructions ..	21
4.1 Data Hold .....	22
4.2 Auto Power Save .....	23
4.3 Communication (RS-232C) .....	24

Chapter 5 Specifications .....	27
5.1 General Specifications .....	27
5.2 Accuracy Chart .....	31
Chapter 6 Maintenance and Service .....	35
6.1 Changing the Batteries and Fuses .....	35
6.2 Cleaning .....	38
6.3 Service .....	38

---

## Introduction

Thank you for purchasing the HIOKI "3803 DIGITAL HiTESTER". To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

---

## Inspection

When you receive the product, inspect it carefully to ensure that no damage occurred during shipping. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

### ■ Accessories

3851-10 TEST LEAD (a pair)	1
Protective holster	1
Instruction Manual	1
6F22 manganese battery (built into this unit, for monitor)	1

---











## Safety Notes





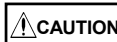

**This product is designed to conform to IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the product. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from product defects.**

This manual contains information and warnings essential for safe operation of the product and for maintaining it in safe operating condition. Before using the product, be sure to carefully read the following safety notes.

### Safety symbols

	<ul style="list-style-type: none"> <li>• The  symbol printed on the product indicates that the user should refer to a corresponding topic in the manual (marked with the  symbol) before using the relevant function.</li> <li>• In the manual, the  symbol indicates particularly important information that the user should read before using the product.</li> </ul>
	<p>Indicates a double-insulated device.</p>
	<p>Indicates DC (Direct Current).</p>
	<p>Indicates AC (Alternating Current).</p>
	<p>Indicates both DC and AC .</p>
	<p>Indicates a grounding terminal.</p>
	<p>Indicates that dangerous voltage may be present at this terminal.</p>

The following symbols in this manual indicate the relative importance of cautions and warnings.

	Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.
	Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.
	Indicates that incorrect operation presents a possibility of injury to the user or damage to the product.
	Advisory items related to performance or correct operation of the product.



We define measurement tolerances in terms of f.s. (full scale), rdg. (reading) and dgt. (digit) values, with the following meanings:

**f.s. (maximum display value or scale length)**

The maximum displayable value or the full length of the scale. This is usually the maximum value of the currently selected range.

**rdg. (reading or displayed value)**

The value currently being measured and indicated on the measuring product.

**dgt. (resolution)**

The smallest displayable unit on a digital measuring product, i.e., the input value that causes the digital display to show a "1".

## **Measurement categories (Overvoltage categories)**

This product conforms to the safety requirements for CAT II (1000V), CATIII (600V) measurement products.

To ensure safe operation of measurement product, IEC 61010 establishes safety standards for various electrical environments, categorized as CAT I to CAT IV, and called measurement categories. These are defined as follows.

**CAT I** : Secondary electrical circuits connected to an AC electrical outlet through a transformer or similar device.

**CAT II** : Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)

**CAT III** : Primary electrical circuits of heavy equipment (fixed installations) connected directly to the distribution panel, and feeders from the distribution panel to outlets.

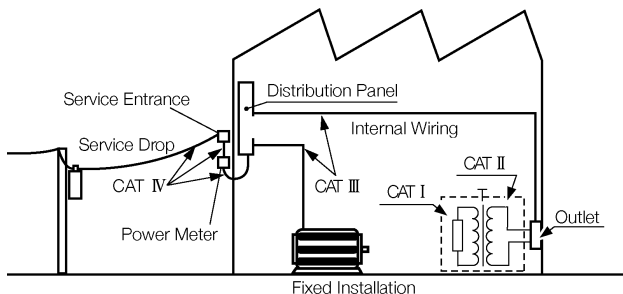
**CAT IV** : The circuit from the service drop to the service entrance, and to the power meter and primary overcurrent protection device (distribution panel).

Higher-numbered categories correspond to electrical environments with greater momentary energy. So a measurement device designed for CAT III environments can endure greater momentary energy than a device designed for CAT II.

Using a measurement product in an environment designated with a higher-numbered category than that for which the product is rated could result in a severe accident, and must be carefully avoided.

Never use a CAT I measuring product in CAT II, III, or IV environments.

The measurement categories comply with the Overvoltage Categories of the IEC60664 Standards.



---

## Notes on Use



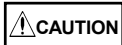
Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.

### ■ Preliminary Check

Before using the product the first time, verify that it operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, contact your dealer or Hioki representative.



