# 3804-50

# DIGITAL HiTESTER

INSTRUCTION MANUAL

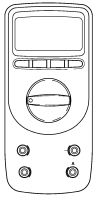
# Contents

# Introduction

Thank you for purchasing the HIOKI “Model 3804-50 DIGITAL HiTESTER.” To obtain maximum performance from the instrument, please read this manual first, and keep it handy for future reference.

# Verifying Package Contents

- When you receive the instrument, inspect it carefully to ensure that no damage occurred during shipping. In particular, check the accessories, panel switches, and connectors. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.
- When transporting the instrument, use the original packing materials in which it was shipped, and pack in a double carton. Damage occurring during transportation is not covered by warranty.



❑ 6LR61 alkaline battery
(built into the instrument/ 1)

❑ 3851-10 TEST LEAD (1)

❑ Instruction manual (1)

❑ 3804-50 DIGITAL HiTESTER
(with protective holster/1)

## Options

❑ 3853 CARRYING CASE
❑ 3856-01 COMMUNICATION PACKAGE (RS-232C)
❑ 3856-02 COMMUNICATION PACKAGE (USB)
❑ 9617 CLIP ON BASE*
❑ 9618 CLIP-TYPE LEAD*
(* not complied with the CE marking)

# Safety Information

**⚠DANGER** This instrument is designed to comply with 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 instrument. 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 instrument defects.

## Safety Symbols

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

| | |
|---|---|
|  | **In the manual, the ⚠ symbol indicates particularly important information that the user should read before using the instrument.** |
| | **The ⚠ symbol printed on the instrument indicates that the user should refer to a corresponding topic in the manual (marked with the ⚠ symbol) before using the relevant function.** |
|  | **Indicates that dangerous voltage may be present at this terminal.** |
|  | **Indicates a double-insulated device.** |
|  | **Indicates a grounding terminal.** |
|  | **Indicates DC (Direct Current).** |
|  | **Indicates AC (Alternating Current).** |
|  | **Indicates DC (Direct Current) or AC (Alternating Current).** |

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

| | |
|---|---|
| DANGER | Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user. |
| WARNING | Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user. |
| CAUTION | Indicates that incorrect operation presents a possibility of injury to the user or damage to the instrument. |
| NOTE | Indicates advisory items related to performance or correct operation of the instrument. |

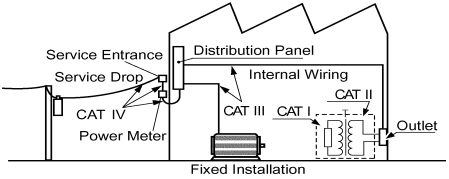
## Other Symbols

| | |
|---|---|
| ⃠ | Indicates the prohibited action. |
| ❖ | Indicates the reference. |
| * | Indicates that descriptive information is provided below. |

## Measurement categories (Overvoltage categories)

This instrument complies with CAT II (1000 V) and CAT III (600 V) safety requirements.
To ensure safe operation of measurement instruments 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 instrument in an environment designated with a higher-numbered category than that for which the instrument is rated could result in a severe accident, and must be carefully avoided.
Never use a CAT I measuring instrument in CAT II, III, or IV environments.
The measurement categories comply with the Overvoltage Categories of the IEC60664 Standards.

# Operating Precautions

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

## Setting up the Instrument

Operating temperature and humidity:
0 to 40°C (32 ± 122°F), 80%RH or less (non-condensating)
In the event that the temperature exceeds 31°C(88°F), linearly decrease the humidity to 40°C at 50%rh.
Temperature and humidity range for guaranteed accuracy:
23 ± 5°C (73 ± 9°F), 80% RH or less (non-condensating)

Avoid the following locations that could cause an accident or damage to the instrument.

Exposed to direct sunlight
Exposed to high temperature

Exposed to liquids
Exposed to high humidity or condensation

Exposed to high levels of particulate dust


In the presence of corrosive or explosive gases

Exposed to strong electromagnetic fields
Near electromagnetic radiators

Subject to vibration

## Preliminary Checks

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

**⚠WARNING** Before using the instrument, make sure that the insulation on the test leads is undamaged and that no bare conductors are improperly exposed. Using the instrument in such conditions could cause an electric shock, so contact your dealer or Hioki representative for replacements. (Model 3851-10 TEST LEAD)

## Measurement Precautions

**⚠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 and terminals before switching the function selector.

**⚠WARNING** The terminals are not sufficiently separated. To avoid electrocution, do not touch the terminals.

**⚠CAUTION** For safety reasons, when taking measurements, only use the test lead provided with the instrument.

## Handling this Instrument

⚠CAUTION To avoid damage to the instrument, protect it from physical shock when transporting and handling. Be especially careful to avoid physical shock from dropping.

NOTE
- To avoid corrosion from battery leakage, remove the batteries from the instrument if it is to be stored for a long time.
- After use, always turn OFF the power.

## Handling the Test Leads

⚠CAUTION
- To avoid breaking the cables, do not bend or pull them.
- The ends of the leads are sharp. Be careful to avoid injury. Fit the protective pin cap when the product is not in use.
- Keep the cables well away from heat sources, as bare conductors could be exposed if the insulation melts.

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# Overview Chapter 1

## 1.1 Product Overview/ Features

The 3804-50 is a multifunction, high-performance digital multimeter that can be used for voltage (DC/AC), current (DC/AC), resistance, continuity, diodes, and electrostatic capacity measurement. Furthermore, this instrument can be controlled by computer and transfer measurement data to the computer when the optional 3856-01/02 is used.

### High-performance Handheld DMM

The 3804-50 can display a maximum count of 9999. The basic accuracy for DC voltage measurement is ±0.09% rdg. ±2 dgt.

### Safe Design Compliant with CE Marking Standards

The 3804-50 is compliant with international safety standards (IEC61010-1 measurement categories CAT II (1000 V) and CAT III (600 V)) and EMC related standards.

### Comprehensive Additional Functions

The 3804-50 is also equipped with a wealth of additional functions ranging from simple support for measurement to easy analysis.

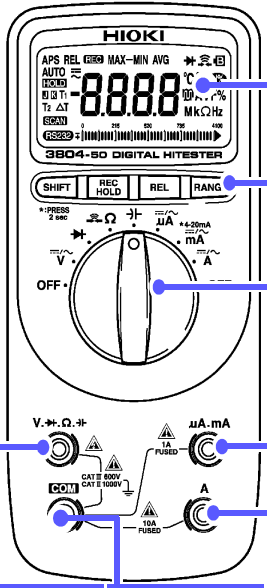
See Chapter 3 Additional Functions (page 27)

| | |
|---|---|
| **Refresh Hold Function** | The measured value is locked automatically and then stored, even if you let go of the test leads. |
| **Recording Function** | Switches the display to maximum measured value, minimum value, average value, or current value. |
| **4-20 mA (0-20 mA) Percentage Display Function** | Displays 4-20 mA (0-20 mA) instrumentation signal converted into a percentage of 0-100%. |
| **Relative Display Function** | Displays the deviation from the reference value. |
| **Communications Function** | Permits connection to a computer for data analysis. (Requires RS-232C/USB and the optional 3856-01/02.) |

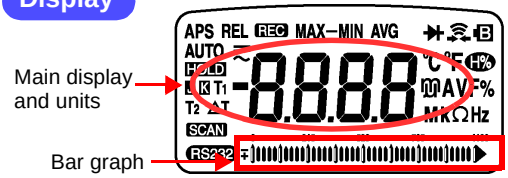
# 1.2 Names and Functions of Parts

The name and function of each part of the 3804-50 is described below.

