

THERMOMETER

FG-102

Instruction manual



Thank you for purchasing the HAKKO FG-102 Thermometer.
This thermometer can transfer the following data to PC making them into one file.
And it can set up some particular temperature setting groups
to determine temperature ranges.
Please read this manual before operating the HAKKO FG-102.
Keep this manual readily accessible for reference.



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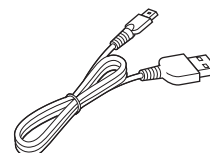
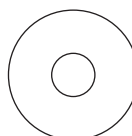
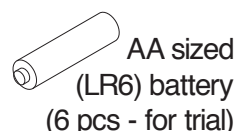
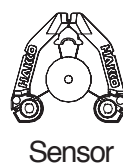
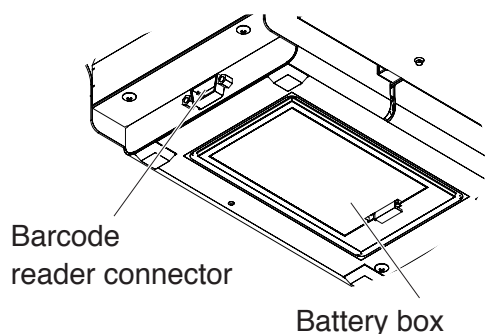
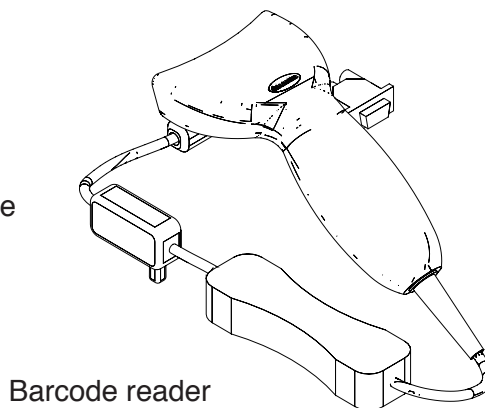
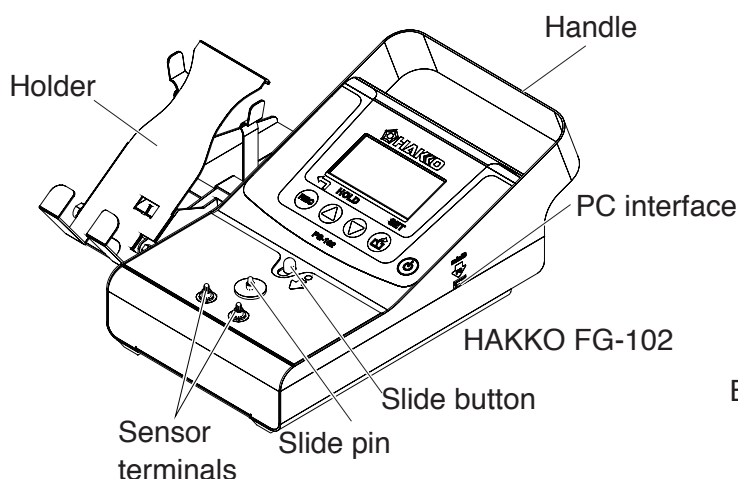
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1. PACKING LIST AND PART NAMES

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

HAKKO FG-102	1
Barcode reader	1
USB cable	1
Software (CD-ROM)	1
Sensor	1

AA sized (LR6) battery (6 pcs for trial)	6
Barcode seal (For Unit ID 30 sheets)	1
Barcode seal (For Measurer ID 30 sheets)	1
Instruction manual	1



Barcode seal
(For Unit ID)



Q10001



Barcode seal
(For Measurer ID)

M10001

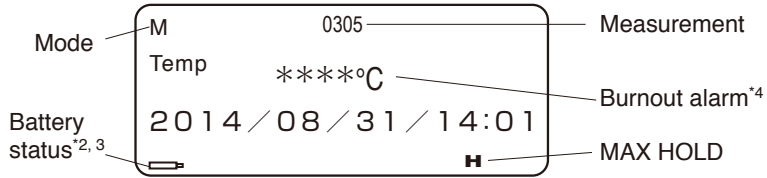


※ 各言語（日本語、英語、中国語、フランス語、ドイツ語、韓国語）の取扱説明書は以下のURL、HAKKO Document Portal からダウンロードしてご覧いただけます。
（商品によっては設定の無い言語がありますが、ご了承ください。）
* 各國語言（日語、英語、中文、法語、德語、韓語）的使用說明書可以通過以下網站的HAKKO Document Portal 下載參閱。
（有一部分的產品沒有設定外語對應、請見諒）
* Instruction manual in the language of Japanese, English, Chinese, French, German, and Korean can be downloaded from the HAKKO Document Portal.
（Please note that some languages may not be available depending on the product.）




<https://doc.hakko.com>

2. SPECIFICATIONS

	Celsius type	Fahrenheit type
Model name	HAKKO FG-102	
Resolution	1°C	1°F
Temperature measurement range	0 - 700°C ^{*1}	32 - 1,300°F ^{*1}
Applicable sensor	K (CA) type thermocouple	
Measurement tolerance	±3°C (between 300 and 600°C) ±5°C (Other than above)	±6°F (between 572 and 1,112°F) ±10°F (Other than above)
Display	Besides measured temperatures, display indications include the following: 	
Power supply	AA sized (LR6) battery × 6 (alkaline cell recommended)	
Outline dimensions	193 (W) × 90 (H) × 219 (D) mm (w/o barcode reader)	
Weight	0.93 kg (w/o batteries, bar code reader)	
Length of cord (Barcode reader)	2 m	
Length of the USB cable	1.1 m	
USB type	A-miniB	
Operating environment	Ambient Temperature/Humidity Range: 0 to 40°C (32 to 104°F), max.80% RH (without condensation)	
Environmental conditions	Applicable rated pollution degree 2 (according to IEC/UL61010-1)	

*1 Sensor can only be used to measure temperatures below 500°C (932°F).
To measure higher temperatures, use an applicable temperature probe.

*2  is blinking: The batteries are low. Prepare new batteries.

*3  will be always shown: The battery is depleted and must be replaced.

*4 If the sensor burns out, the burn-out will be indicated. Once the indication occurs, replace the sensor with new one.

The specifications may be subject to change without notice.

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. Two examples are given below.

NOTE : A NOTE indicates a procedure or point that is important to the process being described.

⚠ CAUTION

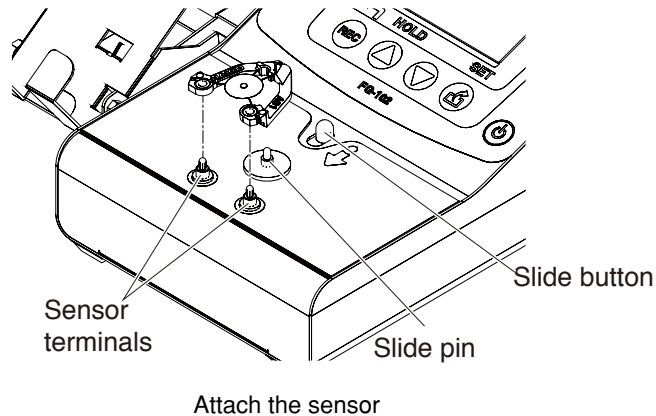
- When using the thermometer to measure the temperature of the soldering iron tip or de-soldering nozzle, pay great attention to the temperature of the tip or nozzle that will be as high as 200 to 450°C (392 to 842°F). Careless handling of such a hot object may result in a burn or fire.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

4. INITIAL SETUP

A. Preparation of the HAKKO FG-102 side

● Attach the sensor that comes with the equipment.