- **Do not use the product where it may be exposed to corrosive or combustible gases. The product may be damaged or cause an explosion.**
- **Before using the product, make sure that the insulation on the test leads is undamaged and that no bare conductors are improperly exposed. Using the product under such conditions could result in electrocution. Replace the test leads with the specified Hioki Model 3851-10.**



- To avoid damage to the product, do not allow the product to get wet, and do not use it when your hands are wet.  
Adjustments and repairs should be made only by technically qualified personnel.
- This product should be installed and operated indoors only, between 0 and 40°C and 80% RH or less. However, it can be safely operated down to -10°C.
- Do not store or use the product where it could be exposed to direct sunlight, high temperature or humidity, or condensation. Under such conditions, the product may be damaged and insulation may deteriorate so that it no longer meets specifications.
- This product is not designed to be entirely water- or dust-proof. To avoid damage, do not use it in a wet or dusty environment.
- Do not use the product near a device that generates a strong electromagnetic field or electrostatic charge, as these may cause erroneous measurements.
- To avoid damage to the product, protect it from vibration or shock during transport and handling, and be especially careful to avoid dropping.
- If the protective functions of the product are damaged, either remove it from service or mark it clearly so that others do not use it inadvertently.

x

**NOTE**

To avoid corrosion from battery leakage, remove the battery from the product if it is to be stored for a long time.

---

# Chapter 1

## Overview

---

---

### 1.1 Product Overview

This multimeter has DCV, ACV, DCA, ACA, OHM, Diode check and Audible continuity tests. The built-in optical RS-232C will assist you to capture the data without hazardous as the high voltage has been measured.

## 1.2 Features

The multimeter is shown in the following Figure. This meter has a lot of functions can be used in HVAC, Power, Process fields, Electronic/Electrical system diagnostics and troubleshooting. It will be the best one of your need. See below detail:

- Resolution of display: 3,999 counts
- Data Hold to freeze displayed digital value.
- Auto and Manual Ranging
- Communication with RS-232C

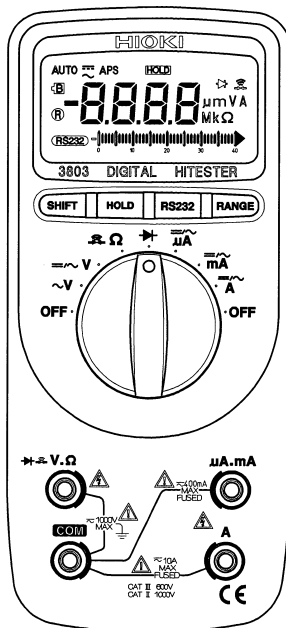


---

## Chapter 2

# Names and Functions of Parts

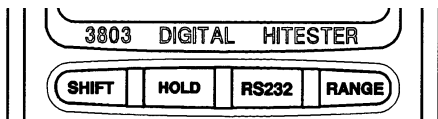
---



---

## 2.1 Push Buttons

The operation of push-button is shown as below. When push the button, a display symbol will light, and the beeper will sound. Turning the rotary switch to another switch setting resets all push buttons to their default state.



**SHIFT** button

- For voltage and current measurements, press this button momentarily to cycle through DC and AC tests.
- For Ohm test, press button momentarily to toggle "Audible continuity mode" ON/OFF. Pushing this button for more than 1 second will exit the continuity function and returns to the auto-ranging ohm measurement.

**HOLD** button (Data Hold)

- Press this button momentarily to toggle data hold on or off. The display shows **HOLD** to indicate the hold function.

**RS232** button (Communication)

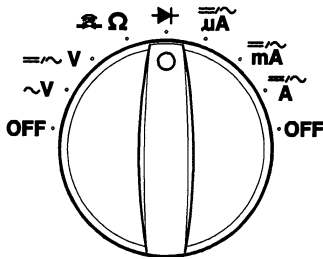
- Press this button momentarily to toggle RS-232C on or off.  
The display shows **RS232C** to indicate the RS-232C function has been enabled.

**RANGE** button

- In auto-range press this button momentarily to select manual range and turn on the **R** annunciator.
- In manual range, press this button momentarily to step up 1 range at one time, press this button for more than 1 second to select auto-range.  
In auto-range, the meter will select an appropriate range for measurement being made.
- The meter will select a higher range when reading is greater than 3950 count.  
The meter will select a lower range when reading is less than about 350 count.  
If a reading is greater than maximum available range, **OL** (overload) is displayed on the screen.

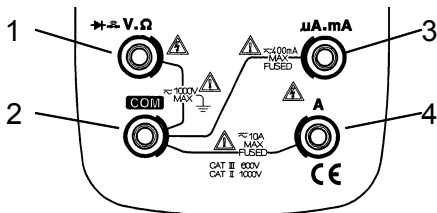
## 2.2 Rotary Switch

To select function, turn the rotary switch to a switch setting. Then the meter is ready for use. (If you press and hold any push button while pushing the meter from OFF to ON, the display will remain lit until the push button is released.)



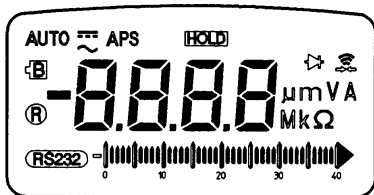
<b>OFF</b>	Power off position.
<b>~V</b>	AC voltage measurements.
<b>=~V</b>	AC or DC voltage measurements. Initial test is defined to AC.
<b>Ω</b>	Ohm and Continuity measurements
<b>▶</b>	Diode Check
<b>μA</b>	AC or DC Current measurements
<b>mA</b>	AC or DC Current measurements.
<b>A</b>	AC or DC Current measurements.

