HAKKO

HAKKO FX-838

SOLDERING STATION

Heavy Duty Soldering Station

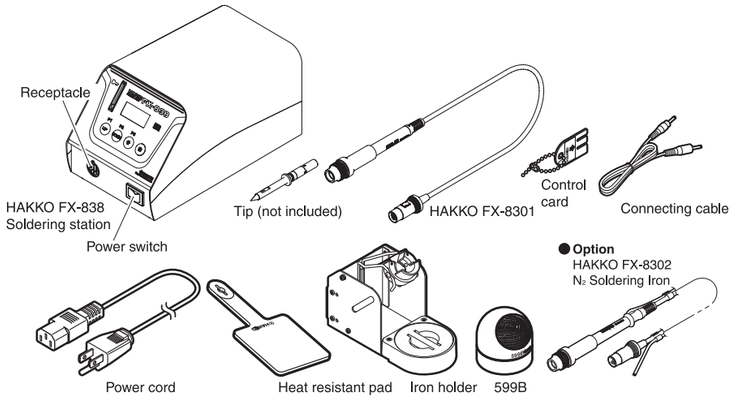
Instruction Manual

Thank you for purchasing the HAKKO FX-838 Soldering Station.
Please read this manual before operating the HAKKO FX-838.
Keep this manual readily accesible for reference.

1. PACKING LIST AND PART NAMES

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

HAKKO FX-838 soldering station	1	Iron holder (With cleaning sponge and 599B)	1
HAKKO FX-8301 soldering iron	1	Connecting cable	1
Control card	1	Heat resistant pad	1
Power cord	1	Instruction manual	1



2. SPECIFICATIONS

HAKKO FX-838 soldering station

Power consumption	158 W

● Station

Output voltage	27 V
Temperature Range	200-500°C (400-930°F)
Temperature Stability	±5°C (±9°F)
Dimensions	110 × 110 × 205 mm (4.3 × 4.3 × 8.1 in.)
Weight	3.2 kg (7.1 lb.)

● HAKKO FX-8301 soldering iron

Power consumption	150 W (27 V)
Tip to ground resistance	< 2 Ω
Tip to ground potential	< 2 mV
Length of cord	1. 2 m (4 ft)
Length, (w/o cord)	175 mm (6.9 in.) with 2.4D tip
Weight, (w/o cord)	31 g (0.068 lb.) with 2.4D tip

NOTE:
Temperature was measured using the HAKKO FG-101 thermometer.
* This product is protected against electrostatic discharge.
* Specifications and design are subject to change without notice.

■ Electrostatic Protection

This product includes such features as electrically conductive plastic parts and grounding of the handpiece and station as measures to protect the device to be soldered from the effects of static electricity. Be sure to observe the following instructions:

1. The handle and other plastic parts are not insulators, they are conductors. When making repairs or replacing parts, take sufficient care not to expose live electrical parts or damage insulation materials.
2. Be sure to ground the unit during use.

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(Please note that some languages may not be available depending on the product.)

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3. WARNINGS, CAUTIONS AND NOTES

Warnings, cautions and notes are placed at critical points in this manual to direct the operator's attention to significant items. They are defined as follows:

⚠ **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 items involved.
NOTE : A NOTE indicates a procedure or point that is important to the process being described.
EXAMPLE: An EXAMPLE is given to demonstrate a particular procedure point or process.

⚠ WARNING

When power is ON, tip temperatures will be between 200 and 500°C (400 to 930°F). To avoid injury or damage to personnel and items in the work area, observe the following:

- Do not touch the tip or the metal parts near the tip.
- Do not allow the tip to come close to, or touch, flammable materials.
- Inform others in the area that the unit is hot and should not be touched.
- Turn the power off when not in use, or left unattended.
- Turn the power off when changing parts or storing the HAKKO FX-838.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.

