



AUTO TEMPERATURE MEASUREMENT & ADJUSTMENT SYSTEM

CX5041

Instruction Manual

Thank you for purchasing a HAKKO product.

This product is an automatic temperature measurement and adjustment probe and software dedicated to the HU-200.

Make sure to read this manual before using the product,
and keep it in a safe place for future reference.

In addition to this manual, make sure to read the instruction manual of any device
used with this product.

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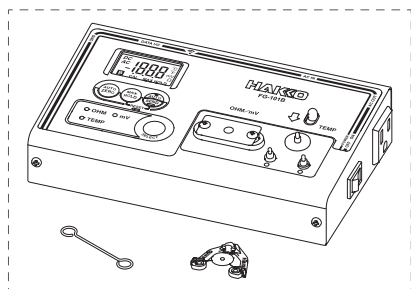
1. Contents

Confirm the contents before use.

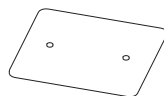
Probe	1	Probe fixing plate	1
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FG-101B (sold separately)

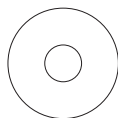
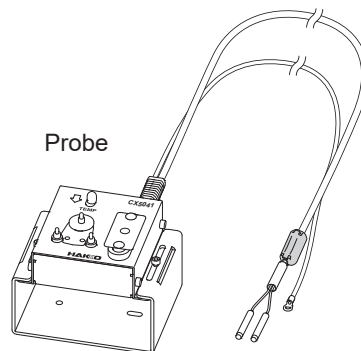
* Hereinafter referred to as the tester



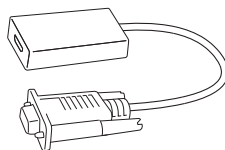
Probe fixing plate



Probe



Instruction manual
(CD-ROM)



USB converter



USB cable



See the web page for the product information such as replacement parts/options.
https://www.hakko.com/doc_cx5041-e

2. Specifications

Temperature measurement range	0 to 700°C
Potential measurement range	0 to 40 mV (AC)
Resistance measurement range	0 to 40 Ω
Dimensions	94 (W) × 76 (H) × 75 (D) mm (3.7 × 3.0 × 3.0 in)
Cord length	Grounding wire: 62 cm (2.0 ft) Compensating lead wire: 82 cm (2.7 ft)
Weight	440 g (15.5 oz)

- The weight excludes the cord.
- Please note that specifications and appearance may be changed without notice for improvement purposes.
- This function only works with "°C setting". Soldering station and tester must be set to "°C".
- Overshoot or undershoot may occur immediately after any offset, please wait approximately 10 minutes for the tip temperature to stabilize before measuring again.

3. Warnings, cautions, and notes

Warnings, cautions, and notes are placed at critical points in this manual to direct your 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 : This indicates procedures or information that are important in a process described in this document.

Be sure to observe the following precautions to ensure safety.

⚠ WARNING

1. Establish guidelines related to each of the following items and perform work following these guidelines.

- (1) Robot operation and procedures (Refer to "7. Operation" of the HU-200 instruction manual (CD-ROM).)
- (2) Speed of robot in operation (Refer to "7-1 Explanation of Software Screen/7-2 JOG Operation" of the HU-200 instruction manual (CD-ROM).)
- (3) Operation when 2 or more operators are performing operations (Refer to "5-1 Cautions on Installation" of the HU-200 instruction manual (CD-ROM).)
- (4) Measures if abnormalities are discovered (Refer to "9. Error Messages/ 10. Troubleshooting" of the HU-200 instruction manual (CD-ROM).)
- (5) Measures to restart the device if abnormalities are discovered and robot operation is stopped. (Refer to "10. Troubleshooting" of the HU-200 instruction manual (CD-ROM).)
- (6) Other required measures to prevent dangers due to unexpected robot operations and malfunctions (3. Warnings, cautions, and notes: During work)

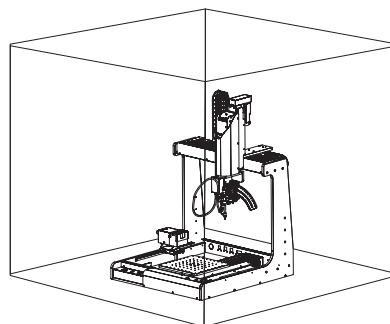
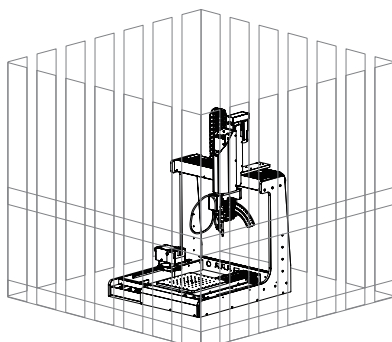
2. Operators performing operations and personnel in charge of observing operators are to perform measures to stop robot operations when abnormalities are discovered. (3. Warnings, cautions, and notes: During work)

3. While work is being performed, perform required measures to prevent personnel other than designated operators from operating switches, etc. such as by displaying messages to the robot operating switches, etc. that work is being performed. (3. Warnings, cautions, and notes: During work)

During operation

There is a risk of death or injury if a person comes in contact with the robot while it is operating. Take safety measures (such as installation of a safety cover) to prevent workers from entering the robot's range of movement during operation.

If there is no safety cover, indicate the robot's range of movement and take necessary safety measures.



3. Warnings, cautions, and notes (cont'd)



WARNING

Installation/transportation

- Be sure that the main power supply is switched off when installing the robot and performing wiring, and check that wiring has been performed properly.

During work

- When training work, inspection, etc. is being performed, be sure that workers perform the work thoroughly.
- To enable operation to be immediately stopped in the event of a dangerous condition, perform work within reach of an emergency stop button, or install emergency stop devices close at hand.
- If a dangerous situation occurs, press the emergency stop of the robot (button of emergency stop device) immediately.
- When work is being performed by multiple workers, perform work while giving voice instructions to each other and while checking safety to prevent other workers from performing careless operations during the work.
- When inspecting or replacing parts that do not require operation, switch off the main power supply before performing such work.

Other

- Do not use near flammable, inflammable, explosive, or corrosive gases or materials.
- If the product will not be used for a long period of time, unplug the power plug.
- Do not touch metal parts near the tip while the tip is at high temperatures.
- Since there is a danger of fingers getting pinched, keep your fingers away from moving sections (X, Y, Z, and θ axes).
- When performing repairs or replacing parts, be sure to unplug the power plug and wait for the soldering iron to cool down before performing such work.
- Do not allow disassembly or repair to be performed by workers other than qualified repair technicians. Also, do not modify the product.

Failure to observe the following precautions to ensure safety might result in electric shock, malfunction or other trouble.

