

## **SOLDERING TESTER**

**FG-101B**

### **Instruction Manual**



Thank you for purchasing the HAKKO FG-101B Soldering tester.  
This product is a soldering iron tester capable of measuring soldering tip  
temperature, leak voltage and ground resistance.

Please read the manual carefully  
before operating the HAKKO FG-101B.

Please keep this manual readily accessible for reference.



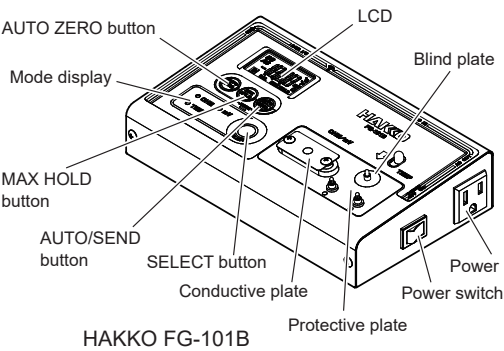
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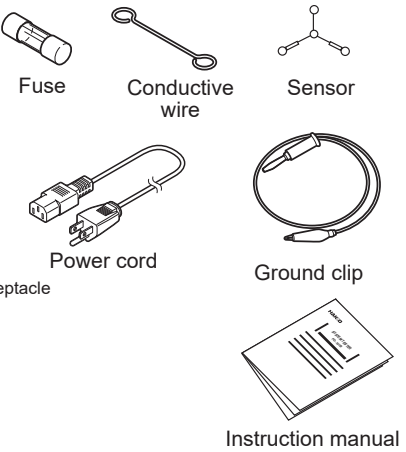
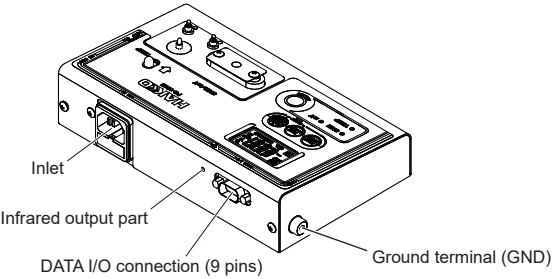
# 1. PACKING LIST AND PART NAMES

Please check that all items listed below are included in the package.

HAKKO FG-101B .....	1	Ground clip .....	1
Fuse.....	1	Power cord .....	1
Conductive wire .....	1	Instruction manual .....	1
Sensor (qty 10).....	1		



HAKKO FG-101B



## Display contents

Display temperature, leak voltage and tip to ground resistance/  
Burnout alarm\*1  
(Display of "-1" indicates burnout.)

DC  
AC

Temperature measurement count\*2

°C / °F / mV / Ω display

AUTO HOLD function

MAX HOLD function

Calibration

\*1 This alarm indicates sensor burnout.  
If this alarm occurs, replace the sensor.

\*2 When the **MAX HOLD** and **AUTO/SEND** buttons are held pressed simultaneously for a long time (1 sec or longer), the count is reset.

**CAUTION**

- Do not use this product for a soldering iron which is not grounded.
- Connect this product to a power receptacle equipped with a ground terminal and ground it before use.

## 2. SPECIFICATIONS

Model name	HAKKO FG-101B		
Temperature	Resolution	1°C	1°F
	Measurement range	0 - 700°C*1	32 - 1300°F*1
	Measurement tolerance	±3°C (between 300 and 600°C) ±5°C (other than above)	±6°F (between 572 and 1112°F) ±10°F (other than above)
	Sensor	K(CA) thermocouple	
Voltage	Resolution	0.1mV	
	Measurement range	0 - 40 mV (AC)	
	Measurement tolerance	±(5% of reading + 1 digit)	
Resistance	Resolution	0.1Ω	
	Measurement range	0 - 40Ω	
	Measurement tolerance	±(5% of reading + 1 digit)	
Display	LCD display	3-1/2 digits	
	Burnout *2	-/	
	MAX HOLD function	Refer to " ■ MAX HOLD Function" (page 7) in "4-5 Explanation about various functions".	
	AUTO HOLD function	Refer to " ■ AUTO HOLD Function" (page 8) in "4-5 Explanation about various functions".	
	Temperature measurement count function	000 to 999 times	

Power consumption	100V : 3.2W   100 - 110V : 3.6W 120V : 3.2W   220 - 240V : 3.6W
Outline dimensions	211(W) × 53(H) × 126(D) mm
Weight	0.95 kg
Usable temperature/humidity range	0 to 40°C, Max. 80%RH, without condensation
Environmental conditions	Applicable rated pollution degree 2 (According to IEC/UL61010-1)

- \*1 Temperature sensors (191-212) can only be used to measure temperatures below 500°C (932°F). To measure higher temperatures, use an appropriate temperature probe (see "6. REPLACEMENT PARTS/ OPTIONS").
- \*2 If the temperature sensor is not attached or is disconnected, "Burnout" will appear. If the temperature sensor is disconnected, replace it with a new one. In addition, if a value out of the temperature range is detected. "Burnout" will also appear.