1. Press the slide button. The slide pin will move toward the terminal.
2. With the slide pin moved toward the terminal, attach the sensor.
3. When attaching the sensor, fit the red-marked side to the red-indicated terminal and the blue-marked side to the blue-indicated terminal.

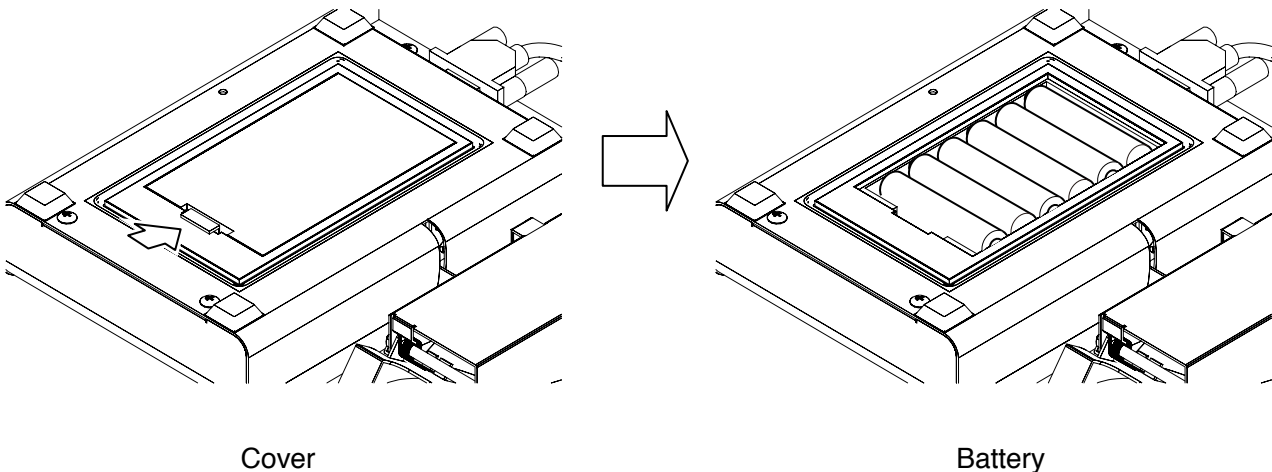


● Set the batteries.

Put six pieces of size AA batteries in the battery box.

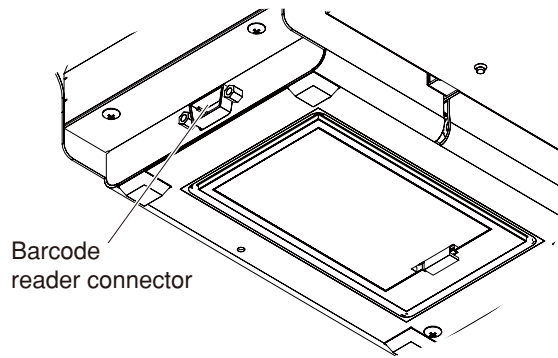
⚠ CAUTION

- Make sure the polarity.
- Avoid any mixed use of new and old batteries.
- While NiCad and nickel metal hydride rechargeable batteries may be used, they last shorter heat generation and(or) liquid spill. Use of alkaline batteries is recommended than NiCad batteries.
- When replacing the batteries, the data saved on the main body will not be lost.



● Connect barcode reader

Connect barcode reader to the D-subminiature and fix the screws.



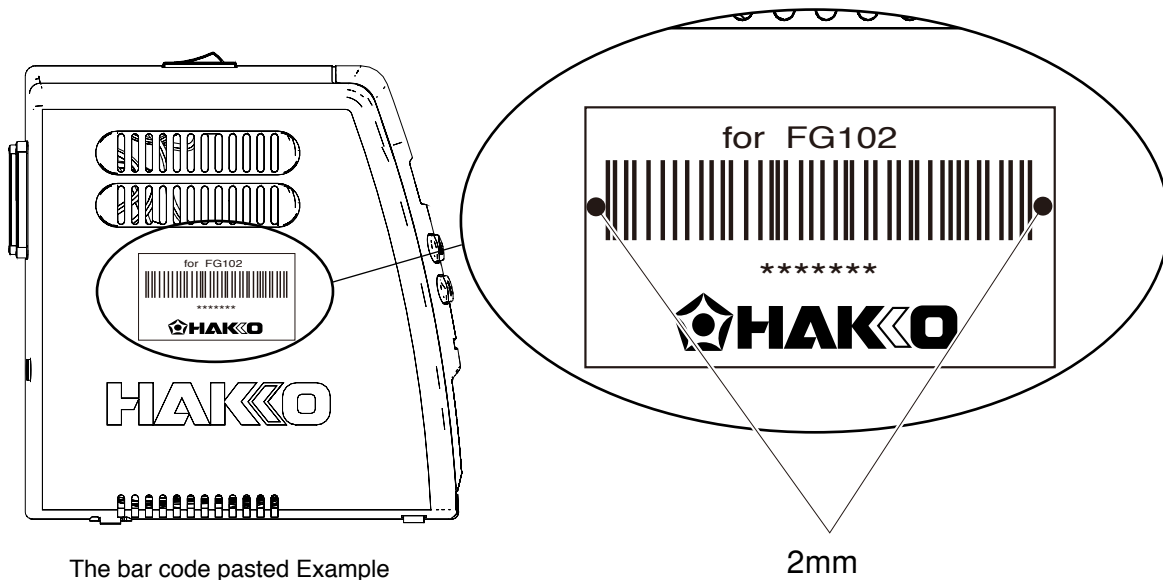
Connecting barcode reader

B. Preparation on the soldering iron side

Stick the barcode that comes with the equipment or a printed one to the soldering iron station or the iron. When sticking the barcode to a unit, be careful of the following points.

⚠ CAUTION

- Select a flat surface and avoid any curved surface wherever possible when sticking the barcode seal.
- The barcode itself should be 2.5 mm wide or over.
- There should be a margin of 2 mm or over on both ends of the barcode, as shown on the figure.
- Do not use metallic luster for the background when making a barcode seal.
- Do not cover the barcode with lustrous or reflective tape or anything like that.



The bar code pasted Example

2mm

■ ID barcode specifications

ID barcode specifications

Barcode types : CODE 39、Check digit ○

Barcode format

Equipment ID : Number of initials "0 (Zero)" + 5 digits

Measurer ID : Number of initials "M" + 5 digits

* The following shows the readable barcode resolution and distance.