## Front Panel

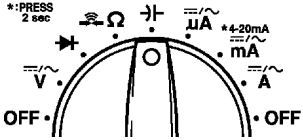


## Display



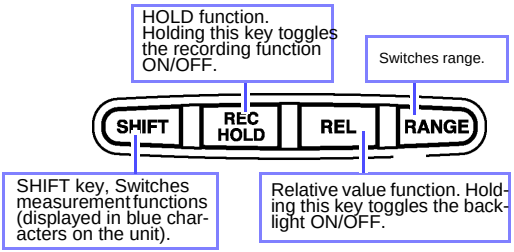

| | |
|---|---|
| **APS** | Lights when the auto power save function is ON. |
| **REL** | Lights when the relative value display function is ON. |
| **REC** | Lights when the recording function is ON. |
| **MAX** | Lights when the maximum value is being displayed. (Recording function) |
| **MIN** | Lights when the minimum value is being displayed. (Recording function) |
| **MAX-MIN** | Lights when the maximum value - minimum value is being displayed. (Recording function) |
| **AVG** | Lights when the average value is being displayed. (Recording function) |
| | Lights when the diode check function is being used. |
| | Lights when the continuity check function is being used. |
| | Low battery indicator. This lights when the battery needs to be replaced. |
| **H%** | Lights when the harmonics percentage display function is ON. |
| **AUTO** | Lights when the auto range function is being used. |
| | Lights when the DCV measurement or DCA measurement function is being used. |
| | Lights when the ACV measurement or ACA measurement function is being used. |
| **HOLD** | Lights when the manual/trigger hold function is ON. |
| **RS232** | Lights when transmissions are being controlled. |

## Function Selector

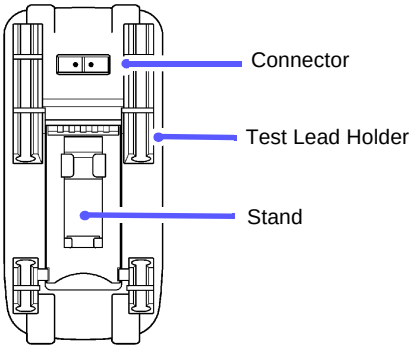



| | |
|---|---|
| **OFF** | Pressing this key turns the instrument off. |
| V | Voltage measurement function<br>Use the **SHIFT** key to select DC or AC. |
| ▶\| | Diode check function |
| Ω | Resistance measurement function<br>Use the **SHIFT** key to select either continuity check. |
| ⊣⊢ | Capacitance measurement function. Use the **SHIFT** key to select the temperature measurement function. |
| µA | Current measurement function up to 9999 µA.<br>Use the **SHIFT** key to select DC or AC. |
| mA | Current measurement function up to 999.9 mA.<br>Use the **SHIFT** key to select DC or AC. |
| A | Current measurement function up to 9.99 A.<br>Use the **SHIFT** key to select DC or AC. |
| **OFF** | Pressing this key turns the instrument off. |

## Operation Keys



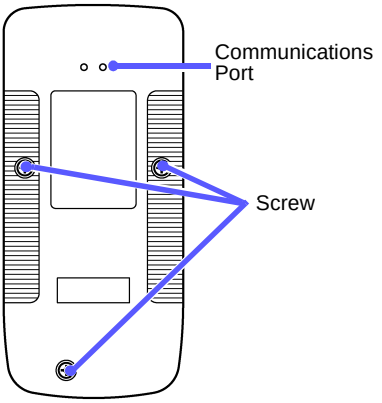
## Holster



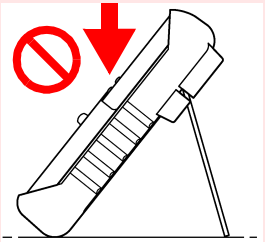

| | |
|---|---|
| Connector | This connector is for the optional communications cable. If you remove instrument from the holster, this connector will also be detached. Be careful not to lose the connector. |
| Test Lead Holder | These lock the test leads in place. You can lock one test lead in place and then carry the instrument around while taking measurements. |
| Stand | Pull out the stand in order to set the instrument down in a standing position. |

This instrument includes the holster as standard equipment.
Because the holster is made of a soft material, it will absorb external shocks and protect the instrument.
Remove the instrument from the holster before attempting to change the battery or the fuse. After replacing the battery or fuse, be sure to return the instrument to the holster before starting to use the instrument again.

## Rear Panel




**⚠CAUTION** Do not apply heavy downward pressure with the stand extended. The stand could be damaged.



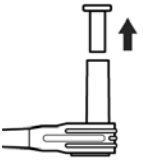
# Measurement ⚠ Chapter 2

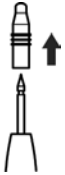
**⚠ DANGER** Observe the following precautions to avoid electric shock.

- 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.
- The maximum input voltage is 1000 VDC, 1000 V or $2\times10^7$ VHz. Attempting to measure voltage in excess of the maximum input could destroy the instrument and result in personal injury or death.
- The maximum input current is as follows;
  A terminal: Continuous up to 10 A AC/DC.
  µA.mA terminal: 1 A AC/DC
  Never exceed this limit, as doing so could result in destruction of the instrument and personal injury or death.
- The maximum rated voltage between input terminals and the ground is as follows;
  CAT II : 1000 VDC, 1000 VAC
  CAT III: 600 VDC, 600 VAC
  Attempting to measure voltages exceeding this level with respect to ground could damage the instrument and result in personal injury.
- 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.

**⚠WARNING** To avoid electrocution, do not touch the terminals.

**⚠CAUTION** For safety reasons, when taking measurements, only use the test lead provided with the instrument.





In order to protect the tips of the test leads, the test leads are capped when the unit is shipped from the factory. Be sure to remove the caps before using the test leads.

## 2.1 Pre-Operation Inspection

### Operation Check

If the operation check reveals any abnormalities, stop the check immediately and do not use the instrument.

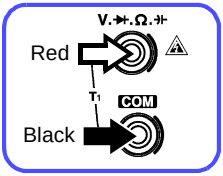
**Required equipment:**

- Model 3804-50 (this instrument)
- Model 3851-10 TEST LEAD
- AC power receptacle
  (100 V AC 50 Hz/60Hz commercial power supply)

1. Set the function switch to "Ω".
2. Press the **SHIFT** key to conduct the continuity check. ( lights.)

❖(23 page)

**3.** Connect the red test lead to the V terminal, and the black test lead to the COM terminal.

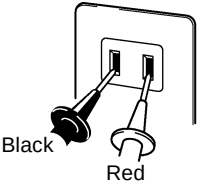



**4.** Short the tips of the red and black test leads by touching them together


- Buzzer sounds.
- Value stabilizes around 0 Ω.→ OK
- **OL** displayed/ The display is unstable →NO
- Possible test leads or tester malfunction.