### NOTE :

Please note that the specifications and appearance are subject to change without prior notice.

### 3. WARNINGS, CAUTIONS AND NOTES

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In this manual, items requiring caution are classified into 2 categories, "WARNINGS" and "CAUTIONS", as defined below. Please make sure to understand these items before reading the main text.

**⚠ WARNING** : Failure to comply with a WARNING may result in serious injury or death.

**⚠ CAUTION** : Failure to comply with a CAUTION may result in injury to the operator, or damage to the objects involved.

**NOTE** : Indicates important steps or items in the procedure being explained.

**Be sure to observe the following warning items.**

#### **⚠ WARNING**

- The unit is for a counter or workbench use only.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in safe way and understand the hazards involved.
- Children shall not play with the appliance.
- Cleaning and user maintenance shall not be made by children without supervision.

**Be sure to observe the following warning items, for which failure to do so may cause accidents or malfunctions.**

#### **⚠ CAUTION**

- This unit is for indoor use only.
- When using the thermometer to measure the temperature of the soldering iron tip or desoldering nozzle, pay great attention to the temperature of the tip or nozzle since it will be as high as 200 to 450°C (392 to 842°F). Careless handling of such a hot object may result in a burn or fire.
- Do not modify this product.
- Do not get this product wet or use it with wet hands.
- Be sure to unplug the power plug before internal inspection or replacement of parts. Failure to do so may cause an electric shock.
- Use HAKKO genuine parts as replacement parts.
- When inserting or unplugging the power plug, do so while holding the plug, not the cord.
- Do not perform dangerous actions.

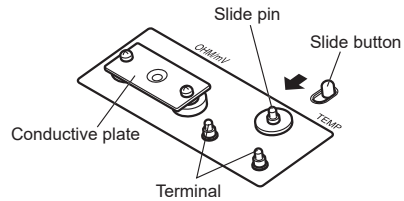
## 4. OPERATION

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### 4-1 Initial setup

#### 1. Attach the included sensor.

- 1) Slide the slide button. The slide pin will move toward the terminal.
- 2) Attach the sensor with the slide pin moved toward the terminal.
- 3) Attach the sensor having a red mark to the red-colored terminal and the sensor having a blue mark to the blue-colored terminal.



#### **CAUTION**

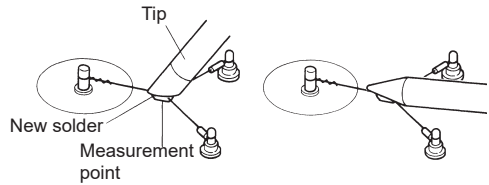
Since the sensor is made of ultra-thin ( $\varnothing 0.2$ ) K thermocouple, pressing the sensor strongly may cause it to be disconnected. Handle it with care.

#### 2. Insert the power plug into the power receptacle and turn on the power switch.

- 1) Be sure to connect the main body power cord to a two-pole grounded-type receptacle.
- 2) The power receptacle of the HAKKO FG-101B main body supplies power only when the power switch is turned on.

## 4-2 Measurement of tip temperature

- 1) Press the SELECT button to set the mode to "TEMP".
- 2) Apply a new coat of solder on the tip and touch it on the sensor measurement part (See the figures at right.)

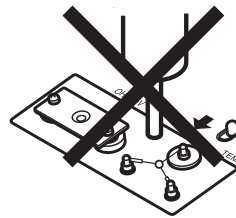


### NOTE:

When measuring, apply a new coat of solder on the tip. This action is required to ensure that the conductive plate comes in firm contact with the tip.

### ⚠ CAUTION

- Since the main body is partially made of resin, be careful not to touch the tip to the main body. In addition, also be careful not to touch the tip to the terminal or the slide pin.
- Although the measurement point of the sensor undergoes special treatment, it will deteriorate gradually due to repeated measurements. In order to measure the temperature correctly, if the measurement point is worn out, replace the sensor with a new one. The reference number for sensor replacement is approx. 50 measurements.
- When flux is stuck on the terminal, wipe it off with alcohol. (Do not use thinner or benzine for wiping.)
- Read the values when the display temperature is stable.