(One mil equals to 1/1000 in. and a width of 4 mil is approximately 0.1 mm wide)

Resolution	Distance
4 mil	30 - 90 mm
5 mil	30 - 105 mm
7.5mil	10 - 180 mm
10 mil	10 - 220 mm
13 mil	10 - 280 mm
20 mil	10 - 360 mm

C. Preparation on PC

● Confirmed operating environment

The operation of the accompanying software has been confirmed in the following environment:

- 1) OS:Windows 7 Professional Service Pack1
CPU:Intel Core i3-3110M 2.40Hz 4.0GB RAM
- 2) OS:Windows 8
CPU:Intel Core i3-2370M 2.40Hz 4.0GB RAM

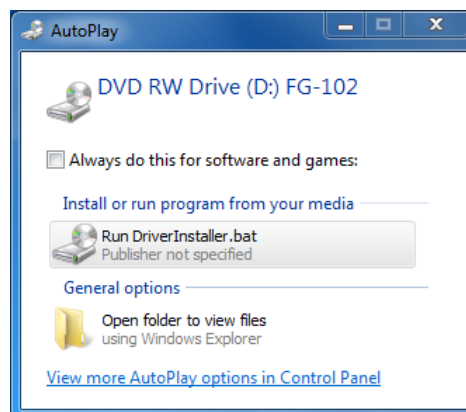
● Connection with PC

- Installing driver software

To connect FG-102 with a PC, installation of the driver software is required.
Please carry out installation from the accompanying CD.

* Installation requires Administrator's privileges.

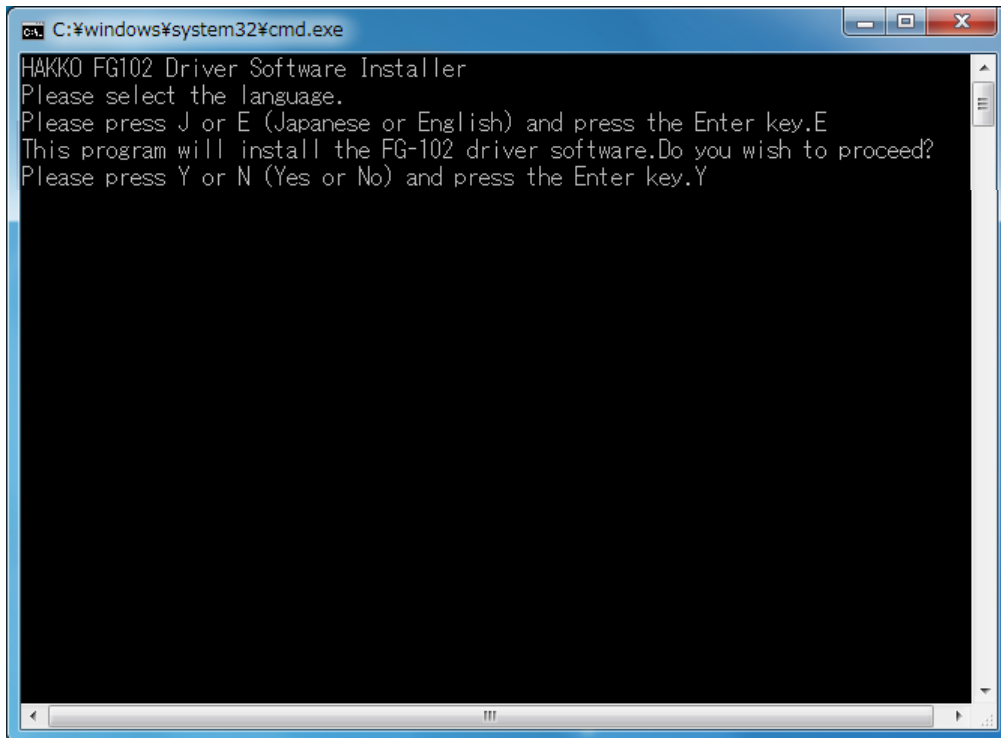
1. Please insert the accompanying CD-ROM into the CD-ROM drive of the PC.
2. Select **Run DriverInstaller .bat**.



AutoPlay confirmation window

The following window appears.

3. Select the language and press the Enter key.
4. Enter Y and press the Enter key.



Starting DriverInstaller

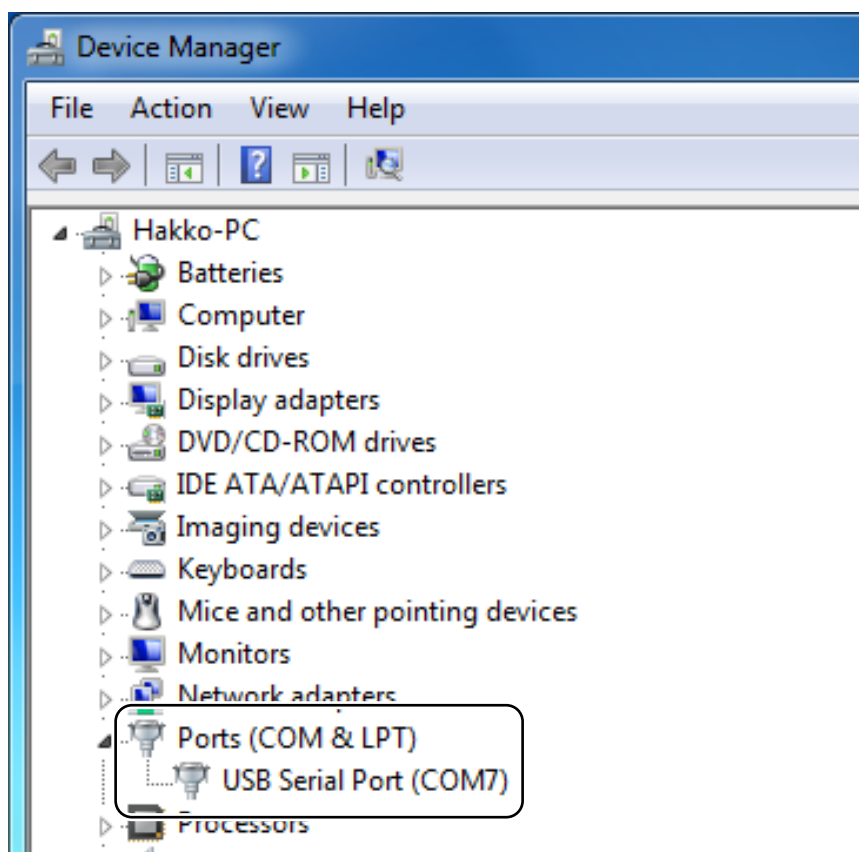
5. Wait until the driver is installed.

* If no window appears or the window was closed, double-click DriverInstaller located in the CD-ROM to start it.

- Connect the HAKKO FG-102 and the PC
 1. Turning on the power of HAKKO FG-102
 2. Connect it with the PC.

Wait until FG-102 is recognized by the PC. This step may take several minutes.

3. Open the Device Manager and make sure that the driver has been installed.



Checking Device Manager

* The COM number may differ from the one shown in the picture below.

The latest version of the driver software can be downloaded from Cypress's web site.

Cypress's web site <http://www.cypress.com/>

User registration to Cypress.com is required for downloading.

● Installing PC software

Communicate with the equipment and install a piece of software to save the data.

1. Open the CD-ROM that comes with the equipment and copy a folder named "PC communication software" to the PC.
2. Open the folder and double-click "FG102_DataSave.exe" to confirm that the software starts up.

⚠ CAUTION

In the process, a file "FG102.ini" will be created. Since the file is necessary for that software, donot delete it.

* If the software on the PC will not run

"The configuration of this application incorrect, it was not able to start the application. There are cases where the issue is resolved by installing the application again. ", "****. Dll can not be found."