## 2.3 Input Terminal



1. Volts, Ohms and Diode measurements.
2. Common terminal for all measurements.
3. Current (maximum 400 mA) measurements.
4. Current (maximum 10 A continuous) measurements.

## 2.4 LCD Display Illustration



<b>APS</b>	Enable Auto power save
<b>AUTO</b>	Indicates AUTO range Mode
<b>Ⓜ</b>	Indicates MANUAL range Mode
<b>HOLD</b>	Data hold annunciator
<b>RS232C</b>	Enable RS-232C
<b>---</b>	Direct Current or Voltage
<b>~</b>	Alternating Current or Voltage
<b>⚡</b>	Diode Check
<b>⚡</b>	Continuity function annunciator
<b>⚡</b>	Low battery indicator
<b>m V</b>	Units of Voltage measurement
<b>μ mA</b>	Units of Current measurement
<b>Mk Ω</b>	Units of Resistance (ohm) measurement
	Bar-graph indicator

---

## Chapter 3

# Measurement Procedures

---

**DANGER**

Observe the following precautions to avoid electric shock.

- Always verify the appropriate setting of the function selector before connecting the test leads.
- Disconnect the test leads from the measurement object before switching the function selector.

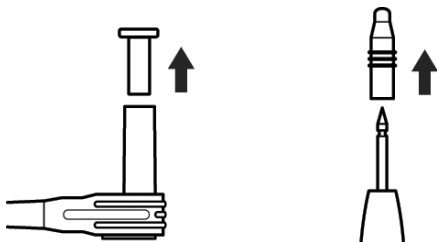
**NOTE**

Accurate measurement may be impossible in the presence of strong magnetic fields, such as near transformers and high-current conductors, or in the presence of strong electromagnetic fields such as near radio transmitters.

**■ Preparation for Measurement**

The safety caps are attached to the test leads.

Remove these caps before connecting to the unit.





---

## 3.1 Voltage Measurement



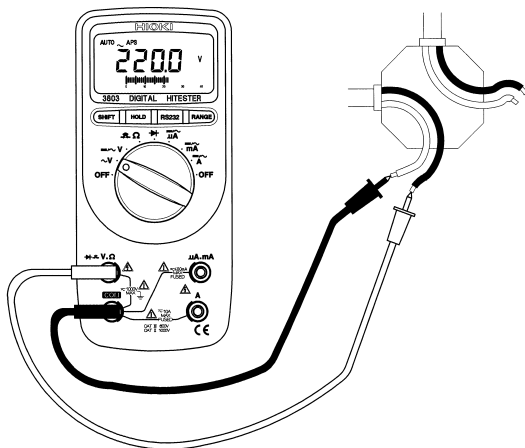
- The maximum input voltage is 1000 V DC, 1000 V rms or  $10^6$  V • Hz. Attempting to measure voltage in excess of the maximum input could destroy the product and result in personal injury or death.
- To avoid electrical shock, be careful to avoid shorting live lines with the test leads.
- For safety, test lead connections must always be made at the secondary side of a circuit breaker.

### 3.1.1 AC Voltage Measurement

- (1) Set the rotary switch to " $\sim$  V" or " $\overline{\sim}$  V".

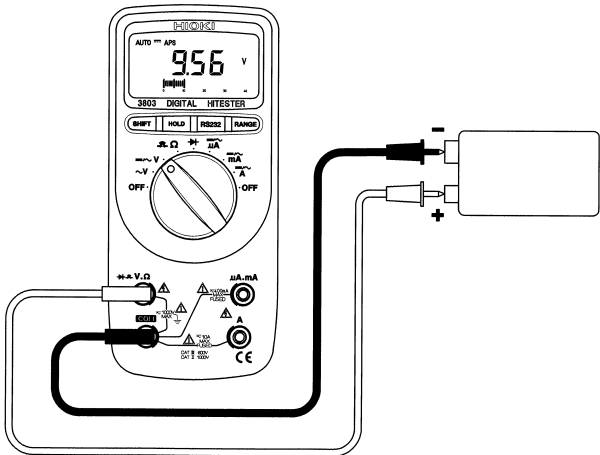
In the case of " $\overline{\sim}$  V", press **SHIFT** button momentarily to cycle through DC, AC tests.

- (2) Connect the black test lead to "**COM**" terminal and red test lead to "**V  $\Omega$   $\rightarrow$** " terminal.
- (3) Touch the test leads to the test points and read the display.



### 3.1.2 DC Voltage Measurement

- (1) Set the rotary switch to " $\text{---}/\sim\text{V}$ ".
- (2) Push **SHIFT** button momentarily to set DC test.
- (3) Connect the black test lead to "**COM**" terminal and red test lead to "**V  $\Omega$   $\rightarrow$** " terminal.
- (4) Touch the test leads to the test points and read the display.