To prevent accidents or damage to the HAKKO FX-838, be sure to observe the following:

⚠ CAUTION

- Do not use the HAKKO FX-838 for applications other than soldering.
- Do not strike the iron against hard objects to remove excess solder. This will damage the iron.
- Do not bend or damage the control card. If the card does become damaged, do not force the card into the station slot.
- Do not modify the HAKKO FX-838.
- Use only genuine HAKKO replacement parts.
- Do not allow the HAKKO FX-838 to become wet, or use it when hands are wet.
- Remove power and iron cords by holding the plug – not the wires.
- Be sure the work area is well ventilated. Soldering produces smoke.
- While using HAKKO FX-838, don't do anything which may cause bodily harm or physical damage.

4. INITIAL SETUP

A.Iron holder

- Loosen the adjusting screws to change the angle of the iron receptacle as you like, then tighten the screws.

- The sponge is compressed. It will swell when moistened with water. Before using the unit, dampen the sponge with water and squeeze to remove excess.

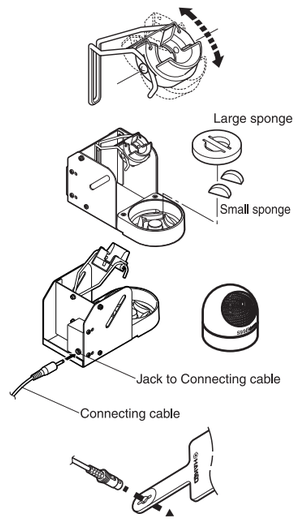
1. Put the small cleaning sponge in one of the five holes in the iron holder base.
2. Add water to the iron holder base.
3. Wet the large sponge, squeeze to remove excess water and put it on the iron holder base.

- Using 599B Tip Cleaner
  599B can be put in the iron holder base.

- Use of the sleep function

When using the sleep function, insert one end of the connecting cable into the jack at the back of the iron holder and the other end into the jack at the back of the soldering station to connect them.

⚠ CAUTION
- Be sure to turn off the power before connecting or disconnecting the connecting cable.
- Securely insert the connecting cable all the way into the jack.



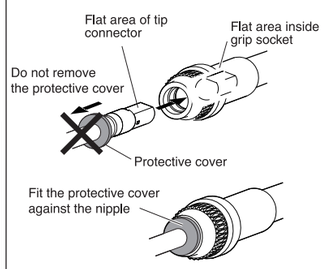
B. Soldering Iron Cord

- Pass the iron cord through the hole in the heat resistant pad.

● Inserting the tip

1. Loosen the nipple slightly.
2. Insert a new tip onto the FX-8301.
   - Gently insert the new tip, then align the flat area inside the grip socket with the flat area on the tip connector and insert the tip fully.
3. Tighten the nipple.
   - If the tip is not inserted fully, a sensor error S-E is displayed when the power is turned on.

⚠ CAUTION
- The tip of the iron may be hot. The iron possesses a burn hazard and should therefore always be handled with extreme care. Do not hold onto the tip for long period of time using the heat-resistant pad.
- If the nipple is completely removed when installing the tip, the protective cover that prevents the incursion of flux is removed at the same time. This may damage the iron.
- Forcibly inserting the tip during installation may damage the iron and the tip.
- Do not move the protective cover along the iron towards the grip.

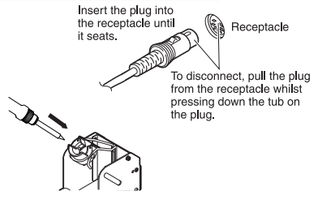


C. Soldering station

⚠ CAUTION
Be sure the power switch is OFF before connecting or disconnecting the soldering iron cord. Failure to do so may result in damage to the circuit board.

1. Insert the power cord into the receptacle at the back of the station.
   Insert the soldering iron cord into the receptacle at the front of the station.
2. Set the iron in the iron holder.
3. Plug the power cord into a grounded wall socket.

⚠ CAUTION
The HAKKO FX-838 is protected against electrostatic discharge and must be grounded for full efficiency.



5. OPERATION

Controls and displays

Controls

The front panel of the HAKKO FX-838 soldering station has the following controls:
- A power on/off switch
- Four control buttons

Displays

The HAKKO FX-838 has a three-digit display
Depending upon the selected mode, it will display:
- Normal mode:
  Sensor temperature (tip temperature)
- Data entry:
  Selected quantity (see 'data entry procedures' for exact characteristics)
- Temperature scale:
  °C or °F, depending upon selection
- Error detection:
  Refer to 'ERROR MESSAGES' section

● Control buttons in normal mode

UP – Increases the value on the display.