If the display such as leaves, the following software to the Microsoft home page Download from, please install.

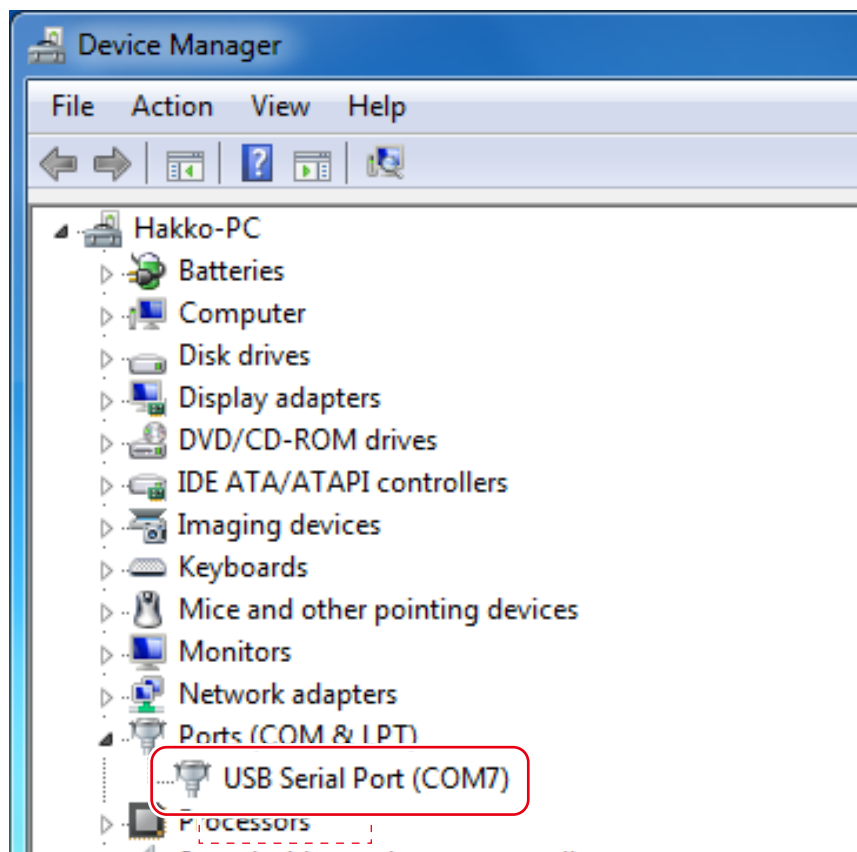
- Microsoft Visual C++ 2010 Redistributable Package
- Microsoft .NET Framework 4 Redistributable Package

Microsoft web site : <http://www.microsoft.com/>

● **Take note of the COM number.**

- * Once the COM number is set, the set number is recorded. You can safely close the software.
- * Please note that, in the case where more than one units of the equipment, the number may differ from unit to unit.
- * Do not connect more than one unit at the same time.
- * If you change the PC, the number will change. So please be careful.

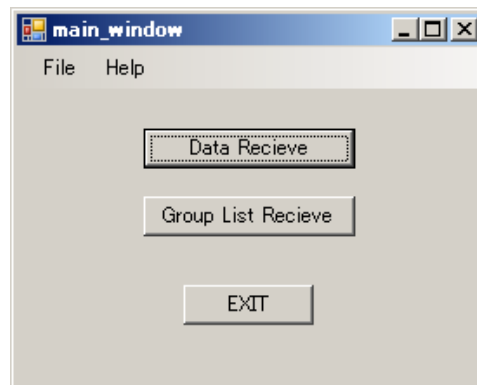
1. Connect the FG-102 and the PC with a cable.
2. Open the COM port tab from device manager of the PC.



Device Manager

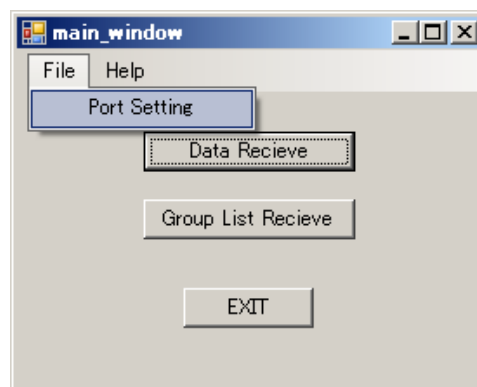
3. Make a memo of the number shown on the red-marked Cypress serial (COM**).
(7 for the case shown above)

4. Double click the software “FG102_DataSave.exe” and start it.

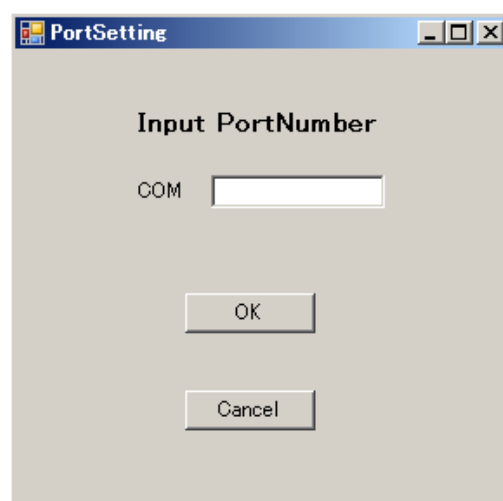


Start screen of the software

5. Select File-Port Setting and open it.



Select Port Setting



Screen of Port Setting

6. Input your written number for COM and press OK button.

A screenshot of a Windows-style dialog box titled "PortSetting". The dialog has a light gray background and a blue title bar. Inside, the text "Input PortNumber" is centered. Below it, the label "COM" is followed by a text input field containing the number "8". At the bottom, there are two buttons: "OK" and "Cancel".

PortSetting

Input PortNumber

COM 8

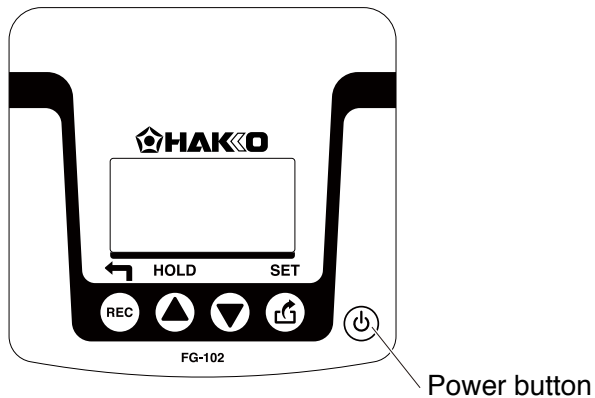
OK

Cancel

Input the port number

5. OPERATION

Control buttons



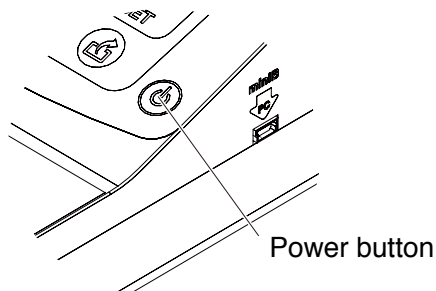
This unit has the following four (4) buttons. The major functions are as shown below:

- Ⓡ - recording data / going back to previous screen
- ▲ - scrolling displayed data; changing a value/MAXHOLD
- ▼ - scrolling displayed data; changing a value
- ◻▲ - data transmission / determination of setting values

Operation

1. Turn the power switch ON.

Press the power button on the right-hand side of the main body.