## 3.2 Diode Check



- **Never apply voltage to the test leads when the Diode Check functions is selected. Doing so may damage the product and result in personal injury.**
- **To avoid electrical accidents, remove power from the circuit before measuring.**

A good diode allows current to flow in one direction only. To test a diode, turn the power off, remove the diode from the circuit, and proceed as follows:

- (1) Set the rotary switch to "**▶**" position.
- (2) Connect the black test lead to "**COM**" terminal and red test lead to "**V Ω ▶**" terminal.
- (3) Touch the test leads to diode and read the display.
- (4) Touch the red lead to the positive side of the diode and the black lead to the negative side. The meter can display diode voltage drops to approximately 2.9 V.  
A typical voltage drop is 0.3 to 0.8 V.

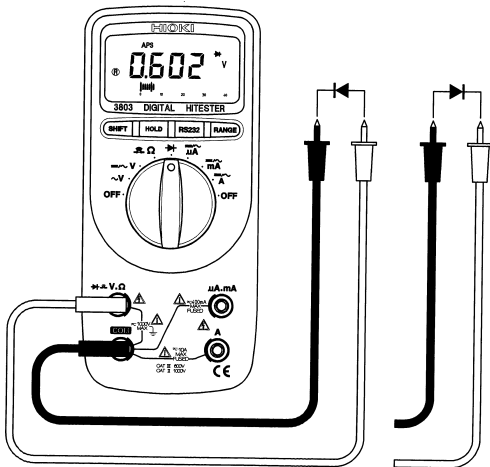
Reverse the test leads and measure the voltage across the diode again. If the diode is:

Good : "**OL**" is displayed.

Shorted : Near 0 V drop is displayed in both directions, and the beeper sounds continuously.

Open : "**OL**" is displayed in both directions.



Repeat step (3) and (4) for other diodes.

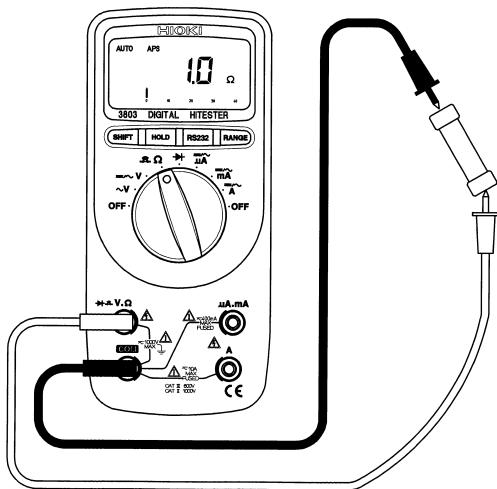


### 3.3 Resistance Measurement



- **Never apply voltage to the test leads when the Resistance, Continuity Check functions are selected. Doing so may damage the product and result in personal injury.**
- **To avoid electrical accidents, remove power from the circuit before measuring.**

- (1) Set the rotary switch to "  $\Omega$ ".
- (2) Connect the black test lead to "COM" terminal and red test lead to " $\Omega$  " terminal.
- (3) Touch the test leads to resistor and read the display.
- (4) Press **SHIFT** button momentarily to toggle CONTINUITY function ON/OFF. The continuity range is 0 to 400.0  $\Omega$ .
- (5) Momentarily pushing this button will only turn the beeper off. While testing continuity, the beeper will sound if the resistance falls below 345 counts. And it will stop if the resistance exceeds 350 counts.



## 3.4 Current Measurement



- **Never apply voltage to the test leads when a current measurement function is selected. Doing so may damage the product and result in personal injury.**
- **To avoid electrical accidents, remove power from the circuit before connecting the test leads.**



- **To prevent electrical accidents, do not use the tester to measure current when the electric potential is 600 V or greater. The current function overload protection trips at either 600 V DC, 600 V rms.**

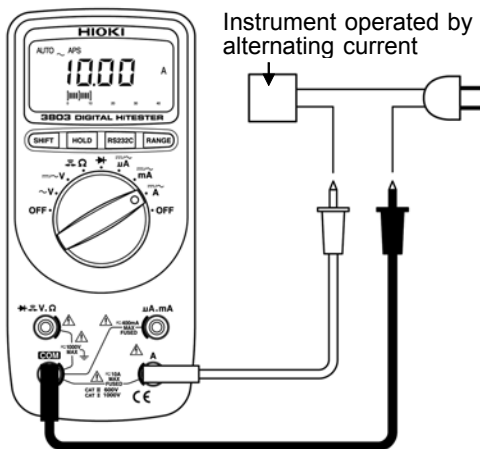


### 3.4.1 AC Current Measurement

- (1) Set the rotary switch to " $\sim$  A".
- (2) Connect the black test lead to "**COM**" terminal and red test lead to "**A**" terminal.
- (3) Touch the test leads to the test points and read the display.

**NOTE**

If the reading is lower than 400 mA, to get better resolution of display, please turn the rotary switch to **mA** or  **$\mu$ A** position and remove the red test lead to " **$\mu$ A mA**" terminal.