**5.** Set the function switch to "V". Press the **SHIFT** key to conduct the ACV. ( ∼ lights.)

**6.** Insert the test lead tips into the openings of the AC receptacle.





- Display of commercial voltage levels → OK
- No display of commercial voltage levels → NO Possible tester malfunction.

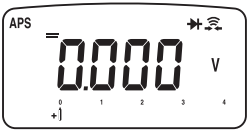
**NOTE** This procedure only partially confirms the operation of this instrument. Periodic calibration is necessary in order to ensure that this instrument operates according to its product specifications.

***7.*** (Confirming blown fuse for mA, mA terminal)
Set the function switch to "Diode Check (⊣◀)".
Connect the red test lead to the µA, mA terminal, and the black test lead to the V terminal. Short the tips of the red and black test leads by touching them together.


- Approximately 1.6 V displayed→ OK
- **OL** displayed→NO
  Fuse may be blown.
  Please replace fuse.

❖(53 page)

***8.*** (Confirming blown fuse for A terminal)
Connect the red test lead to the A terminal, and the black test lead to the V terminal. Short the tips of the red and black test leads by touching them together.



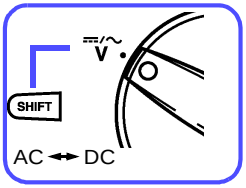

- Buzzer sounds→ OK
- **OL** displayed→NO
  Fuse may be blown.
  Please replace fuse.

❖(53 page)

## 2.2 Voltage Measurement

**⚠CAUTION**

- Note that the instrument may be damaged if voltage or current the measurement range.
- When the power is turned off, do not apply voltage or current to the measurement terminal. Doing so may damage the instrument.

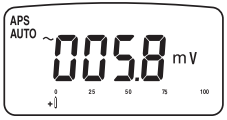



**1.** Set the function switch.

**2.** Use the **SHIFT** key to select either DC or AC.

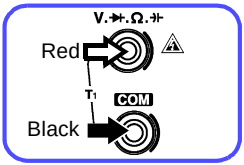
⎓ (DC) ◂▸ ∿ (AC)

<Example>
When ACV is selected



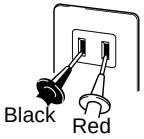

**3.** To set manual range, press the **RANGE** key. (Auto range is the normal setting.)

❖(28 page)

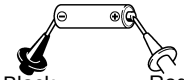



**4.** Connect the test leads to the test terminals.

<Example>
ACV Measurement




DCV Measurement




**5.** Connect the test leads to the object being tested.

<Example>
When measuring AC

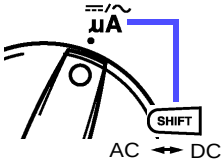

**6.** Read the value displayed.

## 2.3 Current Measurement

**⚠DANGER** Never apply voltage to the test leads. Doing so may damage the instrument and result in personal injury. To avoid electrical accidents, remove power from the circuit before measuring.

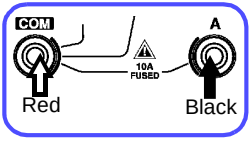
**⚠CAUTION**

- Note that the instrument may be damaged if voltage or current the measurement range.
- When the power is turned off, do not apply voltage or current to the measurement terminal. Doing so may damage the instrument.




<Example>
When ACA is selected


RANGE (**AUTO** off)





**1.** Set the function switch.

μA : For measuring voltages below 9999 μA
mA : For measuring voltages below 999.9 mA
A : For measuring voltages below 9.99 A

If you are not sure of the voltage to be measured, set the function switch to "A".

**2.** Use the **SHIFT** key to select either DC or AC.

⎓ (DC) ⇔ ∿ (AC)

**3.** To set manual range, press the **RANGE** key.

(Auto range is the normal setting.)
❖(28 page)

**4.** Connect the test leads to the test terminals.

**5.** Connect the test leads to the object being tested.

**6.** Read the value displayed.

Holding the **SHIFT** key when using the mA function will switch to the percentage display (4-20 mA / 0-20 mA).
This function can be used to check industrial meters.
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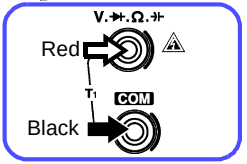
# 2.4 Resistance Measurement

**⚠DANGER** Never apply voltage to the test leads. Doing so may damage the instrument and result in personal injury. To avoid electrical accidents, remove power from the circuit before measuring.

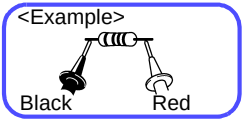
**1.** Set the function switch.

RANGE (**AUTO** off)




**2.** To set manual range, press the **RANGE** key.
(Auto range is the normal setting.)
❖(28 page)

**3.** Connect the test leads to the test terminals.




**4.** Connect the test leads to the object being tested.

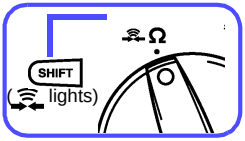
**5.** Read the value displayed.


**NOTE**

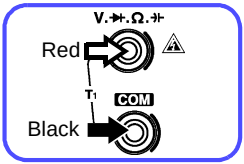
- Relative (REL) display function can be used to zero adjust.
❖(32 page)
- Please note that resistance measurement for coiled conductors (inductors) with impedance more than 10H (henry) may not be possible due to inductive load.

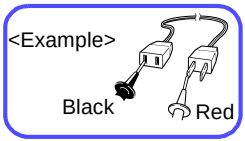
# 2.5 Continuity Check

**⚠DANGER** Never apply voltage to the test leads. Doing so may damage the instrument and result in personal injury. To avoid electrical accidents, remove power from the circuit before measuring.




RANGE (**AUTO** off)



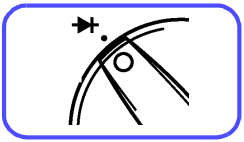





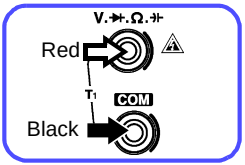
1. Set the function switch.
2. Select continuity ( ) with the **SHIFT** key.
3. If you want to change the range, press the **RANGE** key.
   (Normally, manual range is used.)
   To change to auto range, hold the **RANGE** key down.
   ❖(28 page)
4. Connect the test leads to the test terminals.
5. Connect the test leads to the object being tested.
6. Read the value displayed.
   In each range, the buzzer sounds when the count is less than 100 (less than 10.0 Ω in the 999.9 Ω range).
   However, in relative value display mode, this conforms with the internally measured value, not the display value.

# 2.6 Diode Check

**⚠DANGER** Never apply voltage to the test leads. Doing so may damage the instrument and result in personal injury. To avoid electrical accidents, remove power from the circuit before measuring.

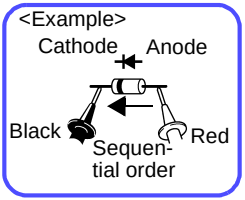


**1.** Set the function switch.




**2.** Connect the test leads to the test terminals.

**3.** Connect the test leads to the object being tested.

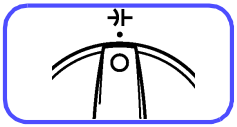



**4.** Read the value displayed.

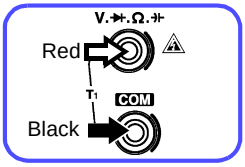
With a normal diode, the sequential order voltage (0.3 to 0.8 V) is displayed.
When the display value less than 0.050 V, buzzer sounds.
When the display value drops to the range of 0.3 to 0.8 V, a single buzzer sounds to indicate that a diode was detected.
However, in relative value display mode, this conforms with the internally measured value, not the display value.