CAUTION

- Before using this product, fully read all descriptions in this document.
- Securely attach the USB converter to the tester with the thumb screws. If loose, it may cause malfunction.
- Attach the probe position to avoid contact with the jig table or cleaner of the robot.
- Use the included USB converter with the probe to connect the robot to the tester. Using a different converter may result in inaccurate soldering tip temperature measurements.
- Attach only HAKKO-specified accessories to the robot, and do not use this product for applications other than soldering.
- Ensure safety by wearing a helmet, protective gloves, safety glasses, and safety shoes when necessary.
- Do not subject the product to strong impact.
- Product should be installed so that sufficient working space to safely perform preventive maintenance, etc. can be secured.
- Be sure to ground the robot during use.
- Be sure to provide sufficient illumination to perform work safely.
(JIS Z9110 specifies 300 to 750 lux.)
- Do not touch the product with wet hands or use the product when the main body or cords are wet.
- Always hold the power plug when plugging it in or unplugging it.
- Do not place the cord close to heat, oil, or objects with protruding corners.
- Do not forcibly bend, pull on, or twist the cord.
- Do not use the cord if the plug is damaged or if it is loose in the electrical outlet.
- Systems related to safety do not lead to loss of safety functions even if defects of single parts occur. Defects of single parts are detected before safety functions of the next cycle are executed and safety functions remain enabled even if defects occur on single parts.
- This product is a precision equipment. Data may get lost due to sudden malfunctions, etc. As a precaution, periodically take backup of important data stored in this product. We shall not be held responsible for any damage or loss of the data stored in this product or in the connected products. Also, we are not capable of recovering, restoring, or duplicating recorded data. We shall not be held responsible if data could not be saved to this product for unspecified reasons.

3. Warnings, cautions, and notes (cont'd)



CAUTION

- Use genuine HAKKO parts for included parts/replacement parts/options.
- Do not modify this product.
- Do not use damaged cords or plugs. Doing so can result in malfunction or injury.
- Do not use the product if it has been dropped or shows signs of damage.
- When inserting and removing the cord, hold the plug body and do not pull the cord.
- Do not allow this product to get wet. Also, do not handle it with wet hands.
- Do not perform any other actions that may be considered to be dangerous.

* Before use, read "3. Warnings, cautions, and notes" in the instruction manual (CD-ROM) provided with this product.

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3. Warnings, cautions, and notes (cont'd)

5. Miscellaneous

This Agreement shall be governed by the laws of Japan, and Osaka District Court shall have exclusive primary jurisdiction with respect to all disputes arising out of this Agreement.

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Please note that we will not respond to inquiries about the source code of open source software.

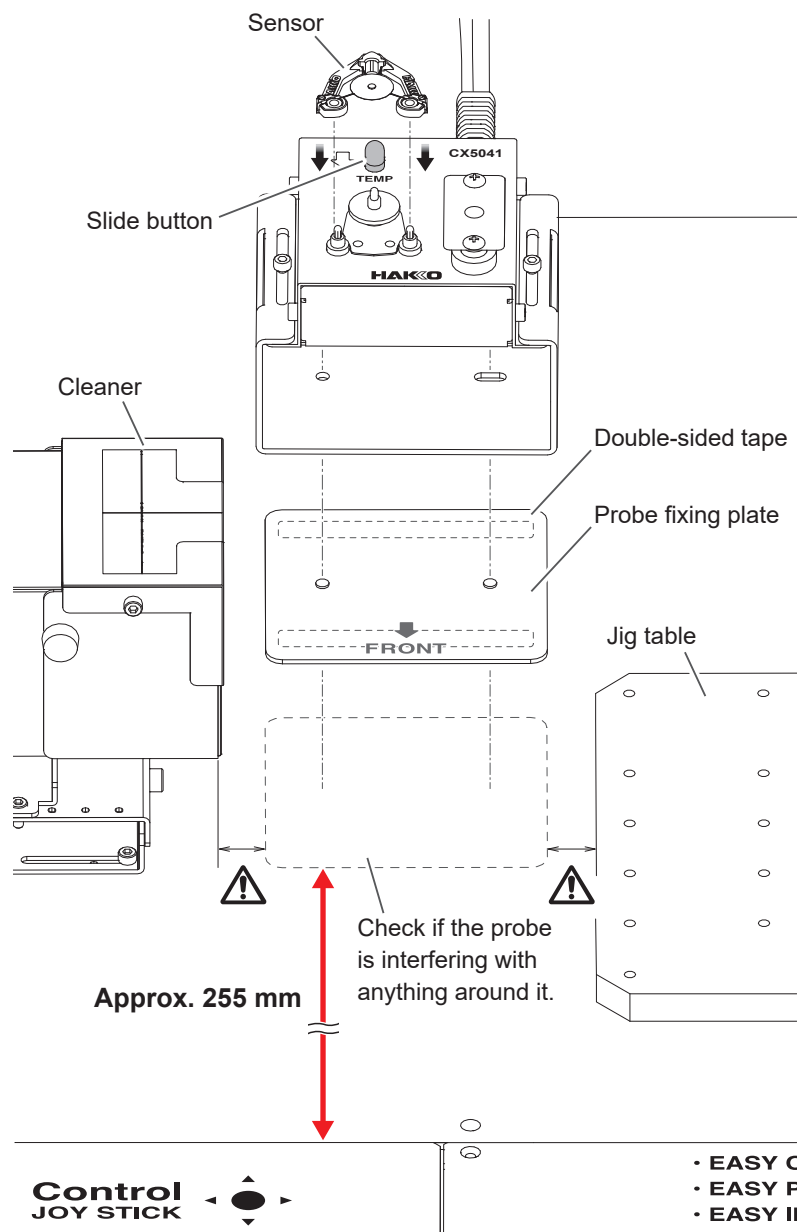
5. Operation

⚠ CAUTION

Attach the probe position to avoid contact with the jig table or cleaner of the robot.

5-1. Probe installation

- (1) Confirm the attaching position of the probe.
Depth : Approx. 255 mm from the front lip of the top panel
Sides : Ensure it does not interfere with the jig table or tip cleaner
- (2) Remove the protective sheet of the double-sided tape from the back of the probe fixing plate.
- (3) Attach the probe fixing plate to the position determined in (1).
- (4) Secure the probe to the probe fixing plate, aligning it with the protrusion of the probe fixing plate.
- (5) Push and hold the slide button, and attach the sensor to the probe.