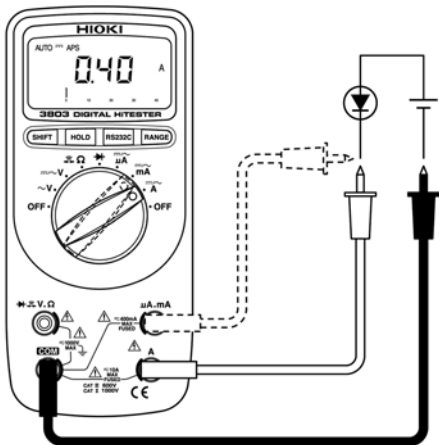


### 3.4.2 DC Current Measurement

- (1) Set the rotary switch to " $\overline{\sim}$  A".
- (2) Push **SHIFT** button momentarily to set DC test.
- (3) Connect the black test lead to "**COM**" terminal and red test lead to "**A**" terminal.
- (4) Touch the test leads to the test points and read the display.

**NOTE**

If the reading is lower than 400 mA, to get better resolution of display, please turn the rotary switch to **mA** or  **$\mu$ A** position and remove the red test lead to " **$\mu$ A mA**" terminal.



---

## **Chapter 4**

# **Special Functions Instructions**

---

This multi-meter provides the operator with various functions including:

- (1) Data Hold
- (2) Auto power Save
- (3) Communication (RS-232C)

## 4.1 Data Hold

The data hold function allows operators to hold the displayed digital value, while the analog bar graph continues showing the present readings. Press **HOLD** button to enter the data hold mode, and the **HOLD** will be displayed. Press the button again to exit. The present reading is now shown.

**NOTE**

The range is held in the case of auto range.

---

## 4.2 Auto Power Save

The instrument will auto power save within 30 minutes, if the functions are not changed. When power-off happens, the final data is saved. You can push any buttons to wake-up meter, the display will indicate the final data and the data hold has been enabled.

### ■ DISABLE AUTO POWER SAVE

When the meter is to be used for long periods of time, the operator might want to disable the auto power save. Once the auto power save function is disabled, the meter will stay on continuously. The meter will shut off by turning the rotary switch to the off position.

Press and hold **SHIFT** or **RANGE** or **RS232** button, then turn on rotary switch to any positions, until the buzzer sounds a tone to release pushing buttons. The annunciator of **APS** will turn off.

#### NOTE

If you turn the rotary switch to other positions to wake-up meter, the final data will not keep.

---

## 4.3 Communication (RS-232C)

This meter has a communication capability. This function will assist user to recording and keeping data easy.

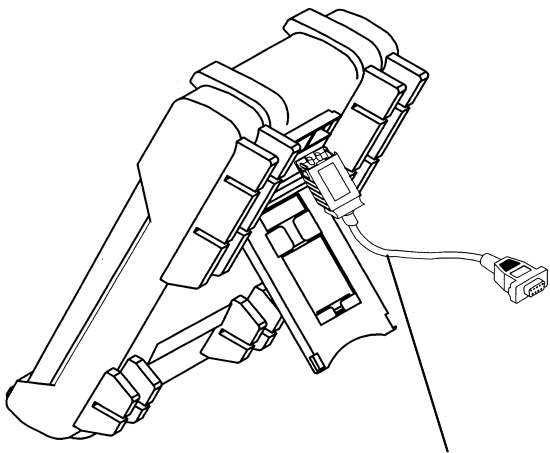
We offer the 3854 RS-232C PACKAGE to optional accessories. This package includes a cable with optical receiver, positional connector and a software disc.

Please refer following procedures if you want to communicate with personal computer.

- (1) Fixed the connector to the holster.
- (2) Fixes one side of cable to the positional connector, and connect the 9 pin's terminal of cable to communication port 1 or 2 of personal computer.
- (3) Press the **RS232** button, then you will find that the annunciator of **RS232** is light on the display.
- (4) Execute the software to take the data for your necessary

**NOTE**

Please refer to manual that the use method of software belonged to 3854 RS-232C PACKAGE . The RS-232C function remains selected until the meter is turned off.



Please fix the connector so that the label becomes upward.





# Chapter 5

## Specifications

### 5.1 General Specifications

<b>Measurement Mode</b>	Dual integration
<b>AC measurement Mode</b>	Mean measurement mode
<b>Function</b>	DCV, ACV, DCA, ACA, OHM, Diode check, Audible continuity tests.
<b>Additional Function</b>	Auto Range function Data hold function Auto Power Save function Low Battery Indicate function RS-232C Interface
<b>Type of Display</b>	LCD
<b>Display</b>	<ul style="list-style-type: none"> <li>• The liquid crystal display (LCD) is 4 digits with maximum reading 3999 counts.</li> <li>• 41 segments analog bar graph and full annunciator</li> <li>• Automatic polarity indication.</li> </ul>
<b>Range Selection</b>	Automatic or Manual / Manual Range
<b>Measuring Rate</b>	1.3 times per second.