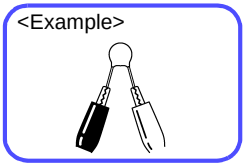
# 2.7 Capacitance Measurement

**⚠DANGER** Never apply voltage to the test leads. Doing so may damage the instrument and result in personal injury. To avoid electrical accidents, remove power from the circuit before measuring.



RANGE (**AUTO** off)





**1.** Set the function switch.

**2.** If you want to change the range, press the **RANGE** key.
(Normally, manual range is used.)
❖ (28 page)

**3.** Connect the test leads to the test terminals.

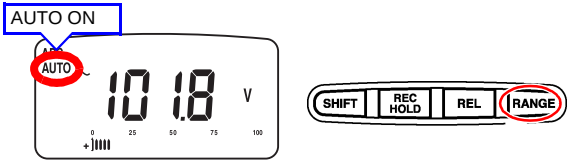
**4.** Connect the test leads to the object being tested.

**5.** Read the value displayed.
This instrument measures capacitance by the charge-discharge method. This instrument measures capacitance by the charge-discharge method. Due to charging times, the 9.999 mF range can take several tens of seconds before the measured value is displayed.

# Additional Functions Chapter 3

## 3.1 Auto Range Function

The auto range function automatically selects the optimal range for measurement. Use this function when you do not know the strength of the input signal or if you wish to avoid having to set the range manually.
Auto range is set automatically as soon as the power is turned on in all functions, except for the continuity check function. ("**AUTO**" lights on the screen.)



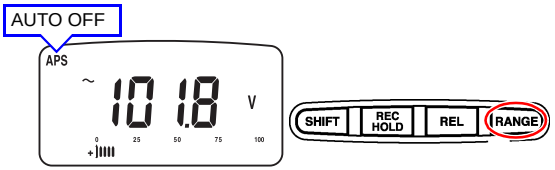

Threshold Values

| Range | Up | Down | Full Scale |
|---|---|---|---|
| 9999 range | Exceeds 9999 | Below 900 | 9999 |
| 9.99 A range | -- | -- | 999 |
| 2.100 V range | -- | -- | 2100 |

NOTE
- When using the continuity check function, manual range is the initial setting.
- Auto range is not available for diode check and A function.

# 3.2 Manual Range Function

Press the **RANGE** key to set the manual range function. Each time the key is pressed the range increases, and the position of the decimal point changes. Use this function when you know the strength of the input signal.
To change to auto range, hold down the **RANGE** key.




**NOTE**

- When using the continuity check function, manual range is the initial setting. When using except for the continuity check function, Auto range is the initial setting.
- Auto range is not available for diode check A function.

# 3.3 Hold Functions

## 3.3.1 Trigger Hold Function

Fix a measurement value for the trigger hold function before pressing the **REC/HOLD** key.

1. Turn the refresh hold function off.
   ❖ (40 page)
2. Press the **REC/HOLD** key during measurement to lock the displayed value.
3. To update and lock the displayed value again, press the **REC/HOLD** key again.

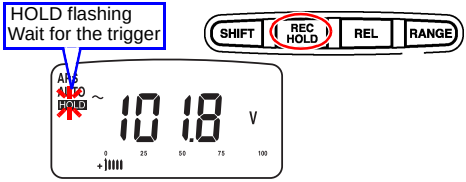

To cancel the trigger hold function, press and hold the **REC/HOLD** key.

NOTE The bar graph conforms with the displayed hold value.

## 3.3.2 Refresh Hold Function

The refresh hold function locks the display value automatically once the measurement value stabilizes. As the display value remains locked even if you remove the test leads from the test subject, this function is useful when you are measuring in locations where it is difficult to see the display value or when you are using both hands to take measurements.

1. Set the threshold value (the amount of change once the display has stabilized) of the refresh hold function. ❖(40 page)
2. Press the **REC/HOLD** key to set the instrument to wait for the trigger.
3. Connect the test lead to the test subject. Once the display value stabilizes, "**HOLD**" lights, a buzzer sounds and the display is locked.



**4.** After confirming that the buzzer has sounded, remove the test lead from the test subject.

The display value remains locked, "**HOLD**" flashes and the instrument waits for the next trigger.

To cancel refresh hold mode, hold down the **REC/HOLD** key.

NOTE

- The bar graph conforms with input signal.
- If the display value does not exceed the threshold value* that was set, the display value is not locked in. If you have trouble getting the display value to lock, try changing the threshold value.

* The threshold value of each function is shown below

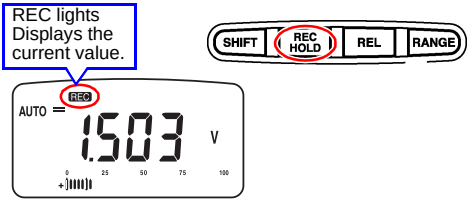
| Function | Threshold value |
|---|---|
| DCV/DCμA/DCmA | 100 counts for each range. |
| ACV/ACμA/ACmA | 500 counts for each range. |
| DCA | 0.1 A |
| ACA | 0.5 A |
| Ω | OL |

## 3.4 Recording Function

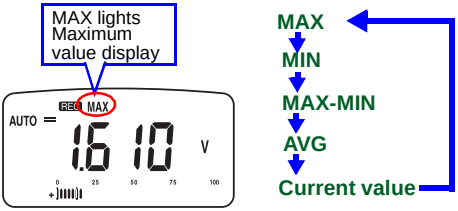
This function records the maximum, minimum, maximum-minimum and average value of the input signal starting from the time when the recording function was started.

Input signal current value : **REC**
Input signal maximum value : **REC MAX**
Input signal minimum value : **REC MIN**
Input signal maximum value-minimum value : **REC MAX-MIN**
Input signal average value : **REC AVG**

**1.** To turn on the recording function, hold down the **REC/HOLD** key while measurement is in progress.




**2.** Press the **REC/HOLD** key again to toggle between the maximum value, minimum value, average value, current value and the display.




When the maximum value (or minimum value) is updated, the buzzer sounds.

**3.** To cancel the recording function, hold down the **REC/HOLD** key.

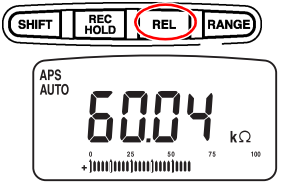
**NOTE**

- The recording function records the maximum value, minimum value, and average value of the internal measurement data prior to smoothing, not the displayed values.
- The auto power save function is disabled automatically when you use the recording function.
- Bar graph shows the current value.

# 3.5 Relative (REL) Display Function

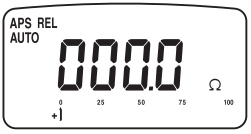
Pressing the **REL** key causes future values to be displayed relative to the currently displayed value, which becomes the reference value.
To reproduce a zero adjust function while measuring voltage (mV), resistance, etc., short the test leads to set the relative value display mode. (This cancels the Seebeck effect and the effect of wiring resistance.)

**1.** Display the measured value that you want to set as the reference value.




**2.** Pressing the **REL** key sets the currently displayed value as the reference value, and displays future values as relative values to that reference value.