DOWN – Decreases the value on the display.

✱ – End of sequence signal (terminates a phase of a data entry mode); when pressed for less than one second, displays settings already stored.

– Initiates the offset entry mode or displays current offset value.

● Control buttons in temperature preset mode

UP (P1) – Selects the preset temperature registered in P1.
DOWN (P2) – Selects the preset temperature registered in P2.
✱ (P3) – Selects the preset temperature registered in P3.
––––– Initiates the offset entry mode or displays current offset value.

NOTE:
Factory default is normal mode.
Change the parameter to use Temperature Preset mode.

An audible buzzer is provided to alert the operator when:
- The station has reached the set temperature. The buzzer will sound once.
- The low temperature threshold has been crossed, the buzzer will sound continuously. This buzzer will shutoff when the tip temperature returns to the acceptable range.
- A failure has occurred in the sensor or heater (including the sensor circuit). The buzzer will sound continuously.
- The auto power shutoff is activated and the power to the heating element is shutoff, the buzzer will sound three times.

● Operation

1. Turn the power switch ON.

2. Once the temperature is reached, the buzzer sounds.

⚠ CAUTION
The HAKKO FX-838 is preset at 350°C (660°F) at the factory.
Check the temperature setting by pressing the ✱ button.
The set temperature will be displayed for two seconds.

⚠ CAUTION
Place the iron in the iron holder when not in use.

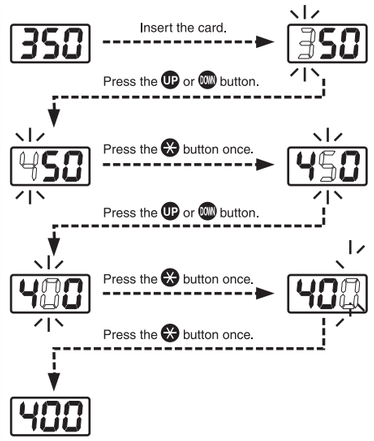
● Changing the temperature setting (Normal mode)

⚠ CAUTION
The temperature setting range is 200-500°C (400-930°F)

- Attempt to enter a value outside the setting range will cause the display to begin flashing the hundreds digit again. Reenter a correct value.
- The HAKKO FX-838 is preset at 350°C (660°F) at the factory.

Example: 350 to 400°C (660 to 750°F)

1. Insert the control card into the slot in the front of the unit.
   - The hundreds digit will begin to flash.
2. Entering digits
   - Press the UP or DOWN button to set the desired figure of each digit.
     Only values from 2 to 5 can be selected when entering the hundreds digit.
     (In °F mode, values from 4 to 9 can be selected.)
     Values from 0 to 9 can be selected when entering the tens or units digits.
     (The same values can be selected in °F mode.)
     When the desired figure is displayed, press the ✱ button to select it.
     The next digit starts flashing. After entering the units digit, press the ✱ button to save the figure to the system memory. Heater control will begin after the new set temperature is displayed.



NOTE:
If power is switched off or lost during the execution of this procedure, no data will be entered. The entire procedure must be repeated from step 1.

To change the set temperature with the control card in the station:

1. Press and hold the ✱ button down for at least one second.
   The current temperature setting will be displayed, and then the hundreds digit begins to flash one second later. This indicates that the station has entered the temperature setting mode. Follow step 2 above to set the temperature.
2. When the ✱ button is pressed for less than one second, the current temperature setting is displayed for two seconds, then returns to show the actual tip temperatures.

5. OPERATION

● **How to enter the tip offset value into the HAKKO FX-838 (Normal mode)**

Example:
If the measured temperature is 410°C and the set temperature is 400°C, the difference is -10°C (need to decrease by 10°C). So, enter the figure which 10 is deducted from present offset value.