5-2. Connecting the tester (sold separately)

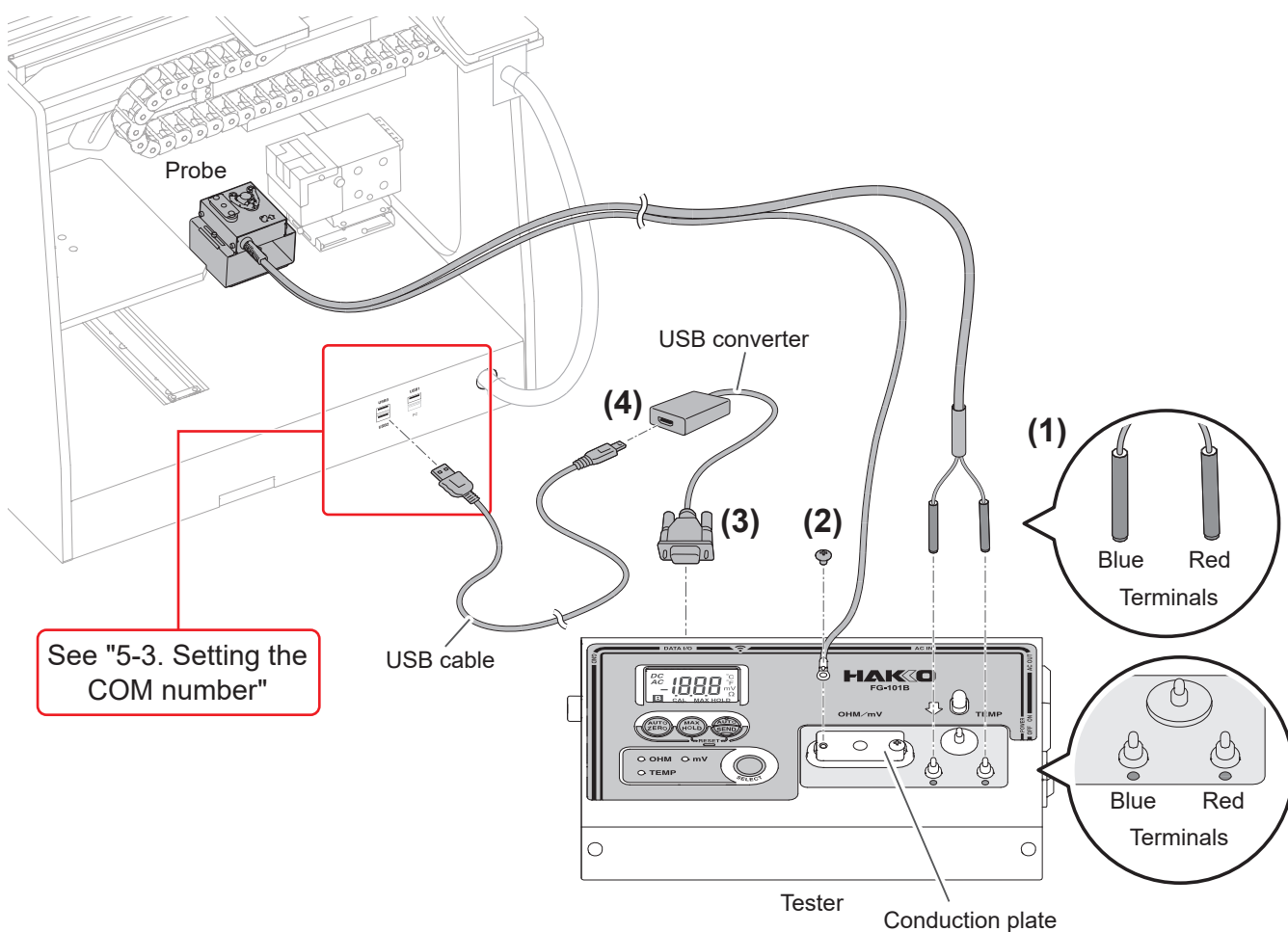
- (1) Connect the terminals of the probe to the tester terminals.

NOTE Match the colors of the terminals of the probe and the tester terminals when connecting.

- (2) Remove one of the screws fixing the conduction plate and attach the ring tongue terminal (white lead wire) to it.
- (3) Connect the USB converter to the tester.

NOTE Securely attach the USB converter to the tester with the thumb screws. If loose, it may cause malfunction.

- (4) Connect the USB cable to the USB converter.



NOTE

If solder does not wet easily on the conduction plate because of the tip having small thermal capacity, use the included conduction wire.

5. Operation (cont'd)

5-3. Setting the COM number

- (1) Open the **"Device Manager"** of the HU-200 tablet PC.
- (2) Open the **[Ports (COM & LPT)]** tree and check the connected COM port.
- (3) Connect the USB cable connected to the tester to the USB connector on the back of the robot.
- (4) Check the new **[USB Serial Port (COM*)]** number that is added after connection.

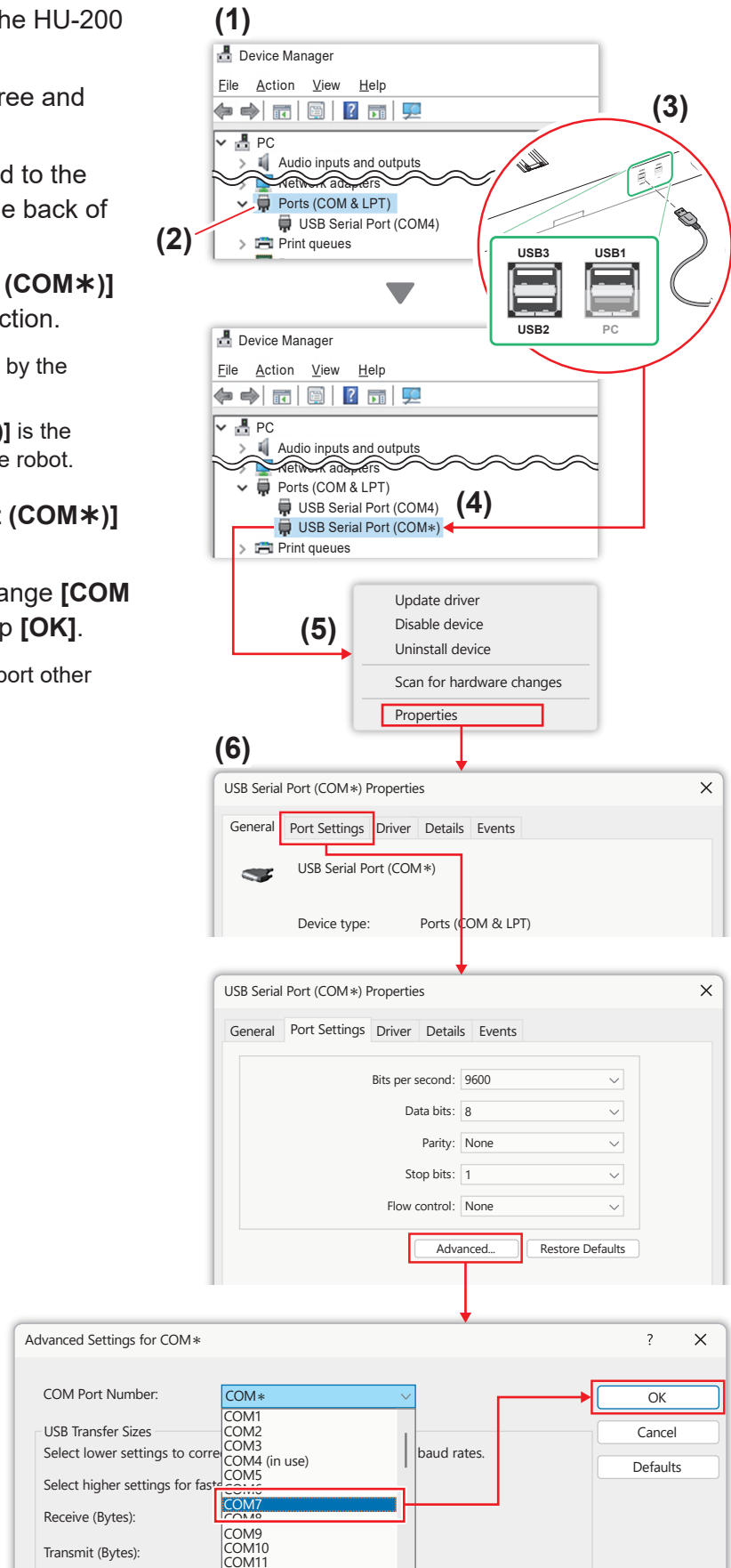
NOTE "*" is a number assigned by the operating system.