Relative Value - Measured Value - Reference Value




**NOTE**

- The bar graph conforms with the displayed relative.
- While **OL** is displayed, the Relative (REL) function is disabled.

# 3.6 4-20 mA (0-20 mA) Percentage Display Function

The 4-20 mA (0-20 mA) percentage display function displays the instrument system 4-20 mA (0-20 mA) signal converted to a percentage of 0% to 100%.

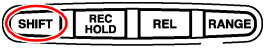
4-20 mA (when measurement current is 12.00 mA)

$$\text{Percentage conversion value} = \frac{\text{Measured value[mA]} - 4\text{[mA]}}{16\text{[mA]}} \times 100[\%]$$


Select through power on option

0-20 mA (when measurement current is 12.00 mA)

$$\text{Percentage conversion value} = \frac{\text{Measured value[mA]}}{20\text{[mA]}} \times 100[\%]$$


1. Select 4-20 mA% or 0-20 mA% from the power-on option conversion chart.
   Use the Power On Option to select 4-20 mA percentage display or 0-20 mA percentage display
   ❖(40 page)
2. Hold the **SHIFT** key for the mA function to turn on the 4-20 mA (0-20 mA) percentage display function.
3. Hold the **SHIFT** key again to turn off the 4-20 mA (0-20 mA) percentage display function.
4. The **RANGE** key can be used to switch the range of the 4-20 mA (0-20 mA) percentage displayed.

| Range | 999.9% | 9999% |
|---|---|---|

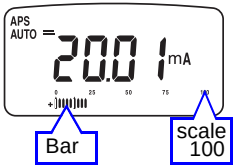
NOTE

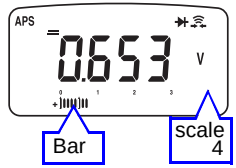
- The bar graph will be in accordance with the current level of the input signal.
- It is not possible to determine from the measurement screen whether the settings are 4-20 mA or 0-20 mA. Please use the Power On Option to confirm the settings.

❖(40 page)

## 3.7 Bar Graph Display Function

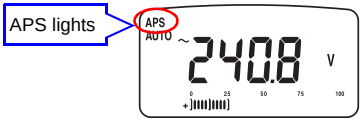
The bar will light in accordance with the measured value, allowing for an intuitive confirmation of the input level. The scale will be displayed in accordance with the measurement function. A ± mark will be displayed in accordance to polarity.




## 3.8 Auto Power Save

The auto power save function is activated after the set time elapses since the last time the function switch or a key was operated. The auto power save function turns off the display screen and minimizes the instrument's internal power consumption.




**1.** Use the Power On Option to set the operating time. Functions can also be disabled.

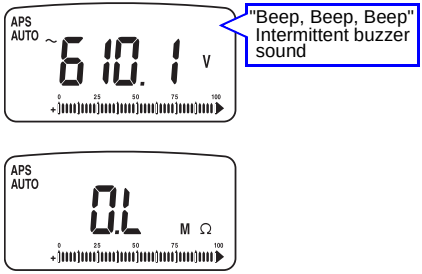
❖(40 page)

**2.** To restore the auto power save function either turn the rotary switch to the OFF position once or press any key.

NOTE
- Auto power save will be turned off in the recording function.
- When the auto power save function is turned off, be careful not to leave the unit on accidentally.

## 3.9 Overload Warning

During voltage measurement, if the input voltage exceeds 610.0 V, the 3804-50 sounds an intermittent beep as a warning. Remove the test leads from the test subject immediately.




NOTE If full scale is exceeded in any of the ranges, "**OL**" is displayed. Either set auto range or else select the correct range.

❖(27 page)
❖(28 page)

| Range | Full Scale |
|---|---|
| 9999 counts | 9999 |
| 9.99 A counts | 9.99 A |
| 2.100 V counts | 2.100 V |

# 3.10Battery Depletion Alert Function


- A battery mark ( ) will be displayed on the measurement screen when it is time to change the batteries (approximately 6.2 V or less). When this happens, replace the battery.
- Measured values will continue to be displayed for an extended period after the battery mark ( ) appears. However, when the battery mark ( ) is displayed accuracy specifications will not be satisfactory. As such, batteries should be replaced as soon as possible.

❖(53 page)

# 3.11Communications Function

This instrument is equipped with an RS-232C interface-based data transmission function. If this instrument is connected to a personal computer, measurement data can be transferred from this instrument to the computer where it can be recorded and saved.

NOTE

In order to use this function, one of the following options is required. Purchase the option that is appropriate for your computer.

- When connecting to a serial port (D-sub 9-pin connector) on the computer side
  3856-01 COMMUNICATION PACKAGE (RS-232C)
- When connecting to a USB port on the computer side
  3856-02 COMMUNICATION PACKAGE (USB)

❖See Model 3856-01 or Model 3856-02 Instruction Manual

**1.** Install the software in the personal computer.

❖See Model 3856-01 or Model 3856-02 Instruction Manual

**2.** This unit's transmission settings are as follows. Adjust computer settings as necessary.

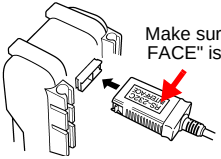
| | |
|---|---|
| Baud Rate | 9600 |
| Parity Check | None |
| Data Length | 8 bit |

**3.** If you are transmitting data using the included software, please set your unit's power-on option as indicated below. (39 page)

| | |
|---|---|
| Response | OFF |
| Data output | OFF |

**4.** When using the 3856-02 communications package, install the driver in the personal computer.

**5.** Connect the optical connector of the communications cable to the connector on the holster for the 3804-50.

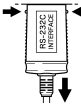



Communication is not possible if "RS-232C INTERFACE" is facing downwards.

**6.** Connect the other end of the communications cable to the personal computer.

**7.** Start the software. The measurement data is transferred from the 3804-50 to the personal computer.


**NOTE** To disconnect the connector from the 3804-50, squeeze the clips while pulling the connector out.

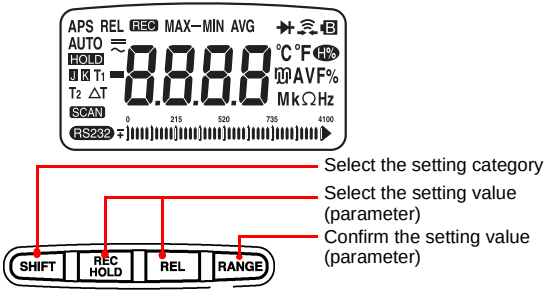


# Power On Options Chapter 4

Performing individual settings for measurement functions and additional functions.

To Operate:

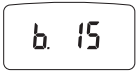
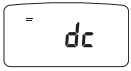
SHIFT +Power ON




1. In order to display the setting screen hold down the **SHIFT** key and turn the unit on by turning the function switch from the OFF position.
2. Press the **SHIFT** key to select the setting category.
3. Select the setting value (parameter) by pressing the **REC/HOLD** key or the **REL** key. (Values other than the currently set value will flash.)
4. Confirm the setting value (parameter) with the **RANGE** key.
5. Turn the function switch to OFF to finish setup. (Otherwise, hold down the **RANGE** key to the normal measurement display.)

