# HIOKI

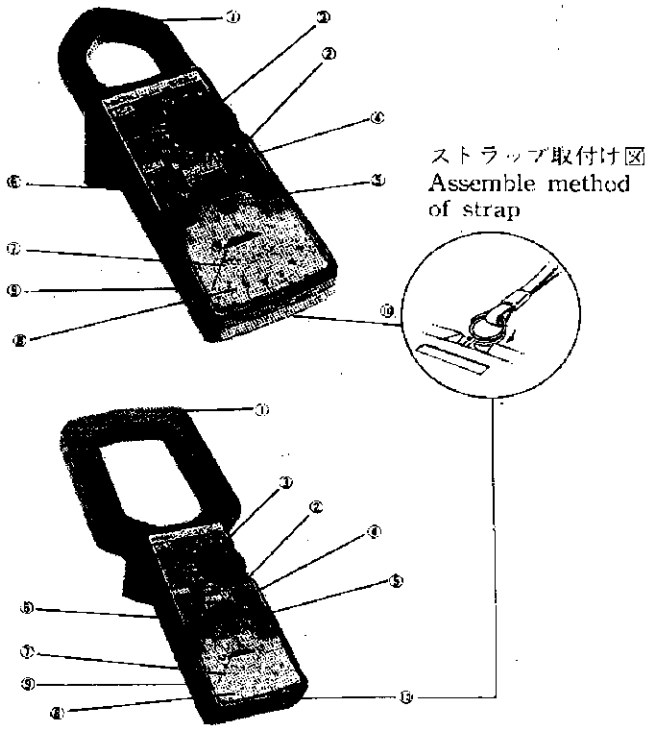
# 3100·3104
# Hi TESTER

# INSTRUCTION MANUAL

**はじめに**

このたびは日置"3100, 3104 ハイテスタ"をご選定いただき誠にありがとうございました。この製品を十分に活用し、末長くご使用いただくためにも説明書をよくお読みの上ご使用ください。

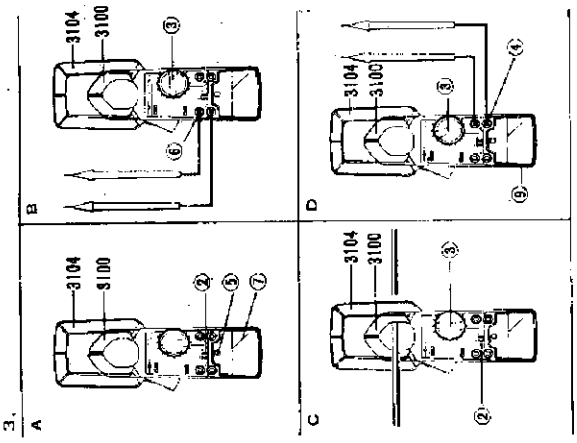


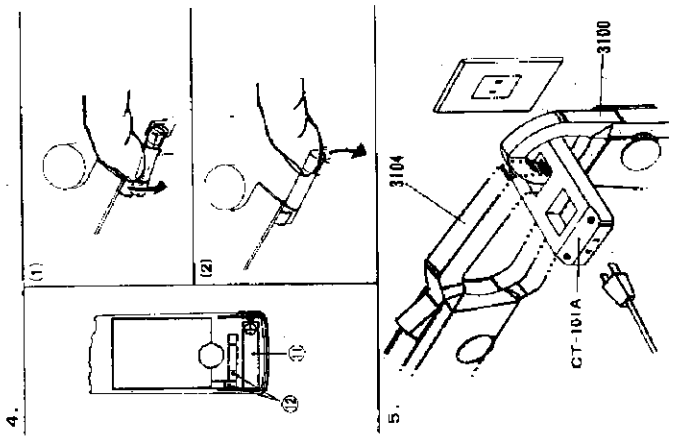


ストラップ取付け図
Assemble method of strap

## 1. Instrument Nomenclature

① Clamp core ② Meter lock switch ③ Range selector ④ Ohms (Ω) terminal ⑤ Zero adjust screw ⑥ Voltage terminal ⑦ Pointer ⑧ Meter scale ⑨ 0 Ω ADJ knob ⑩ Carrying strap



△ Safety Note

This multimeter cannot be used with any power line of greater than 250V. Such power lines may involve spikes of several times the rated voltage. For such power lines, use a multimeter with an overcurrent protector for preventing short-circuit accidents. Hioki's 3008 multimeter is recommended.

Note : Power lines include lines supplying power to motors and industrial equipment in factories and office buildings, but do not include domestic in-house lines, which are protected with circuit breakers or the like.

⚠ WARNING

This Instrument is designed to prevent accidental shock to the operator when properly used. However, no engineering design can render safe an instrument which is used carelessly. Therefore, this manual must be read carefully and completely before making any measurement. Failure to follow directions can result in a serious or fatal accident.