Screen Just after the power switch is on

Just after the power switch is on, above screen is shown for a certain period.

■ Power save/Auto shut-off

To reduce the battery power consumption, the device may enter into the state of power save/auto shut-off after elapse a certain period of time. In the power save state, while the contents being edited in the Setting mode are retained, they will be lost once the device is shut down.

- **In case of the measurement mode**

If there is no temperature input exceeding 100°C (212°F) for a period of 3 minutes or over, or no operation of button, the device will be powered OFF. You will be notified by the buzzer beeping 30 seconds before the powering OFF.

- **In case of other than the measurement mode**

If there is no input, ID reading, button operation, etc. for a period of 3 minutes or over, the device will enter into the state of power save.


* In the recording mode, if the device has transitioned to the power save state after temperature measurement, it will automatically save the data.

If no recovery occurs in 3 minutes after the entry into the power save state, the device will be powered OFF.

NOTE :

With any particular temperature input or button operation, the buzzer will stop beeping and the countdown will be reset.

Recovery from the power save mode

Pressing the  (SET) button causes the recovery from the power save mode.

Power save
Press SET button
to activate


Screen Power save

● Overview of modes

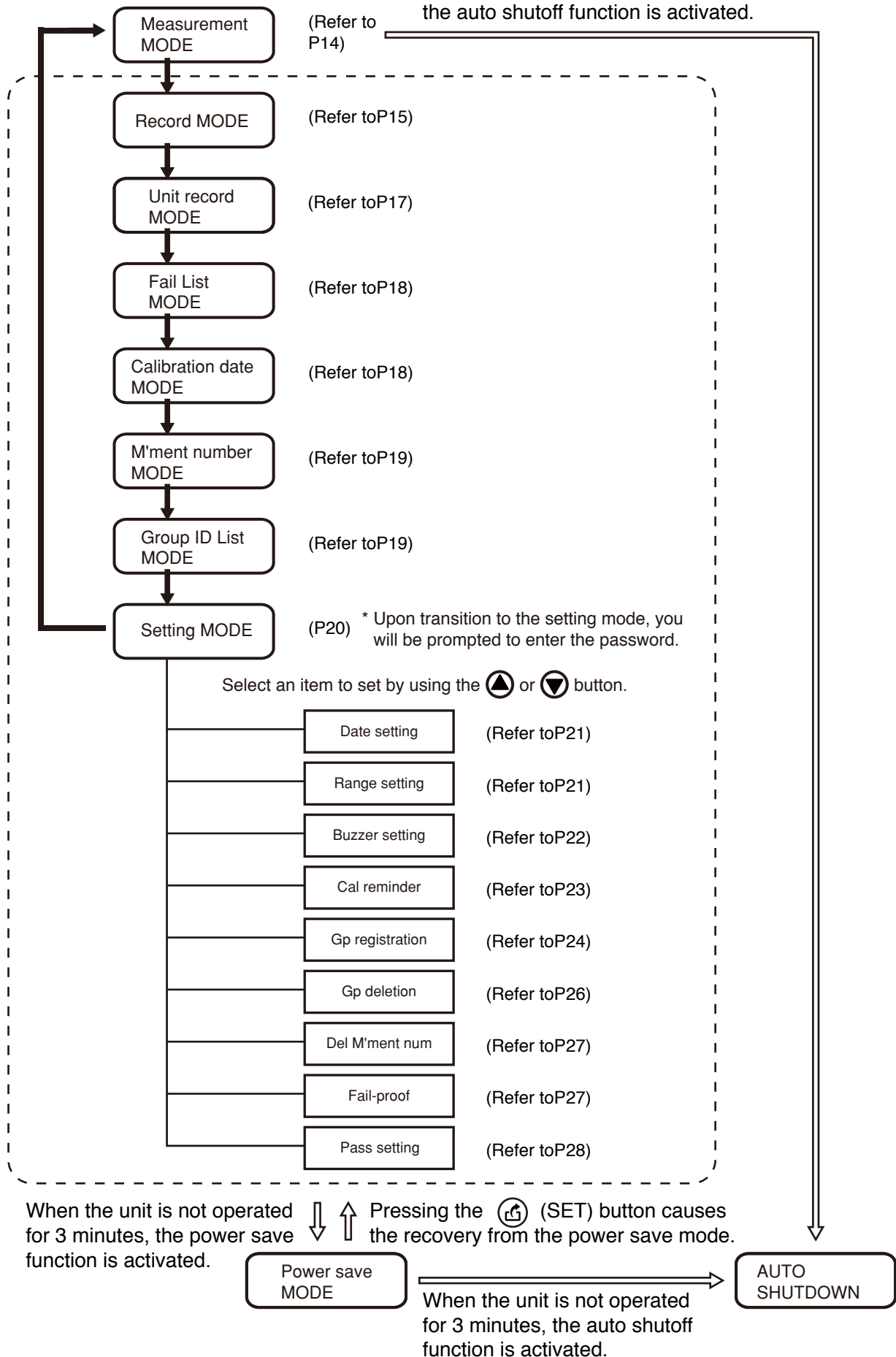
This product has the following modes:

- | | |
|-----------------------|---|
| Measurement mode | - This is a mode of an ordinary thermometer. |
| Recording mode | - In linkage with the barcode reader, it records temperature data. |
| Unit record mode | - Used to view data for each unit. |
| Fail List mode | - Used to view data that proved a fail through the temperature range judgment. |
| Calibration date mode | - Displays the thermometer calibrated date and scheduled date of calibration. |
| M'ment number mode | - Displays the cumulative rounds of measurement. |
| Group ID List mode | - Displays IDs registered for each group. |
| Setting mode | - Used to set a variety of settings of this product.
(Protected by password) |

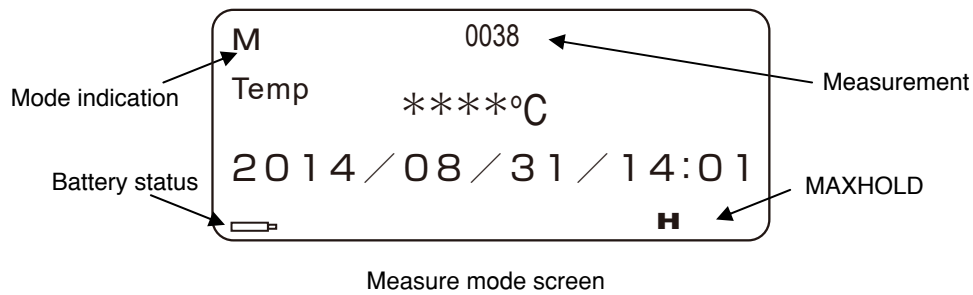
● Operation menu

Press the  button to change the MODE.

When the unit is not operated for 3 minutes, the auto shutoff function is activated.