NOTE **[USB Serial Port (COM4)]** is the communication port for the robot.

- (5) Tap on the new **[USB Serial Port (COM*)]** to open its properties.
- (6) Open the **[Port Settings]** tab, change **[COM Port Number]** to **[COM7]**, and tap **[OK]**.

NOTE This will not work on any port other than COM7.

- (7) Close all open windows.
- (8) Restart the tablet PC.



5-4. Measurement method

⚠ CAUTION

For the range of motion of each axis during measurement, refer to the HU-200 instruction manual (CD-ROM) included with the probe.

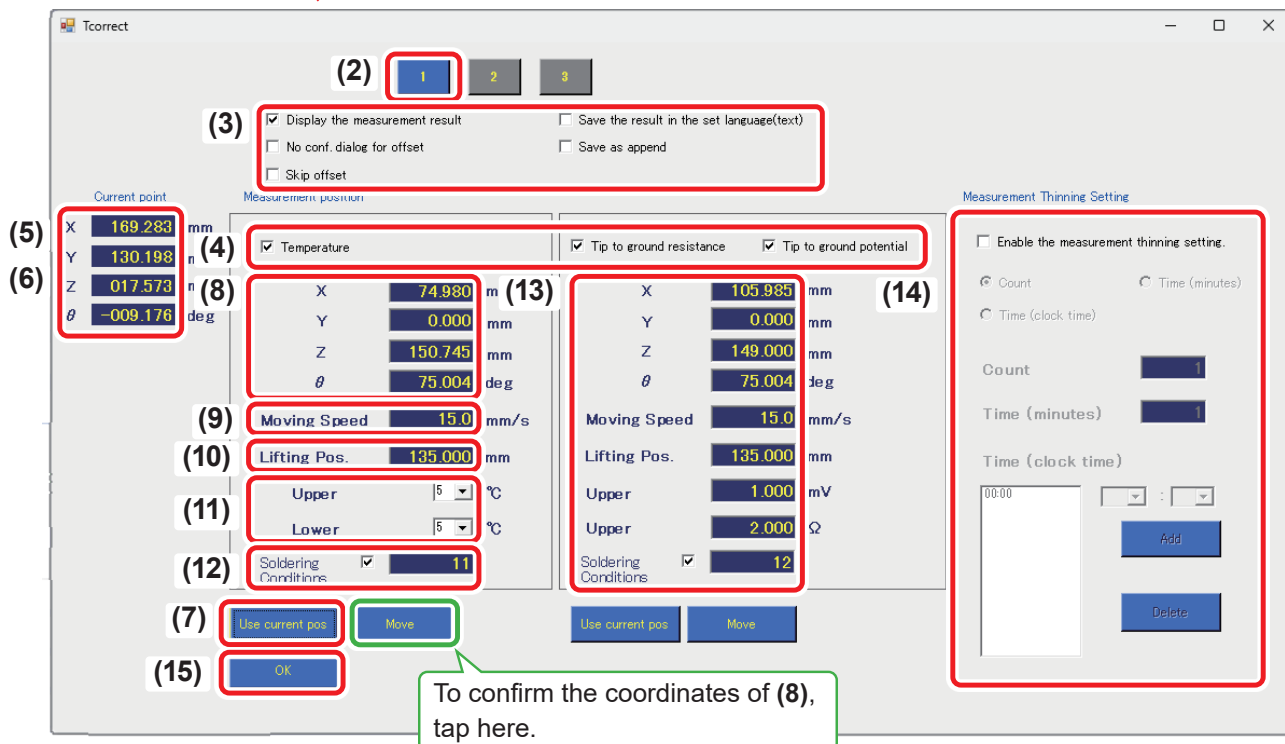
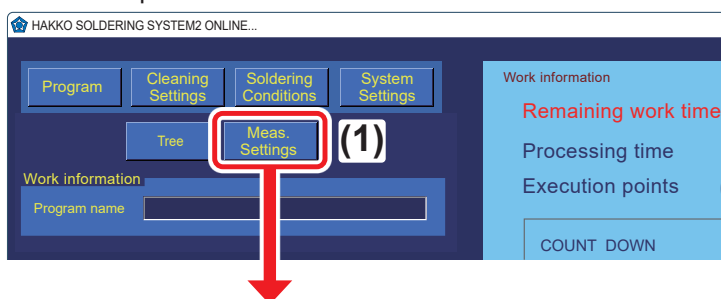
Two measurement methods are available:

- Measurement from **"Software top"**
Measurements can be taken as needed when the program is not running.
- Measurement integrated into the program
Measurement functionality can be integrated into the existing program.

5-4-1. Measurement from "Software top"

5-4-1-1. Measurement position settings

Software top



5. Operation (cont'd)

(1) Tap **[Meas. Settings]**.

(2) Tap **[1]**.

* Three types of measurement positions can be set: **1**, **2** and **3**.

(3) Check the boxes for the desired items after the measurement.

Item contents *The offset function is only applied when measuring temperature.	☒ Checked	☐ Unchecked
☐ Display the measurement result	The measurement results are displayed in a dialog box.	The measurement results are not displayed in a dialog box.
☐ No conf. dialog for offset	If the tip temperature exceeds the allowable range set in (11) , no confirmation will be performed before running the offset.	If the tip temperature exceeds the allowable range set in (11) , a confirmation dialog will be displayed each time before running the offset.
☐ Skip offset	Even if the tip temperature exceeds the allowable range set in (11) , offset will not be performed.	If the tip temperature exceeds the allowable range set in (11) , it will run the offset.
☐ Save the result in the set language (text)	The measurement results are saved as a text file (.txt) in the language selected in [System Settings] .	The measurement results are saved in English as a CSV file (.csv).
☐ Save as append	Each measurement items set in (4) will be saved in chronological order. (English only)	The append format is not saved.