<b>Constituent Inputs</b>	V, $\Omega$ , Audible continuity, Diode, Terminal $\mu$ A, mA Terminal A Terminal COM Terminal 4 Terminal components
<b>Power Supply</b>	6F22 manganese battery X 1 (9 V)
<b>Low Battery Indicator</b>	The "B" appears when the battery voltage drops below 6.3 to 7.5V (approx.).
<b>Dimension</b>	Approx. 76W X167H X33D mm Approx. 2.99"W X6.54"H X1.30"D
<b>Mass</b>	Approx. 300 g Approx. 10.6 oz. (with a battery included) Approx. 400 g Approx. 14.1 oz. (with a battery and protective holster)
<b>Dielectric Strength</b>	6 kVrms sin (1 minute at 50/60 Hz)
<b>Electrical Specifications</b>	Accuracy: See the Accuracy Chart (See 5.2) Accuracy Guarantee: $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ( $73^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ), less than 80% RH (no condensation) Supply Voltage: 9 V to Low Battery Indicator appears
<b>Temperature Coefficient</b>	specified accuracy $\times 0.15/^{\circ}\text{C}$ (from 0 to $18^{\circ}\text{C}$ or 28 to $40^{\circ}\text{C}$ ) (from 32 to $64^{\circ}\text{F}$ or 82 to $104^{\circ}\text{F}$ )
<b>Noise Rejection</b>	NMRR DCV: more than -60 dB (50/60 Hz) CMRR DCV: more than -120 dB (50/60 Hz) ACV: more than -60 dB (50/60 Hz) (1 k $\Omega$ Unbalance)
<b>Rated Supply Voltage</b>	9.0VDC $\times$ 1 (6F22 manganese battery)

<b>Rated Power</b>	15 mVA (Typ.) (DCV Supply Voltage = 9.0 V) 50 mVA (Max.) (Diode (RS232-C) Supply Voltage = 9.0 V)
<b>Continuous Operating Time</b>	Approx. 200 hours (DCV Function at 6F22 manganese battery)
<b>Operating Temperature</b>	0 to 40°C (32 to 104°F) less than 80% RH (no condensation)
<b>Storage Temperature</b>	-20 to 60°C (-4 to 140°F) less than 80% RH (no condensation)
<b>Location for Use</b>	Indoors, altitude up to 2000 m
<b>Accessories</b>	3851-10 TEST LEAD (a pair) Protective holster Manual 6F22 manganese battery (built in)
<b>Option</b>	3851-10 TEST LEAD (a pair) Protective holster 3853 CARRYING CASE 3854 RS-232C PACKAGE
<b>Protective Fuse</b>	$\mu\text{A} \cdot \text{mA}$ D086483P (Made by FERRAZ Inc.) 0.5 A/660 V, $\phi$ 6.35-32 mm, Breaking Capacity 30 kA or 70125 (Made by SIBA Inc.) 0.5 A/700 V, $\phi$ 6.35-32 mm, Breaking Capacity 50 kA A TDC600 (Made by Cooper Bussmann Inc.) 10 A/600 V, $\phi$ 6.35-25.35 mm, Breaking Capacity 10 kA

---

<b>Applicable Standards</b>	Safety	EN 61010-1:2001 EN 61010-2-031:1994 Pollution 2, Measurement Category II (1000 V), Measurement Category III (600 V) (anticipated transient overvoltage 6000 V) UL 3111-1:1994 CAN/CSA-C22.2 No.1010-1-92+B-97 CAN/CSA-C22.2 No.1010.2.031-94
	EMC	EN61326:1997+A1:1998+A2:2001 +A3:2003

---

## 5.2 Accuracy Chart

### Temperature and humidity for guaranteed accuracy

- $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$  ( $73^{\circ}\text{F} \pm 9^{\circ}\text{F}$ ), 80% RH or less, no condensation

### Guaranteed accuracy period

- 1 year

#### (1) DC VOLTAGE

Range	Resolution	Accuracy	Overload Protection
400.0 mV	0.1 mV	$\pm 0.6\% \text{rdg.} \pm 2 \text{dgt.}$	1000 V DC/ 1000 V rms or $10^6 \text{ V} \cdot \text{Hz}$
4.000 V	1 mV		
40.00 V	10 mV		
400.0 V	0.1 V		
1000 V	1 V		

- Input Impedance: 10 M $\Omega$

#### (2) AC VOLTAGE

-1. 40 Hz to 200 Hz

Range	Resolution	Accuracy	Overload Protection
400.0 mV	0.1 mV	$\pm 2\% \text{rdg.} \pm 10 \text{dgt.}$	1000 V DC/ 1000 V rms or $10^6 \text{ V} \cdot \text{Hz}$
4.000 V	1 mV	$\pm 2\% \text{rdg.} \pm 2 \text{dgt.}$	
40.00 V	10 mV		
400.0 V	0.1 V		
1000 V	1 V	$\pm 2.2\% \text{rdg.} \pm 5 \text{dgt.}$	