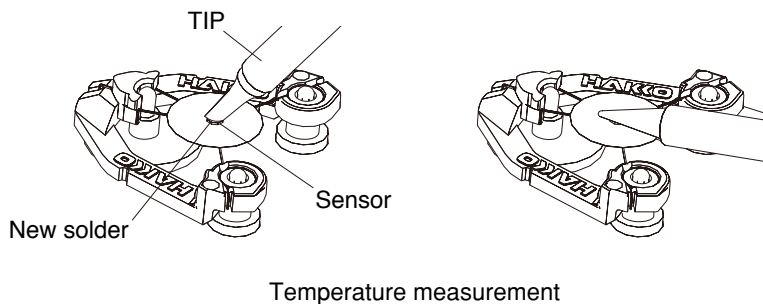


A. Temperature measurement MODE



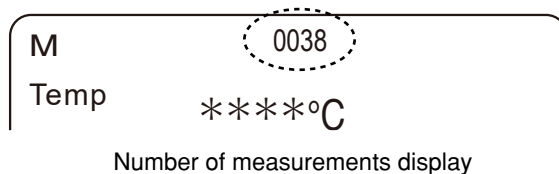
● Measurement of the iron tip temperature

1. With new solder stuck on the iron tip, bring it into contact with the temperature measurement section of the sensor.
2. Wait for the temperature to stabilize.



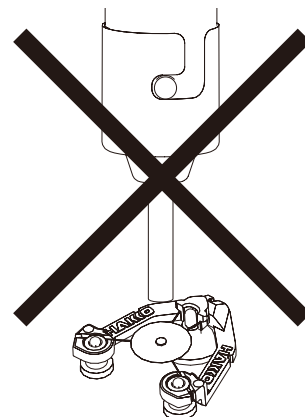
NOTE :

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




⚠ CAUTION

- 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.
- Wipe off any flux deposited on the terminal with alcohol. (Do not use thinner or benzine.)
- Handle the sensor with care. Inadvertent handling may break the K (CA) type thermocouple as it is as thin as 0.2 mm in diameter.
- Do not directly blow any hot air to FG-102 for the measurement. Otherwise, FG-102 main body may be broken.



■ MAXHOLD function

Pressing the  button causes “H” icon to appear on the lower right corner of the screen. In that state, the maximum temperature will be always displayed.

- When short-pressed (for less than 2 seconds)


While, in the MAXHOLD state, the screen always shows the MAX temperature alone, once the button is pressed for a short time, the indicated value will be reset once and the new MAX temperature after the press of the button will be shown thereafter.

- When long-pressed (for 2 seconds or over)


The MAXHOLD function will be released and the screen will return to the normal display.

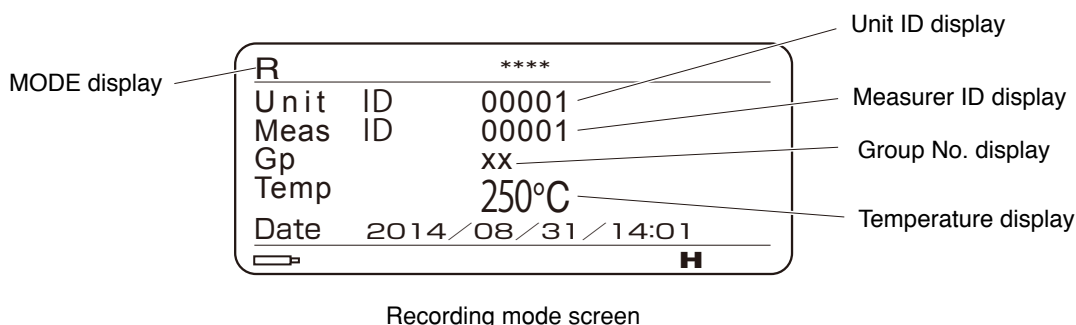
(“H” icon will not be shown any more.)

NOTE :

- When set to OFF once the power, it will return to the normal display the next time the power is turned on.
- If there is no update of the temperature, or when 30 seconds elapse since the  button has been last pressed, the function will be automatically released.

B. Recording MODE

The unit ID scan or pressing the  button in the measurement mode causes the transition to this mode.



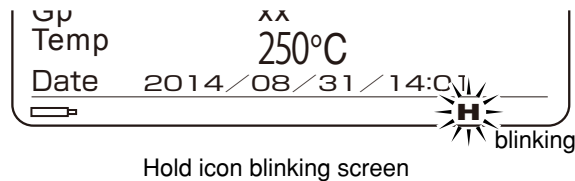
* The recorded data is possible to transfer to the PC. (Refer to P29 “6. SAVING DATA ON THE PC”)

●Recording procedure

1. Scan the unit ID by a barcode reader. This operation conducted in the measurement mode automatically causes the transition to the recording mode. The read ID will be shown in the Unit field. In the case where the group is set, the registered group No. will be displayed. If it is not registered in any group, “--” will be shown.
2. Scan the measurer’s ID by a barcode reader. The read ID is shown in the space of Meas. In the case where the measurer ID has been once read, you can skip this operation and move on to the temperature measurement. In that case, the Meas field will automatically show an ID that was read last.

3. Measure the temperature. The following shows the temperature measurement procedure in the recording mode.

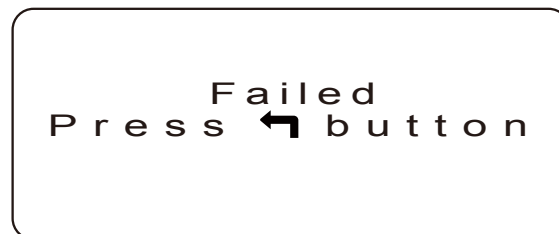
- 1) Put the iron tip into contact with the sensor. When the temperature rises, the HOLD icon starts blinking.




- 2) As the temperature stabilizes, the blink will stop and the recording will be enabled.
(Please note that it is no more than a rough indication for a guide.)

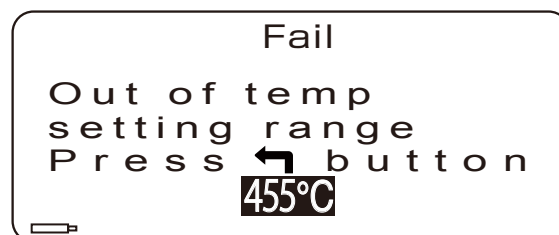
⚠ CAUTION

If you get the iron tip off the sensor before the stop of the HOLD icon blinking, it will cause a tip end-off error, disabling the recording. Allow sufficient time after the stop of the blinking before getting the iron tip off the sensor.




4. After the temperature measurement, press the REC button to save the data on the unit main body.



- * The unit can save up to 300 records of data. Any data saved beyond the 300 records overwrite the existing records starting at the first record.
- * After the recording, if the unit ID that has been read is registered in a group and the upper/lower temperature limit is exceeded, the following failure screen will be displayed. The display of the temperature value will be inverted. Pressing the  button will cause the return to the record mode screen.




- * If the Fail-proof function is set ON, once a failure is determined, no unit ID other than those failed will be accepted from the next time onward. (Refer to P27)

■ Checking the saved data

By pressing the  button after recording the temperature or immediately after the transition to the recording mode, you can view the measurement data recorded previously.

- The data may be scrolled by pressing the  or  button.
- Reading the unit ID causes the return to the recording operation.

C. Unit record MODE




In the recording mode, pressing the  button before reading the unit ID or after the temperature recording causes the transition to the Unit record mode. In this mode, you can view data for a particular unit ID out of the recorded data.