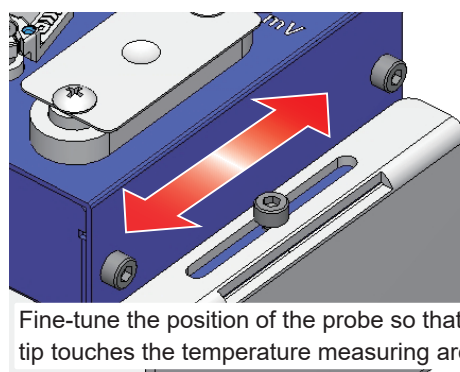
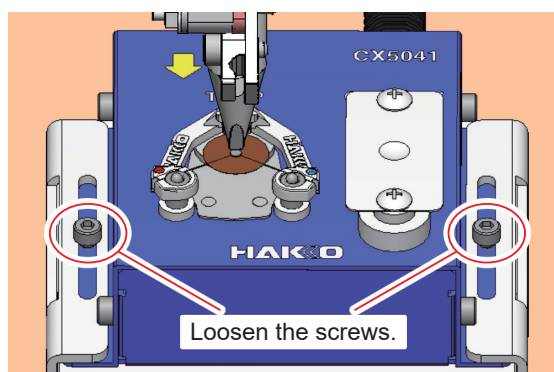
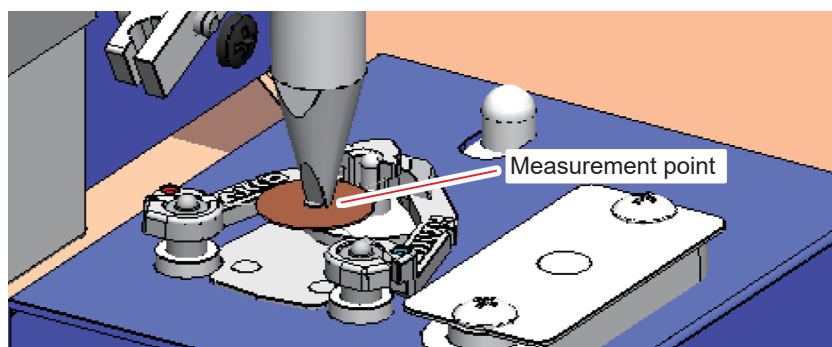
(4) Select the measurement items by checking the boxes.

☒ Temperature	☒ Tip to ground resistance	☒ Tip to ground potential
---	--	---

* All items are checked by default.

(5) Move the tip to the coordinates of the probe sensor (measurement position).

* Adjust the probe's forward/backward direction by loosening the probe screw.

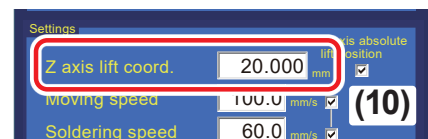


- (6) Make sure the tip is in contact with the sensor and in a position where the temperature can be measured.
- (7) Tap **[Use current pos]**.
- (8) The coordinates of the current location will be reflected.
- (9) Set the **[Moving Speed]** when measuring temperature.
- (10) Set the **[Lifting Pos.]** before and after the offset.

NOTE This setting takes priority over the Z axis lift coord. setting in "Software top".

NOTE When moving the soldering iron, be careful not to hit the solder that has accumulated on the conduction plate.

Software top



- (11) Set the allowable range of the tip temperature using **[Upper]** and **[Lower]**.

NOTE If the measurement falls within the allowable range, no offset will be run.

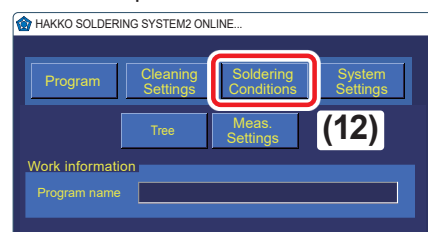
- (12) Set the **[Soldering Conditions]** number of the solder to be fed before measurement.

* Select from the condition numbers set in **[Soldering Conditions]** on "Software top".

NOTE If **[Soldering Conditions]** is unchecked, measurement will start without feeding solder.

NOTE When measuring, feed some solder to the tip. This is necessary to ensure contact between sensor or conduction plate and tip.

Software top



- (13) The tip to ground resistance/tip to ground potential can also be set in the same manner as for the measurement setting of temperature.

NOTE The allowable range settings are upper limits only.

NOTE When measuring both the tip to ground resistance and the tip to ground potential, solder should be fed only once, just before measuring the tip to ground resistance.

- (14) The Measurement Thinning Setting can be performed in the following three patterns.

This applies when a tip measurement sequence is incorporated into the soldering program, or when measurement is required at a specific period or timing.

- When setting by count

The measurement will be performed based on the configured thinning count since the previous measurement. If the same measurement setting is selected in multiple soldering programs, or if a single program includes multiple measurement settings, the thinning counts will be accumulated.

- When setting by time(minutes)

Measurement is performed based on the elapsed time (minutes) since the previous measurement. Measurement is performed after the set time (minutes) has elapsed, when the first STEP set for measurement is executed.

- When setting by time(clock time)

Measurement is performed after the set time(clock time) has arrived, when the first STEP set for measurement is executed.

* Measurement will be performed at the first scheduled measurement after starting HAKKO SOLDERING SYSTEM2.

* When measurement setting is configured, measurement will be performed at the first scheduled measurement.

5. Operation (cont'd)

■ When performing thinning measurements, make the following settings.

(14)-1. Check the box for
[Enable the measurement thinning setting.].

(14)-2. Select the type of thinning from [Count],
[Time (minutes)], or [Time (clock time)].

(14)-3. Make settings according to the type of thinning
selected in 2.

Count : Measurement is performed at the configured
count interval. The setting range is 1 to 9999.

Time (minutes) : Measurement is performed at the configured
time interval. The setting range is 1 to 1440.

Time (clock time): Select the desired [Hour] and [Minute] from the
dropdown lists, then tap [Add] to add the time to
the list on the left.

Measurement Thinning Setting

(14)-1 ☒ Enable the measurement thinning setting.

(14)-2 ☐ Count ☐ Time (minutes)

(14)-3 ☒ Time (clock time)

Count

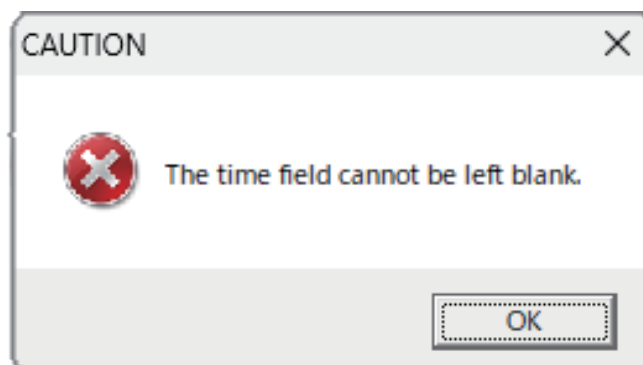
Time (minutes)

Time (clock time)

00:00
15:07

To delete the added time, select the desired time from the list on the left and tap [Delete].
At least one time must be registered in the list.

When attempting to delete the last remaining time in the list, the following warning is displayed.



*Setting example

Count : If set to [5], the next measurement will be performed on the fifth scheduled
measurement since the previous measurement.

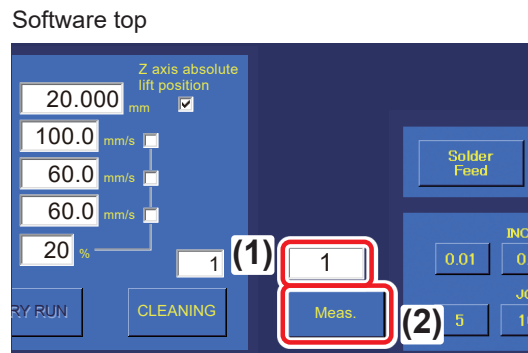
Time (minutes) : If set to [30], measurement will be performed when more than 30 minutes
have passed since the previous measurement.