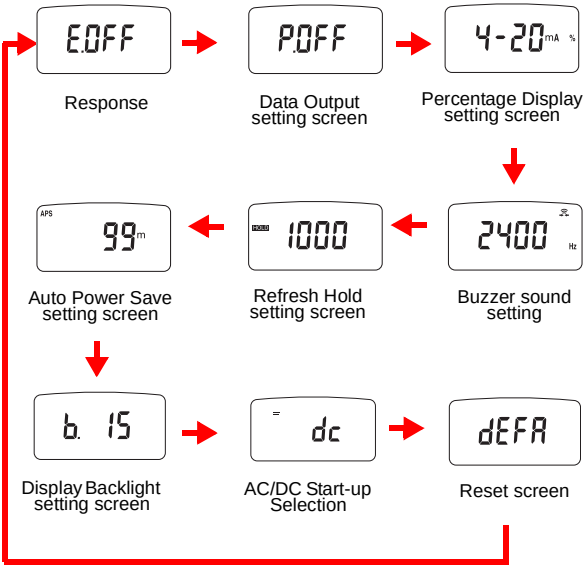
## List of Settings

| Setting category | Setting screen | Function |
|---|---|---|
| Response |   | Communication Function: response setting<br>Turning Response ON will make the unit respond to all characters received through the communication function.<br>(Setting) OFF (default) / ON |
| Data Output |   | Communication Function: data output setting<br>Turning Data Output ON will make the unit output by its communication function the data for each sampling only.<br>(Setting) OFF (default) / ON |
| 4-20mA (0-20mA) Percentage Display |   | Switch between 4-20 mA and 0-20 mA display of the 4-20 mA (0-20 mA) percentage display function.<br>(Setting) 4-20 mA% (default) / 0-20 mA% |
| Buzzer sound setting |   | The buzzer sound can be set to the preferred tone or muted.<br>(Setting) 2400 Hz (default) / 300 Hz / 600 Hz / 1200 Hz / OFF (mute) |
| Refresh Hold |   | Set the threshold value (the amount of change once the display has stabilized) of the refresh hold function. Selecting OFF disables the refresh function. (Trigger hold function enabled)<br>(Setting) OFF (default) / 100 to 1000 (set by interval of 100) |
| Auto Power Save |   | Set the time until the auto power save function activates.<br>(Setting) 15 min (default) / 1 min to 99 min / OFF |

| | | |
|---|---|---|
| Display Backlight |   | Set the time until the backlight automatically turns off.<br>(Setting) 15 sec (default) / 1 sec to 99 sec / OFF |
| AC/DC Start-up Selection |   | Select whether the unit starts up from DC (direct current) or AC (alternating current) when in the voltage function or the current measurement function.<br>DC: Start-up from DC (direct current)<br>AC:Start-up from AC (alternating current) For example, it is convenient to set the unit to AC when the unit is to be frequently used for AC measurements.<br>(Setting) DC (default) / AC |
| Reset |   | Resets all settings to initial defaults.<br>Press the **RANGE** key when the setting screen, two times of buzzers sound, and reset the unit.<br>(Setting) DEFA (default) |

## Power On Option Setting Screen List

The settings screen will change before you press the **SHIFT** key.



# Specifications Chapter 5

## 5.1 General Specifications

| | |
|---|---|
| Measurement functions | • DC voltage measurement<br>• AC voltage measurement<br>• DC current measurement<br>• AC current measurement<br>• Resistance measurement<br>• Continuity check<br>• Diode check<br>• Capacitance measurement |
| Additional functions | • Auto range function (AUTO)<br>• Manual range function<br>• Trigger hold function (HOLD)<br>• Refresh hold function (HOLD)<br>• Recording function (REC: MAX, MIN, AVG)<br>• Relative (REL) display function<br>• 4-20mA(0-20mA)Percentage display function<br>• Bar Graph Display<br>• Auto power save function (APS)<br>• Overload warning function<br>• Battery indicator function ( B )<br>• Communications function (RS-232C, USB) |
| AC measurement method | True RMS measurement |
| Display method | TN-type LCD, 1/4 duty, dynamic drive method |
| Display | • Data display<br>4digits<br>Maximum display count [9999]<br>Maximum display count [999] 10 A range<br>Polarity display [-] mark lights automatically.<br>Over range display [OL] or [-OL]<br>• Bar graph<br>Scale display, 41-dot bar display, ± polarity display<br>• Unit, symbol<br>[m][µ][A][V][F][%][M][k][Ω][APS][REL][REC]<br>[MAX][-][MIN][AVG][ ][ ][ B ][AUTO][ ⎓ ]<br>[ ~ ][HOLD][RS232] |
| Range | Auto range or manual range |
| Input terminals | V.Ω. , , ⊣⊢, COM, µA.mA, A |

| | |
|---|---|
| Functions | OFF, V, Ω, ⊣◁, ⊣⊢, µA, mA, A, OFF |
| Key input configuration | SHIFT, REC HOLD, REL, RANGE |
| Battery low warning voltage | B mark flashes when 6.2 V ± 0.2 V or less |
| Power supply | 6F22 manganese battery or 6LR61 alkaline battery |
| Dimensions | Approx. 83W × 178H × 58D mm (3.27"W × 7.01"H × 2.28"D) (including protective holster, not including protrusion)<br>Approx. 76W × 167H × 33D mm (2.99"W × 6.57"H × 1.30"D) (not including protective holster, not including protrusion) |
| Mass | Approx. 390 g (13.8 oz.)<br>(including protective holster and battery) |
| Operating environment | Indoors use, Pollution degree 2,<br>altitude up to 2000 m (6562-ft.) |
| Operating temperature and humidity | 0°C to 40°C (32°F to 104°F), 80%RH or less (no condensation)<br>However, when the temperature exceeds 31°C (87°F), the relative humidity reduces linearly to 40°C (104°F), 50%RH. |
| Storage temperature and humidity | -20°C to 60°C (-4°F to 140°F), 80%RH or less (no condensation) |
| Accessories | 3851-10 TEST LEAD, Strap,<br>Protective holster, Instruction manual,<br>One 6LR61 alkaline battery (built into instrument) |
| Replacement parts | µA.mA terminal:1 A/700 VAC fuse (Cutoff capacity 50 kA, SIBA fast blowing fuse ϕ6.35 × 32 mm 7012540)<br>A terminal:10 A/600 VAC fuse (Cutoff capacity 10 kA, Bussmann fast blowing fuse ϕ6.35 × 25.35 mm TDC600) |
| Options | 3853 CARRYING CASE<br>3856-01 COMMUNICATION PACKAGE (RS-232C)<br>3856-02 COMMUNICATION PACKAGE (USB)<br>9617 CLIP ON BASE*<br>9618 CLIP-TYPE LEAD*<br>(* not complied with the CE marking) |
| Applicable Standards | Safety EN61010<br>EMC EN61326 |