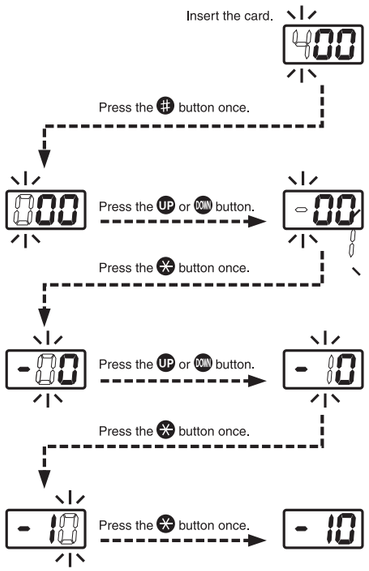
1. Insert the control card into the slot in the station.
- The station is in the temperature setting mode. The hundreds digit will begin to flash.

2. Press the # button on the front panel.
- This will set the station to offset value entry mode.

3. Enter the offset value
- The allowable ranges for offset values are from -50 to +50°C (In F mode from -90 to +90°F).

> **NOTE:**
> During offset data entry mode, the tip temperature is controlled by present offset value.

4. Entering digits
- Use the UP and DOWN buttons to select values for each place.
  The hundreds digit can display 0 (for positive values) or a minus sign (for negative values). (The same values can be selected in °F mode.)
  Values from 0 to 5 can be selected when entering the tens digit.
  (In °F mode, values from 0 to 9 can be selected.)
  Values from 0 to 9 can be selected when entering the units digit.
  (The same values can be selected in °F mode.)
  After entering the units digit, press the ✱ button to save the figure to the system memory and begin heater control with the new offset value.



> **NOTE:**
> When the unit is in offset-free mode, you can go into the offset value entry mode without control card by pressing the # button for second.

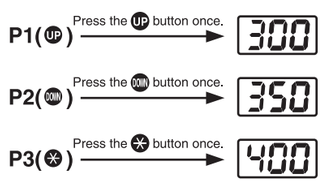
To change the offset value with the control card in the station:

1. Press and hold the # button down for at least one second. The current offset value is displayed, and then the hundreds digit begins to flash one second later. This indicates that the station has entered the offset entry mode. Follow step 4 above for setting the offset value of the tip temperature.
2. When the # button is pressed for less than one second, the current offset value is displayed for two seconds, then returns to tip temperature.

The HAKKO FX-838 has the Temperature Preset mode other than the above Normal mode. When using the temperature preset mode, set the temperature preset mode for "Temperature setting (11)" of Parameter entry mode. (Refer to "●Parameter entry mode process" for 6. PARAMETER SETTINGS)

●Temperature Preset Mode
Preset mode allows a preset temperature to be selected at the press of a button.

> ⚠ **CAUTION**
> - Use this mode with the control card inserted.
> - Default factory settings are as follows:
> for Celsius P1: 300°C, P2: 350°C, P3 400°C
> for Fahrenheit P1: 650°F, P2: 750°F, P3: 850°F



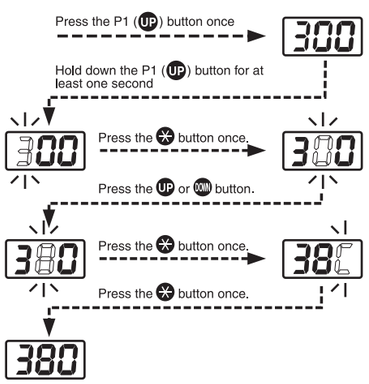
> **NOTE:**
> If the control card is not inserted in preset mode, the unit only displays the set temperature.

● **Selecting preset temperatures**
Pressing the P1, P2, or P3 button sets the tip temperature to the corresponding preset temperature. When a preset button is pressed, the set temperature is displayed for two seconds.

● **Setting or changing the set temperature (temperature preset mode)**

Example:
Changing preset temperature (P1) from 300°C to 380°C
1. Insert the control card into the station.
2. Select a preset button to change (either P1, P2, or P3) and press it once.
   - The set temperature is displayed.
3. Hold down the preset button pressed in step 2 for at least one second.
4. The station enters temperature setting mode and the hundreds digit starts flashing.
   - The set temperature can be adjusted in the same way as normal mode. (See procedure on right.)