1. The unit ID selection screen will show up.

Unit record



Unit ID : * * * * *

Unit ID selection screen

2. Using the  or  button, select a number for each digit of an ID.
3. Press the  button to determine the number.

Repeat the above steps for 5 digits to determine the ID, or read the barcode of ID for the data you would like to see and determine it by pressing the  button. And the data for the ID will be displayed.

※Pressing the  button on the data display screen will bring you back to the ID selection screen.

Unit ID	00001	
Gp	xx	
Meas ID	00001	
Temp	421°C	
Date	04/17/15:10	
Meas ID	00001	
Temp	415°C	

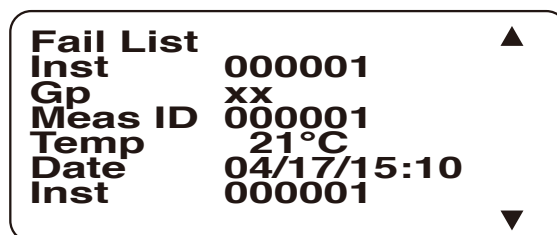
Unit data display screen

D. Fail List MODE

The screen displays the data that proved fail through the temperature range judgment.

Scroll the data by using the ▲ or ▼ button.

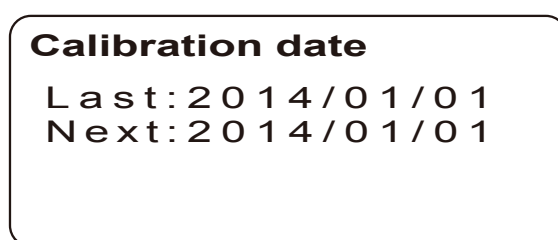
* If there is no fail data, the relevant items will be shown blank.



Fail data screen


E. Calibration date MODE

In this mode, the screen displays the last and the next calibration dates that were set in the case of the Cal reminder ON, which will be discussed later in this document. When it is OFF, “-” will be shown for the dates. (refer to P23 “Cal reminder”)



Calibration date display screen

F. M'ment number MODE

Pressing the  button again causes the transition to the M'ment number mode.

In this mode, the screen displays the temperature measurement rounds conducted in the measurement mode and recording mode.


In the measurement mode, the count will add up if the iron tip is kept in contact for a long time.

It is recommended to use it as a guide for the replacement of the sensor.



Fig.24 Display of cumulative measurement rounds

G. Group ID List MODE

Pressing the  button again causes the transition to the Group ID List mode.

This mode is intended for viewing the unit ID registered for the group.

1. Gp selection screen

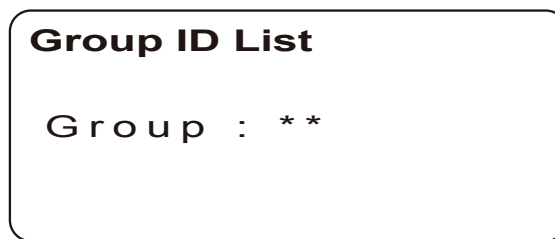





Fig.25 Gp selection screen

2. Using the  or  button, select a group No.

3. Press the  button to determine.

By the above action, the unit ID' registered for a particular group will be displayed.

Scroll the data by using the  or  button. If there is no unit ID registered for the designated group, nothing will be displayed. Pressing the  button on the GpID display screen will bring you back to the GpNo selection screen.

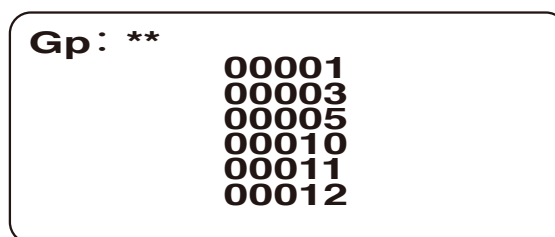


Fig.26 GpID display screen

This mode is possible transfer of the Unit ID data to the PC.



(Refer to P29 "6. SAVING DATA ON THE PC")


H. Setting MODE

This mode allows you to set a variety of settings of the thermometer.

- Password entry

Upon transition to the setting mode, you will be prompted to enter the password.

1. Using the  or  button, select a number for each digit.


2. Press the  button to determine the number.




Repeat the above steps for 4 digits to determine the password.

The initial value for the password is "0000".

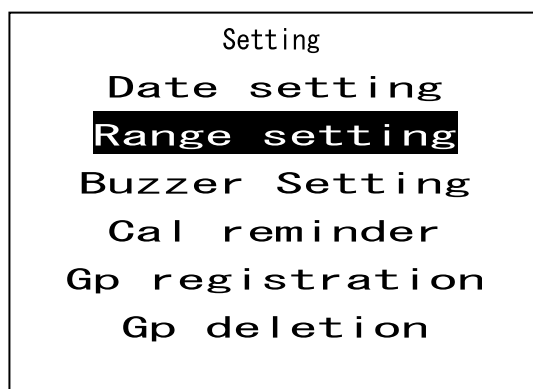
- Menu screen

Once the password is authenticated, this screen will show up.

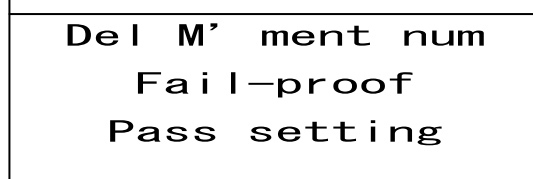
Pressing the  button will bring you back to the password entry screen.

Select an item to set by using the  or  button and press  to determine the selection.

Page 1






Page 2



"Setting" menu screen

① Setting date (Date setting)

You can set the clock in the order of year, month, day, hour and minute. The cursor will blink at the position being set.




Set the number by using the  or  button and press the  button to determine the setting.





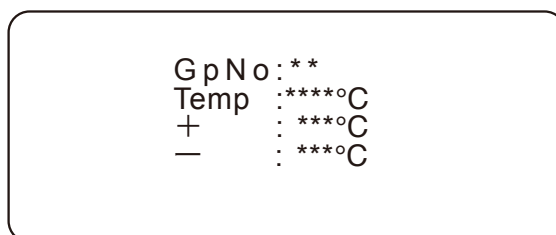
Date & time setting screen

② Setting range (Range setting)

Set the temperature setting, upper limit temperature, and lower limit temperature for each group. Set the value starting at the most significant digit of each item.

Set the number by using the  or  button and press the  button to determine the setting.

* Long-pressing the  or  button will make the number increase or decrease faster.



Setting the limits

1. Set the GpNo.
2. Set the temperature setting.
3. Set the upper limit temperature.
4. Set the lower limit temperature.

Selectable values are: 0 to 1300 for Temp and 1 to 250 for Max and Min. Min is a value in the negative direction from the temperature setting. Shown below is an example.

Example) When setting a range of $\pm 10^{\circ}\text{C}$ with the iron temperature setting of 360°C :




Temp : 360°C
+ : 10°C
- : 10°C

Example) When setting a range of $+10^{\circ}\text{C}$ and -15°C with the iron temperature setting of 380°C :

Temp : 380°C
+ : 10°C
- : 15°C

③ Buzzer ON/OFF (Buzzer Setting)

This item is used to turn ON or OFF the buzzer of the unit.