# 5.2 Electrical specifications

| | |
|---|---|
| Noise resistance NMRR | DCV: 60 dB or more (50 Hz/ 60 Hz) |
| Noise resistance CMRR | DCV: 120 dB or more<br>(DC/ 50 Hz/ 60 Hz, 1 kΩ unbalance)<br>ACV: 60 dB or more<br>(DC/ 50 Hz/ 60 Hz, 1 kΩ unbalance) |
| Response time (auto range) | DCV: within 1.2 s<br>(0 V → 200 V auto range operation)<br>ACV: within 2.2 s<br>(0 V → 200 V auto range operation)<br>Ω : within 2.0 s<br>(Infinite → 0 Ω auto range operation)<br>within 10.0 s<br>(0 Ω → 50 MΩ auto range operation) |
| Dielectric strength | 5.312 kV AC for 15 sec, sin wave, between input terminals and case (50 Hz/ 60 Hz) |
| Maximum input voltage | V terminal:1000 V DC/ 1000 Vrms or $2\times10^7$ VHz<br>Measurement category<br>CAT II 1000 V, CAT III 600 V<br>(anticipated transient overvoltage 6000 V) |
| Maximum input current | A terminal:10 A AC/DC,<br>μA.mA terminal:1000 mA AC/DC |
| Maximum rated voltage to earth | CAT II:1000 V DC/ 1000 Vrms<br>CAT III:600 V DC/ 600 Vrms |
| Rated supply voltage | 9.0 V DC |
| Maximum rated power | 70 mVA (Max.), supply voltage: 9.0 V DC |
| Power during APS | 0.2 mVA (Max.), supply voltage: 9.0 V |
| Continuous operating time | Approx. 30 hours (DCV measurement, when the manganese battery is used)<br>Approx. 60 hours (DCV measurement, when the alkaline battery is used) |

# 5.3 Accuracy

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

**rdg. (reading or displayed value)**
The value currently being measured and indicated on the measuring instrument.

**dgt. (resolution)**
The smallest displayable unit on a digital measuring instrument, i.e., the input value that causes the digital display to show a "1" as the least-significant digit.

| | |
|---|---|
| Accuracy guaranteed supply voltage range | From 10.2 V until B mark lights |
| Accuracy guarantee for temperature and humidity<br>Guaranteed accuracy period | 23°C ± 5°C (73°F ± 9°F), 80%RH (no condensation)<br>For one year |
| Temperature characteristic | Add measurement accuracy × 0.15/ °C<br>(For range other than listed above) |

DC V (DCV measurement)

| Range | Accuracy | Input impedance | Overload protection |
|---|---|---|---|
| 999.9 mV | ±0.09%rdg. ±5 dgt. | 11.11 MΩ±1% | 1000 V DC/ 1000 Vrms or $2\times10^7$ VHz, transient overvoltage: 6000 V |
| 9.999 V | ±0.09%rdg. ±2 dgt. | 10.10 MΩ±1% | |
| 99.99 V | ±0.09%rdg. ±2 dgt. | 10.01 MΩ±1% | |
| 999.9 V | ±0.2%rdg. ±5 dgt. | 10.00 MΩ±1% | |

Indicated revised rate: 7 times/ s

AC V (ACV measurement)

| Range | Accuracy*1 | | Input impedance | Overload protection |
|---|---|---|---|---|
| | 40-200 Hz | 200-500 Hz | | |
| 999.9 mV | ±2.5%rdg. ±5 dgt. | Not specified | 11.11 MΩ ±1% 100 pF or less | 1000 V DC/ 1000 Vrms or $2\times10^7$ VHz, transient over-voltage: 6000 V |
| 9.999 V | ±1.2%rdg. ±5 dgt. | ±1.5%rdg. ±5 dgt. | 10.10 MΩ ±1% 100 pF or less | |
| 99.99 V | ±1.2%rdg. ±5 dgt. | ±1.5%rdg. ±5 dgt. | 10.01 MΩ ±1% 100 pF or less | |
| 999.9 V | ±1.2%rdg. ±5 dgt. | ±1.5%rdg. ±5 dgt. | 10.00 MΩ ±1% 100 pF or less | |

Indicated revised rate: 7 times/ s
*1 Accuracy specified for a range of 5% or greater

Diode

| Range | Accuracy | Measured current | Open terminal Voltage | Overload protection |
|---|---|---|---|---|
| 2.1000 V | ±0.3%rdg. ±2 dgt. | Approx. 0.46 mA | 3.5 VDC or less | 1000 V DC/ 1000 Vrms or $2\times10^7$ VHz, for 1 minute Overload current: 0.3 A or less |

Continuity threshold value: Buzzer sounds at less than 0.050 V. A single sound will sound for diode forward voltage in the range of 0.3 V to 0.8 V.
Indicated revised rate: 14 times/ s
Inductive load: No effect up to 10H.

Ω (Resistance measurement)/ Contact Check

| Range | Accuracy | Measured current | Open terminal voltage | Overload protection |
|---|---|---|---|---|
| 999.9 Ω | ±0.3%rdg. ±3 dgt.*1 | Approx. 0.46 mA | 3.5 VDC or less | 1000 VDC/ 1000 Vrms or $2\times10^7$ VHz, for 1 minute Overload current: 0.3 A or less |
| 9.999 kΩ | ± 0.3%rdg. ± 3 dgt.*1 | Approx. 155 μA | | |
| 99.99 kΩ | ± 0.3%rdg. ± 3 dgt. | Approx. 15.5 μA | | |
| 999.9 kΩ | ± 0.3%rdg. ± 3 dgt. | Approx. 1.55 μA | | |
| 9.999 MΩ | ± 0.8%rdg. ± 3 dgt. | Approx. 141 nA | | |
| 99.99 MΩ | ± 1.2%rdg. ± 3 dgt.*2 | Approx. 141 nA | | |

Continuity threshold value: Buzzer sounds at a resistance equivalent to or less than 100 counts (± 5%) for each range.
Indicated revised rate: 14 times/ s
Inductive load: No effect up to 10H.
*1 Accuracy of 999.9 Ω and 9.999 kΩ is when the test leads have been shorted and when using the relative (REL) display function.
*2 Specified for humidity up to 60%RH

C (Capacitance Measurement)

| Range | Accuracy | Charging current | Overload protection |
|---|---|---|---|
| 9.999 μF | ± 2%rdg. ± 5 dgt. | Approx. 0.08 mA | 1000 V DC/ 1000 Vrms or $2\times10^7$ VHz, for 1 minute Overload current: 0.3 A or less |
| 99.99 μF | ± 2%rdg. ± 5 dgt. | Approx. 0.08 mA | |
| 999.9 μF | ± 3.5%rdg. ± 5 dgt. | Approx. 0.8 mA | |
| 9.999 mF | ± 3.5%rdg. ± 5 dgt. | Approx. 0.8 mA | |

Indicated revised rate: 4 times/ s (100 μF or less)
Measurement method: Charge-discharge method with DC current

DCA (DCA measurement)

| Range | Accuracy | Burden voltage | Shunt resistance | Overload protection |
|---|---|---|---|---|
| 999.9 µA | ± 0.1%rdg. ± 3 dgt. | 0.11 V | 100 Ω | 1 A/700 V Fuse cutoff capacity 50 kA |
| 9999 µA | ± 0.1%rdg. ± 3 dgt. | 1.1 V | 100 Ω | |
| 99.99 mA | ± 0.2%rdg. ± 3 dgt. | 0.17 V | 1 Ω | |
| 999.9 mA | ± 0.2%rdg. ± 3 dgt. *1 | 2.0 V | 1 Ω | |
| 9.99 A | ± 0.5%rdg. ± 3 dgt. | 0.2 V | 0.01 Ω | 10 A/600 V Fuse cutoff capacity 10 kA |

Indicated revised rate: 7 times/ s
*1 0.5% rdg.± 3 dgt. to accuracy at 400 mA or more.

