HAKKO

HAKKO FG-101
SOLDERING TESTER

Soldering Tester

Instruction Manual

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Thank you for purchasing the HAKKO FG-101 Soldering Tester.
Be sure to read these instructions before using your HAKKO FG-101,
and keep the instructions handy for reference during use.

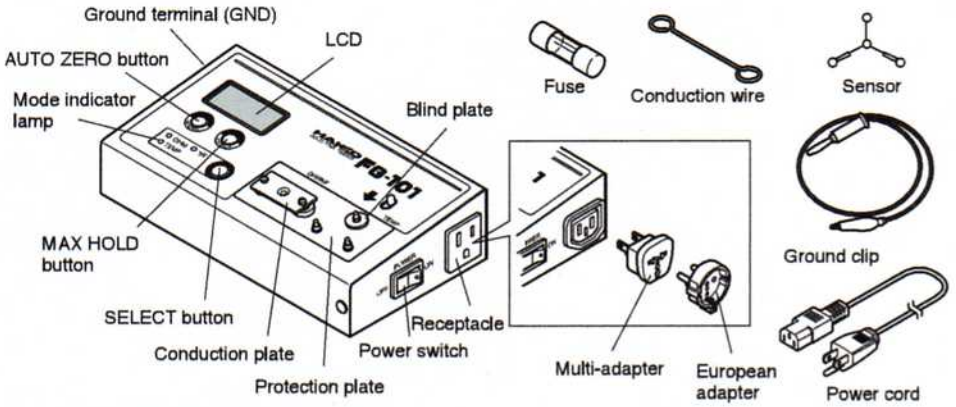
⚠ CAUTION

- The HAKKO FG-101 cannot be used with ungrounded soldering irons.
- Ground the HAKKO FG-101by plugging it into a grounded (3-hole) outlet.

1. PACKING LIST

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

HAKKO FG-101 1
Fuse 1
Conduction Wire 1
Sensor (10 pcs/set) 1
Multi-adapter 1
European Adapter 1
Ground Clip 1
Power cord 1
Instruction Manual 1



* The LCD and the protection plate are covered with protection films.

NOTE:
The Multi-adapter and the European adapter may not be included depending on the type of electrical connection used in your country.

2. SPECIFICATIONS

Model Name	HAKKO FG-101	
Temperature	Resolution	1°C (1°F)
	Measurement Range	0 - 700°C (32 - 1300°F) *1
	Precision	±3°C (300 to 600°C)/±6°F (572 to 1112°F) ±5°C/10°F (other than above)
	Sensor	K (CA) type thermocouple
Voltage	Resolution	0.1mV
	Measurement Range	0 to 40 mV (AC)
	Precision	±(5% of reading +1 digit)
Registance	Resolution	0.1Ω
	Measurement Range	0 to 40Ω
	Precision	±(5% of reading +1 digit)
Display	LCD	3 1/2 digits
	Burnout*2	-/
	MAX HOLD	(Refer to "MAX HOLD function.")
Power Consumption		100V-2.6W, 110V-2.9W, 120V-2.6W, 220V-2.7W, 230V-2.8W, 240V-3.0W
Dimensions		200(W)×50(H)×120(D) mm /7.9(W)×2.0(H)×4.7(D) in
Weight		1kg
Ambient Temperature/Humidity Range		0 - 40°C (32 - 104°F), 20 - 90%RH (without condensation)
Environmental condition		Applicable rated pollution degree 2 (According to IEC/UL61010-1)

*1 Temperature sensor (191-212) can only be used to measure temperatures below 500°C (932°F). To measure higher temperatures, use an applicable temperature probe (see "5. REPLACEMENT PARTS AND OPTIONS").
*2 When a sensor is not attached or it burns out, the alarm symbol of Burnout (-1) is displayed. If the sensor burns out, replace it with a new one. The same symbol is also displayed when a temperature outside the measurement range is detected.
Note: * This product meets China RoHS requirements. (See the table at the end of this manual.)
* The specifications may be subject to change without notice.

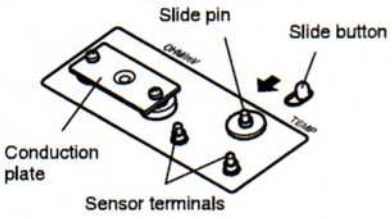
3. SAFETY NOTICE

⚠ CAUTION

- When measuring the temperature of the soldering iron tip or de-soldering nozzle, pay great attention to the temperature of the tip or nozzle that 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.
- Disconnect the power cord before service/maintenance procedures. Failure to do so may result in electric shock.

4. OPERATION

1. Attach the sensor:
   - Press the slide button to move the slide pin closer to the terminal side.
   - While holding down the slide pin, attach a sensor to the slide pin and terminals.
   - Connect the red connector of the sensor to the red terminal and the blue connector to the blue terminal.



2. Insert the power cord into the outlet at the back of the body and turn the power switch on.
   - Be sure to insert the power plug into a grounded (3-hole) outlet.
   - Power will be supplied through the receptacle on the HAKKO FG-101 only when the power switch is turned on.

(1) Measuring the tip temperature

1. Press the SELECT button to light up the mode indicator lamp of "TEMP."
2. Place the tip coated with fresh solder on the measuring point (Refer to the figure at right).

⚠ CAUTION
- Do not bring the iron tip into contact with the resin components including terminals and slide pin of the tester.
- The measuring point of the sensor generally undergoes degradation as a result of repeated measurement activities. It is recommend that the sensor be replaced every 50 measurements as a guideline to ensure measurement accuracy.
- If the terminals are contaminated with the soldering flux, wipe them clean with alcohol. Do not use thinner or benzin for cleaning.
- Please read when the temperature stabilizes.