Time (clock time): If set to [13:00], measurement will be performed on or
after 13:00.

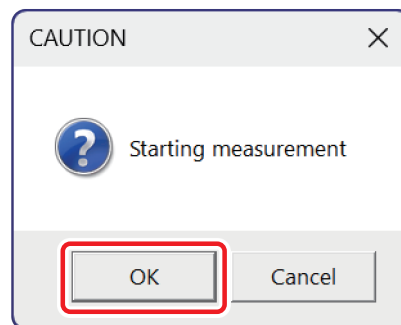
(15) Tap [OK] to confirm the settings and close "Meas. Settings".

5-4-1-2. Measurement

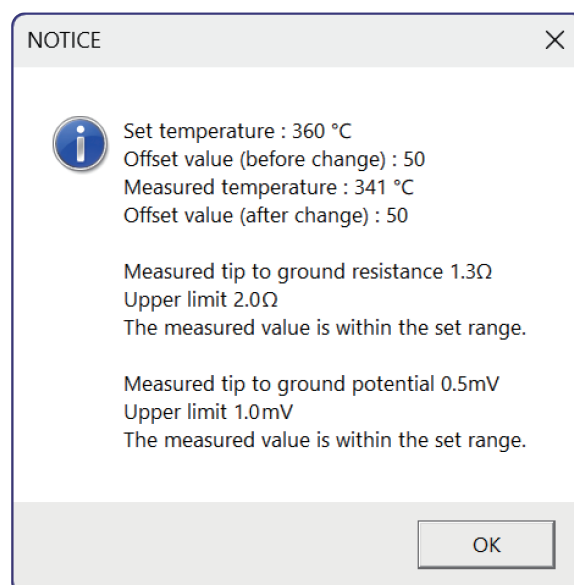
- (1) Enter the number of the measurement setting to be executed.
- (2) Tap **[Meas.]** at "Software top".



- (3) A dialog will appear, tap **[OK]**.



- (4) The measurement is performed.
- (5) The measurement results will be displayed.



If ☒ **Display the measurement result** is checked, this dialog will be displayed after the measurement is completed.

5. Operation (cont'd)

5-4-2. When incorporating the measurement into a program

- (1) Set the measurement position. (See "5-4-1-1. Measurement position settings")

- (2) Open the detailed settings of **[Program]**.
For details on how to set up the program, refer to "7-5 Creating a Soldering Program" in the HU-200 instruction manual.

- (3) **[Soldering]**: Select **[None]**.

NOTE If the solder mode is set to **[PS]** or **[DS]**, the selection in (4) will be disabled.

- (4) **[TRP Check]**: Select the measurement condition number set in (1) will be highlighted in reverse video.

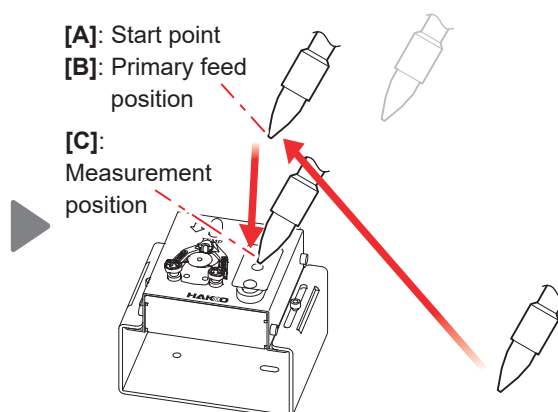
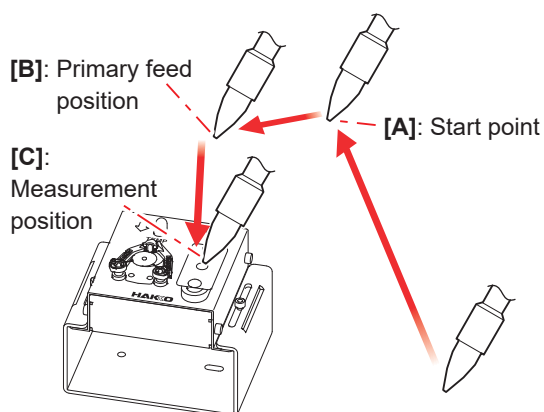
* TRP: Temperature/Resistance/Potential.

- (5) Set the starting point.



Iron movement

(5) the start point **[A]** → Z lift position, which is primary feed position **[B]**, of the measurement position → measurement position **[C]**. By setting the start point **[A]** at the same position as **[B]**, the movement time can be reduced.

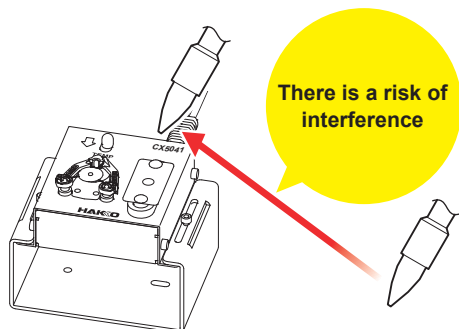


(6) Set the Z lift position.

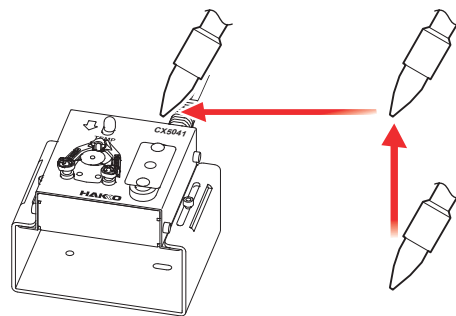
⚠ CAUTION

When moving to the starting point set in (5), the tip moves in a straight line. Setting the Z lift position prevents contact with other parts or equipment.

Without Z lift position setting:



With Z lift position setting:



(7) After starting the program, measurements will be taken during the program.

(8) The measurement results will be displayed.

NOTICE



Set temperature : 360 °C
Offset value (before change) : 50
Measured temperature : 341 °C
Offset value (after change) : 50

Measured tip to ground resistance 1.3Ω
Upper limit 2.0Ω
The measured value is within the set range.

Measured tip to ground potential 0.5mV
Upper limit 1.0mV
The measured value is within the set range.

OK

5. Operation (cont'd)

5-4-3. Checking the measurement results

Each measurement result is saved in the following folder.

C:\HakkoCorporation\HAKKO SOLDERING SYSTEM2\System\FG101Log

The saved file will change as follows:

	☐ Save the result in the set language (text)	☒ Save the result in the set language (text)
File formats	CSV file (.csv)	Text file (.txt)
Language	English	The language set in [System Settings]
File name	check_temp_resistance_potential_Pno = *_ YYYYMMDD_hhmmss.csv	check_temp_resistance_potential_Pno = *_ YYYYMMDD_hhmmss.txt

The measurement program number will be entered in "*".