ACA (ACA measurement)

| Range | Accuracy*1 | | Burden voltage | Shunt resistance | Overload protection |
|---|---|---|---|---|---|
| | 40 to 500 Hz | 500 to 2 kHz | | | |
| 999.9 μA | ± 1.2%rdg. ± 5 dgt. | ± 1.5%rdg. ± 5 dgt. | 0.11 V | 100 Ω | 1 A/700 V Fuse cutoff capacity 50 kA |
| 9999 μA | ± 1.2%rdg. ± 5 dgt. | ± 1.5%rdg. ± 5 dgt. | 1.1 V | 100 Ω | |
| 99.99 mA | ± 1.2%rdg. ± 5 dgt. | ± 1.5%rdg. ± 5 dgt. | 0.17 V | 1 Ω | |
| 999.9 mA | ± 1.2%rdg. ± 5 dgt. | ± 1.5%rdg. ± 5 dgt. | 2.0 V | 1 Ω | |
| 9.99 A | ± 1.2%rdg. ± 5 dgt. | ± 1.5%rdg. ± 5 dgt. | 0.2 V | 0.01 Ω | 10 A/600 V Fuse cutoff capacity 10 kA |

Indicated revised rate:7 times/ s

*1 Accuracy is specified at 5% or more of range.

# Maintenance and Service Chapter 6

## 6.1 Troubleshooting

⚠CAUTION

- If damage is suspected, check the "Troubleshooting" section before contacting your dealer or Hioki representative.
- Calibration and repair of this instrument should be performed only under the supervision of qualified technicians knowledgeable about the dangers involved.
- When transporting the instrument, pack the instrument so that it will not sustain damage during shipping, and include a description of existing damage. We cannot accept responsibility for damage incurred during shipping.
- Never modify the instrument. Only Hioki service engineers should disassemble or repair the instrument. Failure to observe these precautions may result in fire, electric shock, or injury.
- If the protective functions of the instrument are damaged, either remove it from service or mark it clearly so that others do not use it inadvertently.

When this instrument has been in extended storage (for more than one year), the instrument will not be able to meet its specifications. Be sure to have the instrument calibrated before using it.

## Before returning for repair

If problems are encountered with operation, check the appropriate items below.

| Symptom | Checks | Ref Page |
|---|---|---|
| Screen is blank | Is the battery dead?<br>→ Replace the battery. | (53 page) |
| | Are the battery wires damaged?<br>→ Contact your nearest dealer. | |
| Screen shuts off after a few moments | Is the battery dead?<br>→ Replace the battery. | (53 page) |
| | Is the auto power save function being activated?<br>→ Check the auto power save setting. | (34 page) |
| A portion of the screen is blank | Is a portion of the display blank when the entire screen is supposed to be displayed?<br>→ Return for repair | (56 page) |
| Cannot measure electric current | Is the fuse blown?<br>Check to see if the fuse is blown.<br>→ Replace the fuse. | (18 page)<br>(53 page) |
| | Are the test leads damaged?<br>→ Perform a continuity check to check the test leads. If the test leads are damaged, replace the test leads. | (23 page) |
| Communication not possible | Is there a problem with the communication settings of the 3801-50 and the computer?<br>Is the communication cable connected correctly? | (36 page) |

If the cause of the problem still cannot be found, try resetting the system. This returns most of the system settings to their factory defaults.

See (41 page)

## 6.2 Cleaning

To clean the instrument, 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.

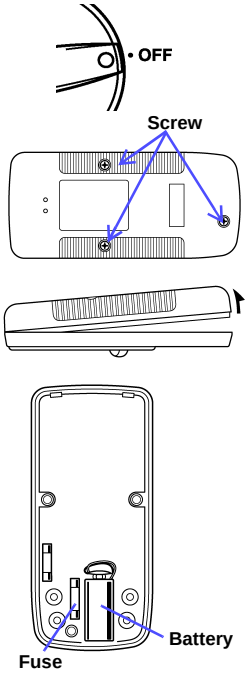
**NOTE** Wipe the LCD gently with a soft, dry cloth.

## 6.3 Replacing the Battery and Fuses

**⚠WARNING**

- To avoid electric shock, turn off the power and disconnect the test leads before replacing the batteries. After replacing the batteries, replace the cover and screws before using the instrument.
- Be sure to insert them with the correct polarity. Otherwise, poor performance or damage from battery leakage could result. Replace batteries only with the specified type.
- To avoid the possibility of explosion, do not short circuit, disassemble or incinerate batteries.
- Handle and dispose of batteries in accordance with local regulations.
- To avoid electric shock, turn off the power and disconnect the test leads before replacing the fuses. After replacing the fuses, replace the cover and screws before using the instrument.
- 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.
  Fuse type:

**NOTE** The "B" indicator appears when battery voltage becomes low. Replace the batteries as soon as possible.




1. Disconnect the test leads from the unit and set the function switch to OFF.
2. Detach the holster from the unit.
3. Use a Phillips screwdriver to unscrew and remove the lower case screws (3 screws). Next, remove the lower case. (Remove the lower case from the bottom. The top is connected by a hook.)
4. Replace the battery (6F22 (manganese) or 6LR61 (alkaline)) or fuse.

**Fuse type**
µA.mA terminal:
7012540 1A/ 700 VAC/ 50 kA
(SIBA fast blowing fuse
ϕ 6.35 × 32 mm)
A terminal:
TDC600-10A/ 600 VAC/ 10 kA
(Bussmann fast blowing fuse
ϕ 6.35 × 25.35 mm)

5. Close the screw on the lower case, and then reattach the holster. When closing the case up, be careful not to pinch the wires on the snap-on battery connector.

**NOTE** Please observe the following when performing replacements in order to avoid damaging the unit.
- Do not damage any other internal components.
- Do not allow foreign material(s) to enter the unit.

# 6.4 Checking the Instrument Software Version

You can use the following procedure to check the version number of the instrument software.

1. Turn on the power while holding down the **REL** key.
2. Release the **REL** key while the buzzer is sounding.
3. The version number appears on the main screen.

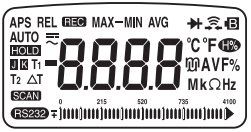

The version number on this screen is 2.00.

4. Press any key to switch to the measurement screen.

# 6.5 Displaying All On-Screen Items

Use the following method to turn on all on-screen items and check the display.

1. Turn on the power while holding down the **REC/HOLD** key.
2. Release the **REC/HOLD** key while the buzzer is sounding.
3. All on-screen items are displayed.




4. Press any key to switch to the measurement screen.

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: 3804-50
3805-50

Accessory: 3851-10 TEST LEAD

The above mentioned products conform to the following product specifications:

Safety: EN61010-1:2001
EN61010-031:2002

EMC: EN61326-2-2:2006
Class B equipment
Portable test, measuring and monitoring equipment used in low-voltage distribution systems

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC.

HIOKI E.E. CORPORATION

3 October 2007

Mitsuyoshi Tanaka

Director of Quality Assurance

3804C999-00

HIOKI 3804-50 DIGITAL Hi TESTER
Instruction Manual

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