### ⚠ CAUTION


Do not measure the temperature by applying hot air (HAKKO FR-811, etc.) directly to the HAKKO FG-101B. If hot air is applied directly, the HAKKO FG-101B will be damaged.

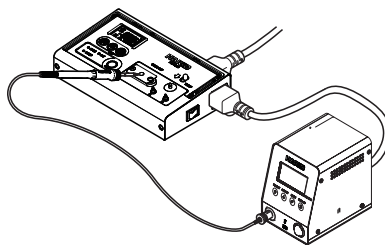
## 4. OPERATION(continued)

### 4-3 Measurement of leak voltage

#### ⚠ CAUTION

- Before measuring the voltage or resistance, be sure to connect the main body power cord to a two-pole grounded-type receptacle.
- If values exceeding specified ones are displayed as results for voltage or resistance, check the tip and attaching screws of the soldering iron for looseness and take another measurement.

- 1) Plug the power plug of the soldering iron to be measured into the power receptacle the HAKKO FG-101B main body.
- 2) Wait until the tip reaches the set temperature. If the soldering iron temperature is variable, set temperature to maximum.
- 3) Press the SELECT button and change the mode to "mV".
- 4) Press the  button. Refer to "■ AUTO ZERO function" (page 8) in "4-5 Explanation about various functions".
- 5) Clean the tip and apply a new coat of solder on the tip.
- 6) Apply a coating of solder to the center of the conductive plate and heat it until a good soldering wet condition is achieved.
- 7) When the display temperature is stable, read the values.



#### NOTE :

During measurement of leak voltage, even when the tip is not applied to the conductive plate, values are displayed; however, this is not a malfunction of the product. In addition, when values out of measurement range are detected, burnout will be displayed, and this is also not a malfunction.

#### NOTE :


If solder can't wet easily on the conductive plate due to low tip temperature or because of the tip having small thermal capacity, use the included conductive wire.

#### Replacement method

Remove the 2 screws attaching the conductive plate, replace the conductive plate with the conductive wire, and then attach the conductive wire with the removed screws.




## 4-4 Measurement of resistance difference between tip and ground wire

- 1) Plug the power plug of the soldering iron to be measured into the power receptacle the HAKKO FG-101B main body.
- 2) Wait until the tip reaches the set temperature. If the soldering iron temperature is variable, set temperature to maximum.
- 3) Press the SELECT button and change the mode to "OHM".
- 4) Press the  button. {Refer to " ■ AUTO ZERO function" (page 8) in "4-5 Explanation about various functions".}
- 5) Perform the measurement in the same procedure as "4-3 Measurement of leak voltage".

## 4-5 Explanation about various functions

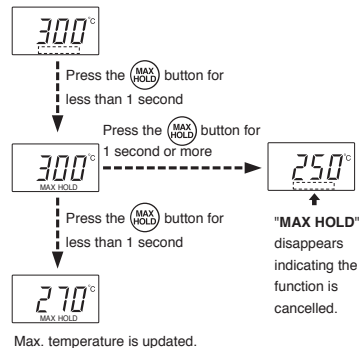
HAKKO FG-101B can use the following functions.

### ■ MAX HOLD function (Temperature measurement only)

Quickly pressing the  button will cause "MAX HOLD" to be displayed at the bottom of the screen. As long as "MAX HOLD" is shown, the maximum temperature will stay displayed.

#### Operation method

- **Pressed quickly (less than one second)**  
"MAX HOLD" is displayed at the bottom of the screen.
- **Pressed quickly (less than one second) ("MAX HOLD" is displayed )**  
By pressing the button quickly, the displayed value will be reset and the maximum temperature after pressing the button will be displayed.
- **Pressed for a long time (1 second or longer)**  
The MAX HOLD function will be released and the product will return to normal display.



#### ⚠ CAUTION

- Turning off the power always cancels the MAX HOLD function.
- The MAX HOLD function can only be used during the temperature measurement.

## 4. OPERATION(continued)

### ■ AUTO ZERO function

AUTO ZERO function is necessary for measuring voltage (mV) and resistance (OHM).


Pressing the  button displays "counting": 0.0.0 → 0.0 → 0.

Wait until the normal display appears.

Correction values from AUTO ZERO are recorded in the main body. Even after the power is turned off, the correction values are still available in later measurement sessions.

Before using this function, it is necessary to cancel the "AUTO HOLD" displays.

### ■ AUTO HOLD function


When the  button is pressed quickly (less than one second), "AUTO" will blink at the lower right of the LCD.

While "AUTO" is blinking, touch the soldering iron tip to the sensor. (temperature)


While "AUTO" is blinking, touch the soldering iron tip to the conductive plate. (mV, OHM)

"AUTO" will stop blinking and stay lit after a certain amount of time, and the fixed measurement result will be displayed.