	A	B	C	
1	2024/10/08_16:18:50			
2	Set temperature	360	degrees	Temperature measurement and offset change result
3	Offset value (before change)	40		
4	Measured temperature	323	degrees	
5	Offset value (after change)	50		
6	Skip offset	FALSE		
7	2024/10/08_16:18:57			
8	Measured tip to ground resistance	1.4	ohm	Tip to ground resistance measurement results
9	Upper limit	2	ohm	
10	2024/10/08_16:19:11			
11	Measured tip to ground potential	0.3	mV	Tip to ground potential measurement results
12	Upper limit	1	mV	

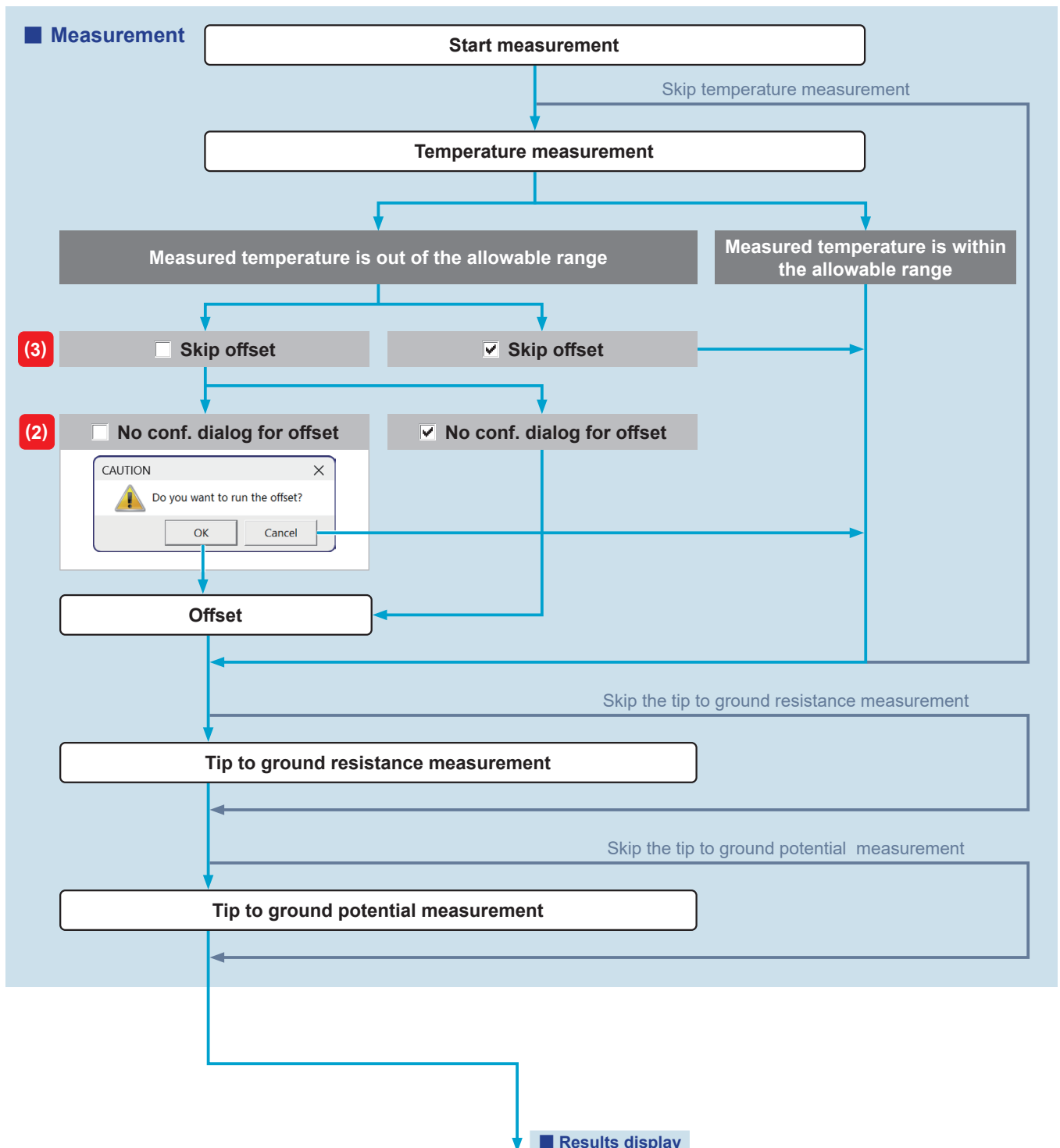
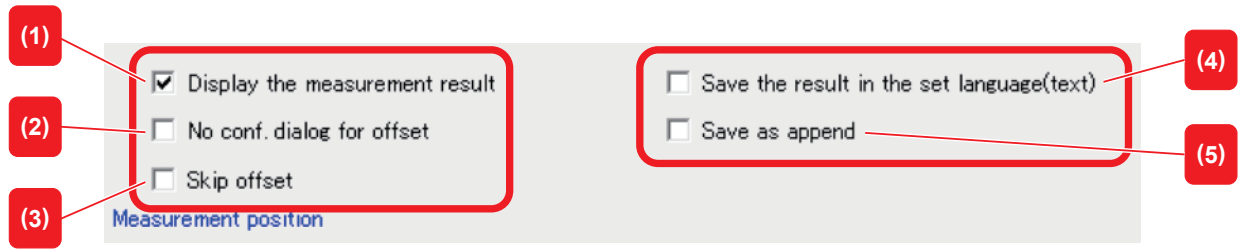
Checking [☒ **Save as append**] will save each measurement result in chronological order.

The saved file will change as follows:

	☐ Save as append	☒ Save as append
File formats		CSV file (.csv)
Language		English
File name		Temperature: temp_log.csv Tip to ground resistance: reg_log.csv Tip to ground potential: pot_log.csv

	A	B	C	D	E	F	G	H
1	Time	Set temperature	Offset value (before change)	Upper	Lower	Measured	Offset value (after change)	Skip offset
2	2024/10/7 18:46	360	50	5	5	358	No adjustment made	FALSE
3	2024/10/7 18:50	360	50	5	5	352		50 FALSE
4	2024/10/7 18:58	360	50	5	5	351		50 FALSE
5	2024/10/7 18:59	360	50	5	5	349		50 FALSE
6	2024/10/7 19:04	360	50	5	5	345		50 FALSE
7	2024/10/8 15:03	360	50	5	5	332	No adjustment made	FALSE
8	2024/10/8 15:06	360	50	5	5	340	No adjustment made	FALSE

5-4-4. Operation flow by measurement settings



5. Operation (cont'd)

Results display

(1)

☒ Display the measurement result

NOTICE

Set temperature : 360 °C
 Offset value (before change) : 50
 Measured temperature : 341 °C
 Offset value (after change) : 50
 Measured tip to ground resistance 1.3Ω
 Upper limit 2.0Ω
 The measured value is within the set range.
 Measured tip to ground potential 0.5mV
 Upper limit 1.0mV
 The measured value is within the set range.