> **NOTE:**
> - In preset mode the set temperature can be set within the range of 200 to 500°C (400 to 930°F).
> - To set or change a preset temperature in preset mode, select the desired preset temperature before beginning the adjustment procedure.



● **Entering the tip temperature offset (temperature preset mode)**
For instructions on how to enter digits, see step 4 of the offset value entry procedures.

> **NOTE:**
> In preset mode, be sure to insert the control card securely before holding down the # button for at least one second.

6. PARAMETER SETTINGS

● **Parameter entry mode process**

Select the parameter entry mode using the following operation.
Be sure to insert the control card before opening.

① Turn the power on while pressing the UP button.
The station enters the parameter entry mode.

② Select the parameter number.
01 is initially displayed, and the tens digit begins to flash. Use the ✱, UP and DOWN buttons to change the parameter selection.
Press the ✱ button to go to the next step.

③ Set the value for the parameter.
The current parameter value is initially displayed. Use the ✱, UP and DOWN buttons to enter the parameter value.
Press the ✱ button to return to step ②.

After the necessary parameters are set, press and hold the ✱ button for two seconds.

④ The display changes to --y.
Select --y and press the ✱ button to exit the parameter entry mode.

The HAKKOFX-838 has the following parameters.

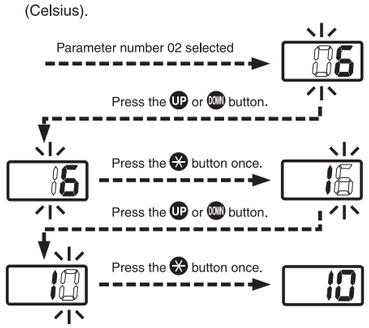
	Number	LED display	Setting	Default setting
Temperature display	01	F or C	F:°F display C:°C display	°C display
Auto sleep time setting	02	Tens digit entry	Sleep time	6 min.
Low temperature error setting	03	Hundreds digit entry	Low temperature threshold entry	150°C
Offset-free mode	04	0 or 1	0: Off 1: On	Off (0)
Buzzer setting (C-E sound, S-E sound)	05	0 or 1	0: Off 1: On	On (1)
Buzzer setting (Set temperature alert)	06	0 or 1	0: Off 1: On	On (1)
Auto sleep on/off setting	07	0 or 1	0: Off 1: On	On (1)
Auto shutoff on/off setting	08	0 or 1	0: Off 1: On	Off (0)
Spare	09	——	——	——
Spare	10	——	——	——
Temperature setting	11	0 or 1	0: Normal 1: Preset	Normal(0)
Power-mode setting	12	0 or 1	0: Normal power 1: High power	Normal power (0)
Auto sleep temperature setting	13	Hundreds digit entry	Sleep temperature	200°C

> **NOTE:**
> - Each time the UP or DOWN button is pressed, the display toggles --y and --n.
> - When --n is selected, the parameter entry mode process restarts from step 2 above.

> ⚠ **CAUTION**
> Do not leave the FX-838 for a long time with the auto shutoff function activated. Turn the power off when the FX-838 is not in use.

● 01: Temperature display (°C or °F)

- When the display changes to F or C, the station enters the mode for changing the temperature display.
- Press the UP or DOWN button to switch the display alternately between F (Fahrenheit) and C (Celsius).



> ⚠ **CAUTION**
> - When the setting temperature is 300°C (570°F) or less, the sleep function cannot be set to Sleep even if the sleep function is set to ON.
> - The tip temperature rises to the setting temperature once at power on even if the sleep time is set to "0". The tip temperature will be reduced to the sleep temperature after the temperature reaches the set temperature.

- The hundreds digit begins to flash when entering the low temperature setting. Use the method for setting the temperature to enter and set the low temperature setting.
- If you enter a value outside the low temperature setting range (see the table on the left), the display returns to the hundreds digit, and you have to enter a correct value.
- After the low temperature setting is set, the display returns to the parameter number selection screen.

● 02: Auto sleep time setting

Set the time until the auto sleep function activates after the soldering iron is set on the iron holder.