■ MAX HOLD function

When pressing the (MAX HOLD) button, "MAX HOLD" is displayed at the lower right of the LCD. As long as (MAX HOLD) appears, the maximum temperature will stay displayed.

OPERATION

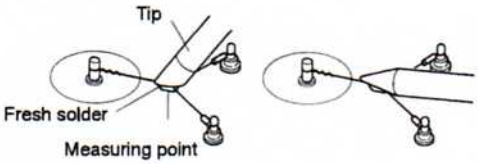
The (MAX HOLD) button provides two additional functions: The max. temperature update function when quickly pressing the button and the MAX HOLD cancellation function when pressing the button longer.

- Quickly pressing the (MAX HOLD) button for less than one second, with "MAX HOLD" displayed, updates the maximum temperature. See the figure to the right.
- With "MAX HOLD" displayed, pressing the button for longer than one second cancels the MAX HOLD function. See the figure to the right.

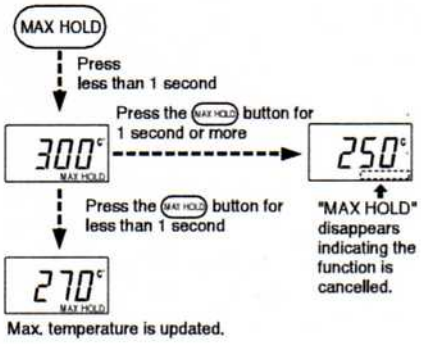
NOTE:
- Turning off the power always cancels the MAX HOLD function.
- The MAX HOLD function can only be used during the temperature measurement.

⚠ CAUTION
Handle the sensor with care. Tough handling may break the CA sensor wire as it is as thin as 0.2 mm in diameter.

NOTE:
Use the iron tip coated with fresh solder when performing mesurement to ensure contact between the temperature sensor or the conduction plate and the tip.



⚠ CAUTION
Do not directly contact the FG-101 with hot air (FR-802, etc.), during measurement. Direct contact with hot air can damage the FG-101.



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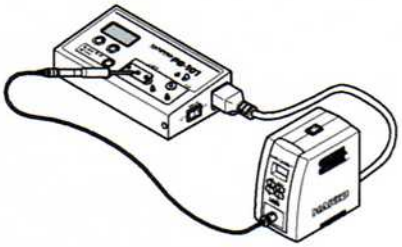
(2) Measuring the difference in potential between tip and ground

1. Insert the power cord of the soldering iron to be tested into the receptacle on the HAKKO FG-101.
2. Wait until the tip reaches the set temperature. If the soldering iron is a variable tip temperature model, set temperature to the maximum.
3. Press the SELECT button to light up the mode indicator lamp of "mV."
4. Press the (AUTO ZERO) button. (Refer to "AUTO ZERO function.")
5. Clean the tip and coat it with fresh solder.
6. Place a tiny bead of solder in the center of the conduction plate and heat the bead until the solder has completely melted.
7. Read the value, when the displayed value becomes stable.

NOTE:
When using fine tips the solder may not melt on the conduction plate. If this occurs, replace the conduction plate with the conduction wire. Do not use the conduction wire for larger tips.

Replacement

Remove the two screws which secure the conduction plate. After removing the conduction plate, secure the conduction wire with the same secrews in place of the conducion plate.



NOTE:
The tester may provide a numeric value during voltage measurement, even if the tip is not in contact with the conduction plate. This does not mean a failure of the tester. Also, if a temperature outside the measurement range is detected, a value that is outside the measurement range may be displayed. This does not mean a failure of the tester.

(3) Measuring the Resistance Between Tip and Ground

Press the SELECT button to light up the mode indicator lamp of "OHM." Using the same procedure as when measuring the difference in potential, measure the resistance after pressing the (AUTO ZERO) button.

⚠ CAUTION

- Be sure to plug the tester power cord in a bipolar grounded outlet during voltage or resistance measurement.
- If the measured voltage or resistance is out of the specified range, check the iron tip or mounting screws for looseness and repeat the measurement.

■ AUTO ZERO function

- Voltage and resistance must be measured in respective modes.
- When pressing the (AUTO ZERO) button you will see a count transition of 0.0.0 →0.0 →0. Wait until the display returns to normal status.
- A correction value obtained by the AUTO ZERO function is saved in nonvolatile memory and is not lost even when the tester is shut off.

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

● 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.

5. PARTS LIST

● HAKKO FG-101

Item No.	Part Name	Spec.
B3213	Multi-adapter	
B3214	European Adapter	
B1752	Conduction Plate	
B1754	Ground Clip	
B1950	Conduction Wire	
B1258	Fuse/250V-3.15A	
B2468	Fuse/125V-5A	
191-212	Sensor/Lead free	10 pcs.
B2419	Power cord, 3 wired cord & American plug	
B2421	Power cord, 3 wired cord but no plug	
B2422	Power cord, 3 wired cord & BS plug	India
B2424	Power cord, 3 wired cord & European plug	220V KTL 230V CE
B2425	Power cord, 3 wired cord & BS plug	230V CE
B2426	Power cord, 3 wired cord & Australian plug	
B2436	Power cord, 3 wired cord & Chinese plug	China

● Optional Parts

Part No.	Part Name	Spec.
A1310 *3	Temperature Probe for soldering pot	
C1220	Temperature Probe for automatic solder machine	

*3 Remove the standard sensor, and connect the red connector of this option to the red terminal of the HAKKO FG-101 and the blue connector to the blue terminal. Insert the top of the probe into solder to measure the temperature.