Even after the fixed result is displayed, applying the tip to the sensor or the conductive plate will enable the AUTO HOLD function to work again.

Each time the  button is pressed, the AUTO HOLD function toggles between ON and OFF. The AUTO HOLD function does not assume the measurement by temperature probes such as the hot air.

### ■ Data send function (infrared)

Press the  button for longer than one second.

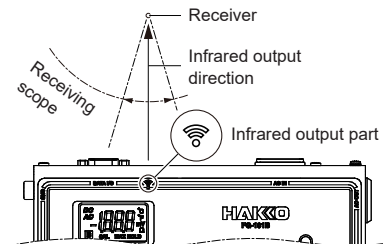
Temperature data will be sent by infrared output from the upper part of the HAKKO FG-101B. The temperature display will blink during sending.

The temperature send function can send data only to machines capable of receiving the data.

Only fixed values can be sent.



In order to send fixed values, the AUTO HOLD function or MAX HOLD function can be used for temperature measurements and the AUTO HOLD function can be used for voltage or resistance measurements.

Make sure the HAKKO FG-101B infrared output part is facing and within the reception range of the receiver.

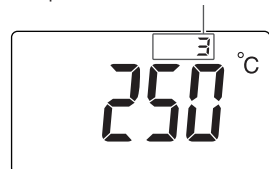


### ■ Count function


When a sensor detected a sudden temperature rise more than 100 degrees Celsius, the value of the thermometry count increases.

When resetting the count number, push the  button and the  button for more than one second at the same time.

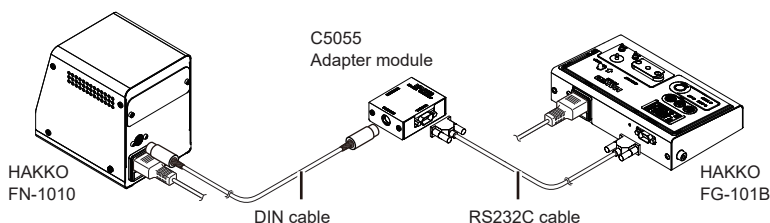
Temperature measurement count



## ■ Data communication function (DATA I/O)

Connecting an exclusive cable adaptor module (option) to the DATA I/O connector on the upper part of the HAKKO FG-101B enables communication to applicable stations such as the HAKKO FN-1010, etc. (See the figure below) Data communication by infrared will be disabled during communication by DATA I/O. Pressing the  button for 1 second or longer sends data. Only fixed values can be sent.

In order to send fixed values, the AUTO HOLD function or MAX HOLD function can be used for temperature measurements and the AUTO HOLD function can be used for voltage or resistance measurements. Measurement and data acquisition can be performed smoothly using the functions of connected stations.



## ● Ground terminal (GND)


When using a type of soldering iron that is grounded with an alligator clip, connect the clip to the GND terminal.

# 5. MAINTENANCE

## Maintenance and Calibration

- To replace the conduction plate, remove the set screws.
- The life of the temperature sensor will vary depending on the temperature at which measurements are made and the type of solder and flux being used. In general, temperature sensors can be used for 50 measurements. Replace the sensor as soon as the measuring point wears out.
- HAKKO can calibrate the instrument for a nominal fee. Please contact your dealer for further information.

### CAUTION

Pressing the POWER button while holding the  button pressed changes the temperature unit between °C and °F.

## 6. REPLACEMENT PARTS/OPTIONS

### • HAKKO FG-101B

Item No.	Part name	Specifications
B2419	Power cord/3 core & American plug	120V USA
B2421	Power cord/3 cored wire with no plug	
B2422	Power cord/3 core & BS plug	India
B2424	Power cord/3 core & European plug	220V KC 230V CE
B2425	Power cord/3 core & BS plug	230V CE U.K.
B2426	Power cord/3 core & Australian plug	
B2436	Power cord/3 core & Chinese plug	
B3508	Power cord/3 core & American plug	
B3550	Power cord/3 core & SI plug	
B3616	Power cord/3 core & BR plug	
B1752	Conduction Plate	
B1754	Ground Clip	
B1950	Conduction Wire	
B1258	Fuse/250V-3.15A	
B2468	Fuse/125V-5A	
191-212	Sensor/Lead free	qty 10

### • Optional Parts

Item No.	Part name	Specifications
A1310	Temperature probe for soldering pot	
C1541	Temperature probe for hot air	With sensor A/B
CX1002	Temperature probe for robot	
A1556	Sensor A	
A1557	Sensor B	



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