> **Auto sleep examples:**
> 00 Sleep (immediately after the iron is set on the iron holder)
> 10 Sleep (10 minutes after the iron is set on the iron holder)

> **NOTE:**
> The auto sleep time can be set in units of minutes (up to 29 minutes).

- When SLP is displayed, press the UP or DOWN button, or remove the soldering iron from the iron holder to restore power to the heater.

● 03: Lower temperature error setting

Lower temperature error
- When the temperature drops below a set limit, an error is displayed and the buzzer sounds.
- When the temperature returns within the allowable range, the buzzer stops.

> **Low temperature setting range**
> for Celsius: 30 to 150°C
> for Fahrenheit: 50 to 270°F

Example:
When the set temperature is 350°C and the low temperature error setting is 100°C, a warning buzzer sounds when the temperature drops to 250°C.

6. PARAMETER SETTINGS

● 04: Offset-free mode

- When the station is in the offset-free mode, either 0 or 1 is displayed.
  0: The offset value cannot be entered without the control card inserted into the station.
  1: The offset value can be entered without the control card inserted into the station.
  Select UP or DOWN and press the ✱ button.

● 05: S-E, C-E buzzer sound setting mode

- In the buzzer sound setting mode, which sets whether to sound the buzzer when a sensor error or soldering iron error occurs, either 0 or 1 is displayed.
  0: The buzzer does not sound.
  1: The buzzer sounds.
  Select UP or DOWN and press the ✱ button.

● 06: Set temperature alert setting mode

- In the set temperature alert setting mode, either 0 or 1 is displayed.
  0: The buzzer does not sound when the soldering iron reaches the set temperature.
  1: The buzzer sounds when the soldering iron reaches the set temperature.
  Select UP or DOWN and press the ✱ button.

● 07: Auto sleep function setting mode

> **NOTE:**
> When the auto sleep function is on, removing the iron from the iron holder or pressing the UP or DOWN button resumes operations.

- In the auto sleep mode, either 0 or 1 is displayed.
  0: The auto sleep function is off , regardless of the auto sleep set time.
  1: The auto sleep function is on, and the auto sleep time is activated.
  Select UP or DOWN and press the ✱ button.

● 08: Auto shutoff function setting mode

When the soldering iron is set on the iron holder and is not operated for 30 minutes, power to the heater is shut off automatically, and the unit shuts off.
When the auto shutoff function is on, removing the iron from the iron holder or pressing the UP or DOWN button resumes operation.
When auto shut-off is activated, the buzzer sounds, and it sounds again in 30 minutes.

- In the auto shutoff setting mode, either 0 or 1 is displayed.
  0: The auto shutoff function is turned off.
  1: The auto shutoff function is turned on.
  Select UP or DOWN and press the ✱ button.

● 11: Temperature setting mode

Temperature settings mode allows normal mode or preset mode to be selected.

- In the temperature setting mode, either 0 or 1 is displayed.
  0: Selects normal mode.
  1: Selects preset mode.
  Select UP or DOWN and press the ✱ button.

● 12: Power-mode settings

> **NOTE:**
> High-power mode is mainly suited to applications that require large heat capacity such as quick soldering of ground patterns or cast metal products.

- In the power-mode setting, either 0 or 1 is displayed.
  0: Selects normal output.
  1: Selects high output.
  Select UP or DOWN and press the ✱ button.

> ⚠ **CAUTION**
> If the tip is oveloaded, it may cause overshooting.

● 13: Auto sleep temperature setting

Sets the auto sleep temperature.
Setting a high sleep temperature enables shorter start up time when the unit recovers from sleep mode.

> ⚠ **CAUTION**
> Setting the sleep temperature too high will shorten tip life.

> **Auto sleep temperature setting range:**
> for Celsius: 200 to 300°C
> for Fahrenheit:400 to 570°F

- When the unit enters auto sleep temperature setting mode, the hundreds digit starts flashing. Once the unit starts flashing, enter a desired value within the auto sleep temperature setting range.
- If the entered value exceeds the auto sleep temperature setting range (see box on the left below), the hundreds digit starts flashing again. If this happens, enter a correct value.
- When the temperature setting has been selected, the unit returns to the parameter number selection screen.