-2. 200 Hz to 500 Hz

Range	Resolution	Accuracy	Overload Protection
400.0 mV	0.1 mV	-	1000 V DC/ 1000 V rms or $10^6 \text{ V} \cdot \text{Hz}$
4.000 V	1 mV	$\pm 2\% \text{rdg.} \pm 2 \text{dgt.}$	
40.00 V	10 mV		
400.0 V	0.1 V		
1000 V	1 V	$\pm 2.2\% \text{rdg.} \pm 5 \text{dgt.}$	

- Input Impedance: 10 M $\Omega$

### (3) DC CURRENT

Range	Resolution	Accuracy	Internal Resistance (approx)	Overload Protection
400.0 $\mu\text{A}$	0.1 $\mu\text{A}$	$\pm 1.5\% \text{rdg.} \pm 2 \text{dgt.}$	500 $\Omega$	0.5 A/600 V Quick Acting Fuse
4000 $\mu\text{A}$	1 $\mu\text{A}$		50 $\Omega$	
40.00 mA	10 $\mu\text{A}$		5 $\Omega$	
400.0 mA	0.1 mA		0.5 $\Omega$	
10.00 A	10 mA	$\pm 1.5\% \text{rdg.} \pm 5 \text{dgt.}$	0.05 $\Omega$	10 A/600 V Quick Acting Fuse

- 10 A continuous, 10 to 20 A for 15 seconds maximum with 5 minutes cool down interval.

### (4) AC CURRENT

40 Hz to 500 Hz

Range	Resolution	Accuracy	Internal Resistance (approx)	Overload Protection
400.0 $\mu\text{A}$	0.1 $\mu\text{A}$	$\pm 2\% \text{rdg.} \pm 2 \text{dgt.}$	500 $\Omega$	0.5 A/600 V Quick Acting Fuse
4000 $\mu\text{A}$	1 $\mu\text{A}$		50 $\Omega$	
40.00 mA	10 $\mu\text{A}$		5 $\Omega$	
400.0 mA	0.1 mA		0.5 $\Omega$	
10.00 A	10 mA	$\pm 2\% \text{rdg.} \pm 5 \text{dgt.}$	0.05 $\Omega$	10 A/600 V Quick Acting Fuse

- 10 A continuous, 10 to 20 A for 15 seconds maximum with 5 minutes cool down interval.

## (5) RESISTANCE

Range	Resolution	Accuracy	Maximum Test Voltage	Overload Protection
400.0 $\Omega$	0.1 $\Omega$	$\pm 0.6\% \text{rdg.} \pm 3 \text{dgt.}$	1.2 V max.	600 V DC/ 600 V rms
4.000 k $\Omega$	1 $\Omega$		0.45 V max.	
40.00 k $\Omega$	10 $\Omega$			
400.0 k $\Omega$	100 $\Omega$			
4.000 M $\Omega$	1 k $\Omega$	$\pm 1.2\% \text{rdg.} \pm 3 \text{dgt.}$		
40.00 M $\Omega$	10 k $\Omega$	$\pm 2\% \text{rdg.} \pm 3 \text{dgt.}$		

## (6) AUDIBLE CONTINUITY TEST

Range	Threshold Level	Overload Protection
400.0 $\Omega$	The beeper will sound if the resistance falls below 34.5 $\Omega$ . And it will stop if the resistance exceeds 35.0 $\Omega$ .	600 V DC/ 600 V rms

- The measurement accuracy and open terminal voltage (test voltage) are the same as these of  $\Omega$  function.

## (7) DIODE CHECK

Range	Resolution Accuracy	Test Current Voltage	Overload Protection
Diode	1 mV $\pm 1.0\% \text{rdg.} \pm 2 \text{dgt.}$	approx. 1.65 mA Less than 3 V	600 V DC/ 600 V rms