## 2. Precautions

- Always check the range selection prior to making a measurement.
- Do not clamp bare wires even if they are low voltage lines. Bare wires are hazardous.
- When the current or voltage value of the circuit under test is unknown, always start from the highest range. When the correct range is ascertained, then range down to it.
- Do not take measurements exceeding 1000A over an extended period of time. Heat build-up within the core will affect reading accuracy. Therefore, it is better to take two or more measurements of short duration. (3104)
- Maximum circuit voltage rating for the instrument is 750V. For safety reasons, never measure AC current in a circuit operating in evcess of 750V.
- When measuring current in the presence of a strong magnetic field, occasionally the pointer will defect even though the clamp core is not clamped over a conductor. When possible, avoid taking readings where such conditions exist.
- Avoid storing the instrument in locations where temperature or humidity is excessively high.

## 3. Measurement Procedure

### A. Preliminary Steps

(1) Unlock the meter mechanism by sliding the meter lock switch ② to the right.
(2) Check the pointer ⑦ and make sure it is resting on "0". If not, adjust it with the zero adjust screw ⑤.

### B. AC Current (AC A)

(1) Position the range selector ③ to the highest current range.
(2) Clamp the core over a single conductor, and center the conductor as near to the middle of the clamp core as possible.
(3) If the reading is low on the scale, range down one step at a time until the proper range is reached for a good reading.
(4) If the measurement is being performed where it is difficult to get a good reading, slide the meter lock switch ② to the left and take the reading later.

### C. AC.DC Voltage (AC V, DC V)

(1) Position the range selector ③ to the highest voltage range. (AC or DC).
(2) Plug the test lead into the voltage Ⓥ terminal ⑥.
(3) Touch the probe tips to the circuit under test, making contact across (in parallel with) the circuit.
(4) If the reading is low on the scale, range down one step at a time until the proper range is reached for a good reading.

### D. Resistance (Ω)

(1) Position the range selector ③ to the ohms ⑪ range.
(2) Plug the test lead into the ohms Ⓡ terminal ④.
(3) Short the test lead probes together and adjust the 0 Ⓡ ADJ knob ⑨ until the pointer is resting on the 0 Ω graduation. When this adjustment cannot be made, the meter battery is worn out and requires replacement.
(4) Touch the probe tips to the device or circuit being measured, making contact in series with the sample.

Note: When measuring the resistance of a circuit, always cut the power to the circuit first.

### E. Temperature measurement

(1) Temperature probe model 9021-01 enables direct temperature read out on the X100 range.

## 4. Battery ⑪ and Fuse ⑫ Replacement

- Remove the case back by loosening the securing, screw.
- Replace the battery with a new one, observing correct pole polarity ( ⊕ - ⊖ ).
- For fuse replacement, always use a 0.5A, non-arcing type.

**(1) Removing and inserting the fuse.**
**(2) Press down firmly with your finger.**

## 5. Current/Voltage Measurements on Equipment Using a 2-Conductor Line Cord

Current and voltage measurement of equipment or appliances powered from a 2-conductor line cord (indicated by the use of a 2-prong) may be made very easily by using the optional CT-101A Line Splitter.

**Measurement Procedure**

(1) Unplug the line cord from the AC outlet and plug it into the line splitter receptacle. Plug the line splitter into the AC outlet.
(2) The line spitter has two openings; one for X1 readings, and the other for X10 readings. Clamp the core through one of the openings and the current reading. If the X10 opening is used, multiply the reading by 0.1.
(3) Voltage readings are taken by inserting the test probe tips into the voltage test point terminals. ⑬ DO NOT TOUCH THE PROBE TIPS during this measurement.

## 6. Specifications

| | 3100 | 3104 |
|---|---|---|
| AC current | 6, 15, 60, 150, 300 A<br>Accuracy: ±3% of f.s. | 15, 60, 150, 600, 1500 A<br>Accuracy: ±3% of f.s. |
| AC voltage | 150, 300, 750V<br>Accuracy: ±3% of f.s. | |
| DC voltage | 75V±3% of f.s. | |
| Resistance Ω | 1kΩ, 100kΩ<br>Mid-scale value: 30Ω ±3% of scale length | |
| Temperature scale | −50 ~ +200°C<br>±3% scale length | |
| Measuring time | | 2 min. over 1000A |
| Battery | SUM-3-1 | |
| Meter | Internal magnet taut-band | |
| Clamp core Jaw dia. | 33 mm | 55mm, Width: 80mm |
| Withstand voltage | 2500VAC | |
| Maximum circuit voltage | 750VAC | |
| Drop test | From one meter above concrete floor | |
| Fuse | Protects Ωranges with AC250V applied | |
| Dimensions | 190(L)x63(W)x34(D) mm | 237(L)x99(W)x34(D)mm |
| Weight | Approx. 340g | Approx. 570g |
| Accessories | 0.5A fuse with non-arcing, Carrying case, 9067 test lead | |
| Accessories optional | Line splitter model CT-101A, Temperature probe model 9021-01 | |