OK

Temperature
measurement and
offset change result

Tip to ground
resistance
measurement results

Tip to ground potential
measurement results

*Only the results of the measured items are displayed.

☐ Display the measurement result

Offset temperature
If it exceeds $\pm 50^{\circ}\text{C}$

CAUTION

The value is out of the set range.
Please check the soldering iron.

OK

Offset temperature
If it does not exceed $\pm 50^{\circ}\text{C}$

Save

Save measurement results

(4)

☐ Save the result in the set language (text)

	A	B	C	D
1	2024/10/08_16:18:50			
2	Set temperature	360 degrees		
3	Offset value (before change)	40		
4	Measured temperature	323 degrees		
5	Offset value (after change)	50		
6	Skip offset	FALSE		
7	2024/10/08_16:18:57			
8	Measured tip to ground resistance	1.4 ohm		
9	Upper limit	2 ohm		
10	2024/10/08_16:19:11			
11	Measured tip to ground potential	0.3 mV		
12	Upper limit	1 mV		

CSV file (.csv) / English

☒ Save the result in the set language (text)

	A	B	C	D
1	2024/10/08_16:18:50			
2	Set temperature	360 degrees		
3	Offset value (before change)	40		
4	Measured temperature	323 degrees		
5	Offset value (after change)	50		
6	Skip offset	FALSE		
7	2024/10/08_16:18:57			
8	Measured tip to ground resistance	1.4 ohm		
9	Upper limit	2 ohm		
10	2024/10/08_16:19:11			
11	Measured tip to ground potential	0.3 mV		
12	Upper limit	1 mV		

Text file (.txt) / System setting language

(5)

☒ Save as append

Temperature

Tip to ground resistance

Tip to ground potential

CSV file (.csv) / English

☐ Save as append

Save to folder

6. Maintenance



CAUTION

Turn the power off and unplug the power cord before inspecting or replacing any internal components.

■ Sensor

- Excessive solder buildup on the sensor can cause the soldering tip to press the sensor, potentially damaging it or preventing accurate temperature measurements. Remove excess solder using a solder wick or desoldering tool.
- The longevity of the sensor will vary depending on the temperature at which measurements are made and the type of solder and flux being used. Replace the sensor as soon as the measuring point wears out.

■ Conduction plate

- Solder accumulates in the conduction plates during routine measurements. If too much solder accumulates, the soldering iron may get caught and cause a malfunction, or the conduction plate or tip may be deformed.
Remove excess solder from the conduction plate with a solder wick or desoldering tool.

■ Probe fixing plate

- If there is solder debris or flux on the probe fixing plate, it may not be possible to fix the component correctly. Wipe off any solder debris or flux on the surface of the fixing plate.

■ Tester

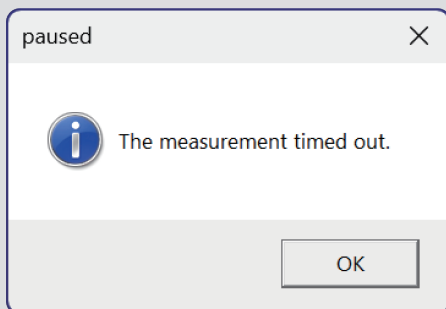
- HAKKO can calibrate the tester for a nominal fee. Please contact your dealer for further information.

7. Troubleshooting

CAUTION

Turn the power off and unplug the power cord before inspecting or replacing any internal components.

The following dialog will be displayed.



Is the tester or station turned on?

► Turn on the tester and station.

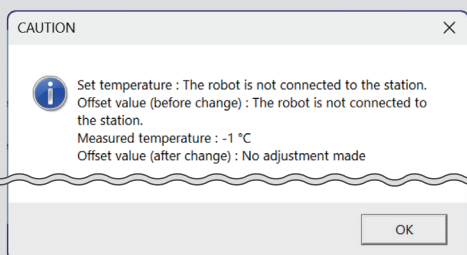
Is the tester's connection cable loose or disconnected?

► Reconnect the connection cable.

Is the COM port set to "COM7"?

► Set the COM port to "COM7".

The following dialog will be displayed.

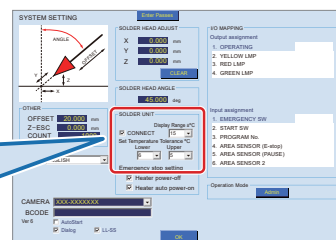
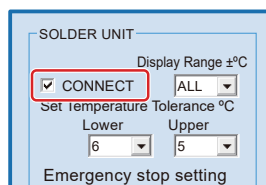


Is the station's connection cable loose or disconnected?

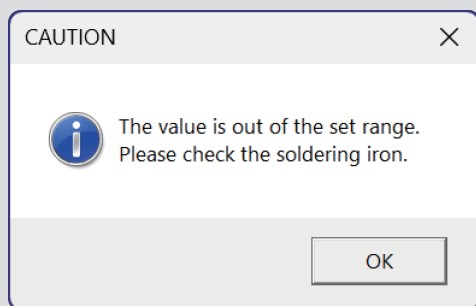
► 1. Reconnect the station's connection cable.
2. Turn the station power back on and check if communication is possible.

Is [CONNECT] checked in [System Settings]?

► Check the box.



The following dialog will be displayed.



The station offset adjustment range has been exceeded.

*Station offset has been performed with maximum/minimum values.

Is the tip worn out?

► Replace the tip with a new one.

Does the length of the iron cable match the station parameter setting **[Cable length setting]**?

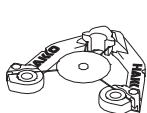
► Check the station parameter settings.

If you cannot find a solution in this manual, or if another problem occurs, please contact the distributors where you purchased the product.

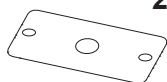


部品リスト／Parts List／零件清单

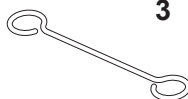
図番 Item No. 图号	品番 Part No. 部件编号	部品名	Part Name	部件名称
1	AS5000	センサー／ 鉛フリー対応 校正付き	Sensor/ lead-free with certificate of conformance	传感器／ 可对应无铅焊锡 具备 COC 符合 性证明书
2	B1752	伝導プレート	Conduction plate	传导板
3	B1950	伝導ワイヤー	Conduction wire	传导线
4	BX1124	プローブ固定板	Probe fixing plate	探头固定板
5	B5129	USB ケーブル	USB cable	USB 线
6	BX1125	USB コンバーター	USB converter	USB 转换器



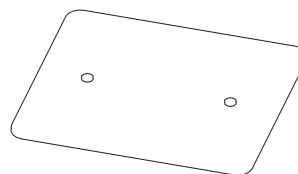
1



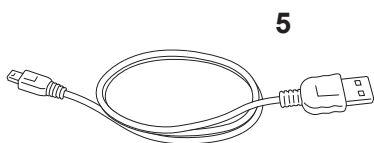
2



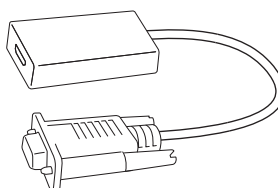
3



4



5



6



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