---

## Chapter 6

# Maintenance and Service

---

---

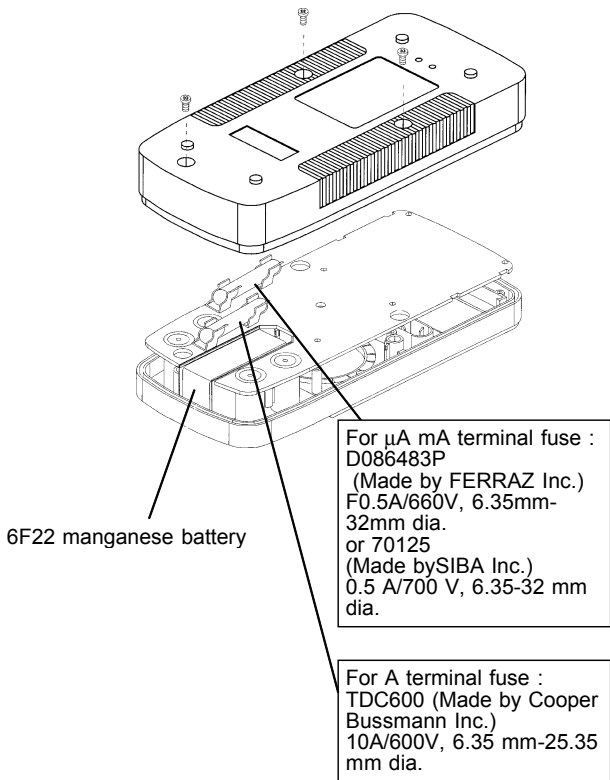
### 6.1 Changing the Battery and Fuses



- To avoid electric shock when replacing the battery and fuse, first disconnect the test leads from the object to be measured, then open the cover.  
After replacing the battery or fuse, replace the cover and screws before using the product.
- When replacing the battery, Be sure to insert them with the correct polarity. Otherwise, poor performance or damage from battery leakage could result. Replace battery only with the specified type.
- To avoid the possibility of explosion, do not short circuit, disassemble or incinerate battery. Handle and dispose of battery in accordance with local regulations.
- Replace the fuse only with one of the specified characteristics and voltage and current ratings. Using a non-specified fuse or shorting the fuse holder may cause a life-threatening hazard.

Use the following procedures to replace the battery, or fuse.

- (1) Using the rotary switch to turn the meter off, and remove the test leads from terminals.
- (2) Loosen 3 screws on bottom cover, pull up and move the cover.
- (3) Replace the defective battery.  
The meter is powered by a 6F22 battery. Replace battery if the low battery sign (⚡B) is displayed and flashes.
- (4) Remove the defective fuse by gently prying one end of the fuse loose and sliding the fuse out of the fuse bracket.  
Install a new fuse of the same size and rating. Make sure the new fuse is centered in the fuse holder. There are 2 types of fuses, one for the  $\mu\text{A}$  , mA terminal and one for the A terminal. Be sure to set the correct fuse.
- (5) Reverse the procedure of opening cover to close the bottom cover.



## 6.2 Cleaning

To clean the product, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.

---

## 6.3 Service

If the product seems to be malfunctioning, confirm that the battery are not discharged, and that the test leads, and fuse are not open circuited before contacting your dealer or Hioki representative.

When sending the product for repair, pack the product carefully so that it will not be damaged during shipment, and include a detailed written description of the problem. Hioki cannot be responsible for damage that occurs during shipment.

**HIOKI**

**DECLARATION OF CONFORMITY**

Manufacturer's Name: HIOKI E.E. CORPORATION  
Manufacturer's Address: 81 Koizumi, Ueda, Nagano 386-1192, Japan  
Product Name: DIGITAL HiTESTER  
Model Number: 3803, 3804, 3805  
Accessory: 3851-10 TEST LEAD  
Option: 3854 RS-232C PACKAGE

The above mentioned products conform to the following product specifications:


Safety: EN61010-1:2001  
EN61010-031:2002  
EMC: EN61326:1997+A1:1998+A2:2001+A3:2003  
Class B equipment  
Portable test, measuring and monitoring  
equipment used in low-voltage distribution  
systems

Supplementary Information:

The products herewith comply with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

29 September 2006

HIOKI E.E. CORPORATION

  
Tatsuyoshi Yoshiike  
President

3803A999-05



# **HIOKI 3803 DIGITAL HiTESTER**

## **Instruction Manual**

Publication date: September 2006 Revised edition 7

Edited and published by HIOKI E.E. CORPORATION

Technical Sales Support Section

All inquiries to International Sales and Marketing  
Department

81 Koizumi, Ueda, Nagano, 386-1192, Japan

TEL: +81-268-28-0562 / FAX: +81-268-28-0568

E-mail: [os-com@hioki.co.jp](mailto:os-com@hioki.co.jp)

URL <http://www.hioki.co.jp/>

Printed in Japan 3803A980-07

- All reasonable care has been taken in the production of this manual, but if you find any points which are unclear or in error, please contact your supplier or the International Sales and Marketing Department at HIOKI headquarters.
  - In the interests of product development, the contents of this manual are subject to revision without prior notice.
  - Unauthorized reproduction or copying of this manual is prohibited.
- 
-

# HIOKI

---

HIOKI E. E. CORPORATION

## HEAD OFFICE

81 Koizumi, Ueda, Nagano 386-1192, Japan  
TEL +81-268-28-0562 / FAX +81-268-28-0568  
E-mail: [os-com@hioki.co.jp](mailto:os-com@hioki.co.jp) URL <http://www.hioki.co.jp/>

## HIOKI USA CORPORATION

6 Corporate Drive, Cranbury, NJ 08512, USA  
TEL +1-609-409-9109 / FAX +1-609-409-9108

---

3803A980-07 06-09H



Printed on recycled paper

---

**T**  **USA**  
**Equipment**  
**.NET**™  
1-877-742-TEST (8378)