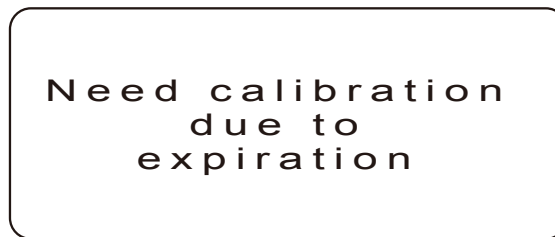
Set the number by using the  or  button and press the  button to determine the setting.






Buzzer setting

④ Next calibration date notification (Cal notification)

When this function is set ON, you will be notified as shown on the figure below when you turn on the power 14 days prior to the next scheduled calibration date.



Calibration date notification screen

Set the number by using the  or  button and press the  button to determine the setting.

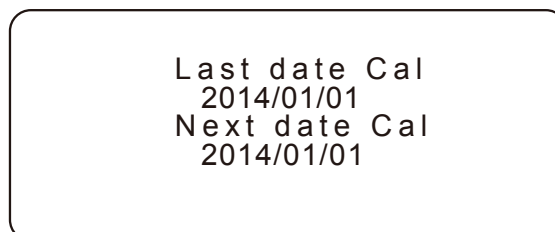


Calibration notification setting

■ When Cal notification is set ON

If ON, go on to the next calibration date setting screen.

Enter the last calibration date and the next calibration date. The method of entry is the same as with the date setting.





Next calibration date setting screen

The following cases are regarded as errors and any such date cannot be set.

- Next date Cal is earlier than Last date Cal.
- Last date Cal is ahead of the current time.
- Next date Cal is earlier than the current time.
- The date & time setting is not present on the calendar.


⑤ Group registration (Gp registration)

You can set unit IDs in each group that is set in the range setting. Pressing the  button on the new registration screen will bring you back to the setting screen.

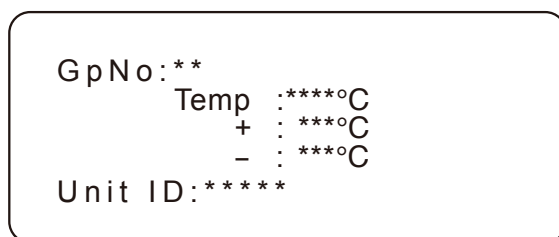
1. Select a group No. at first and press the  button to determine it.

The setting range is 01 to 20.

2. Read the unit ID with a barcode reader.

By reading the unit ID again before pressing the  button, you can change the unit ID.

3. Press the  button to determine.






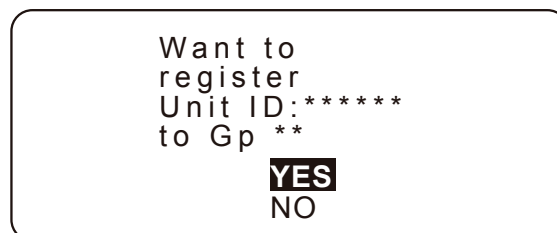
GpNo: **
Temp : ****°C
+ : ****°C
- : ****°C
Unit ID: *****

New registration screen

CAUTION


- No unit ID can be registered in multiple groups at the same time.
- Up to 99 unit IDs may be registered in a group.

4. The screen transitions to the group registration confirmation screen. Select Yes or No using the  or  button and press the  button to determine it. After the registration, the buzzer will beep.




Want to
register
Unit ID: *****
to Gp **
YES
NO

Registration confirmation

- If the entered unit ID is already registered, the following message will be shown. Press the  button to return to the “Setting” menu screen.

Unit ID:*****
is already
registered.

“ready registered” notification




- If the maximum number of unit IDs are already registered, the following message will be shown. Press the  button to return to the “Setting” menu screen.

Gp No:**
is full.

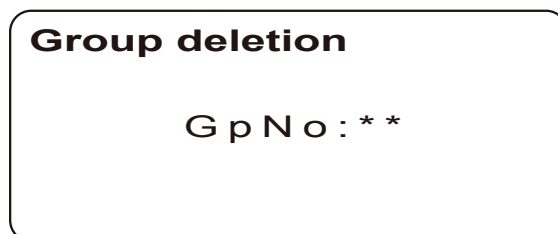
Number-of-ID limit exceeded

⑥Deleting from group(Gp deletion)

With this function, you can delete unit IDs from each group.

1. Set the number by using the  or  button and press the  button to determine the setting.

* If there is no unit ID registered for the designated group, the buzzer will beep and nothing will be displayed.




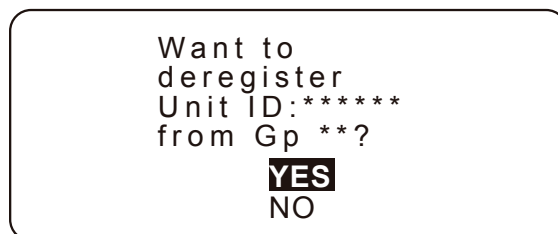
Group No. selection screen

2. Then select a unit ID to delete and press the  button.



Unit ID selection screen




3. The screen transitions to the deletion reconfirmation screen. Select Yes or No and press the  button to determine it.

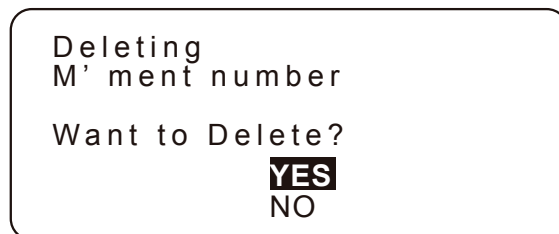


Yes/No selection screen

⑦ Resetting cumulative rounds (Del cumulative)

Reset the temperature measurement rounds to zero (0).

Set the number by using the  or  button and press the  button to determine the setting.
Select Yes to delete or No to cancel.






Cumulative rounds resetting screen

After resetting, the buzzer will beep.

⑧ Fail-proof function (FixID)

This function disables the recognition of any other unit ID if the temperature range determination has proved a fail. If the function is set ON, no unit ID other than the one that has been judged a fail is accepted for reading.

Set the number by using the  or  button and press the  button to determine the setting.



Fail-proof setting

■ Release method of fixed ID

How release of If the ID is fixed are as follows.




- Once an ID has been locked, it will not be released until the ID is judged OK.
- Turn OFF the setting to release the locked ID.

CAUTION

The state will continue on despite powering OFF the unit.

⑨ Setting password (Pass setting)

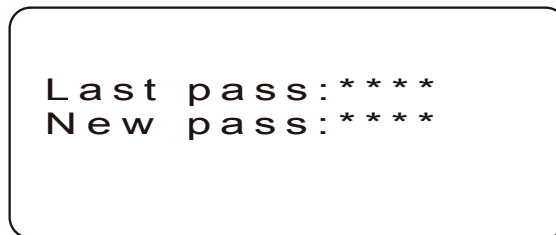
Reset the password for entering the setting mode.

1. First of all, enter the previous password (Last pass). Set the number by using the  or  button and press the  button to determine the setting.

Usable characters include numbers 0 - 9 and letters A - Z.

2. In the same manner enter the new password (New pass). Once the fourth digit has been determined, the password will be changed to the new one.

* If the last password is not correct, reentry is required.



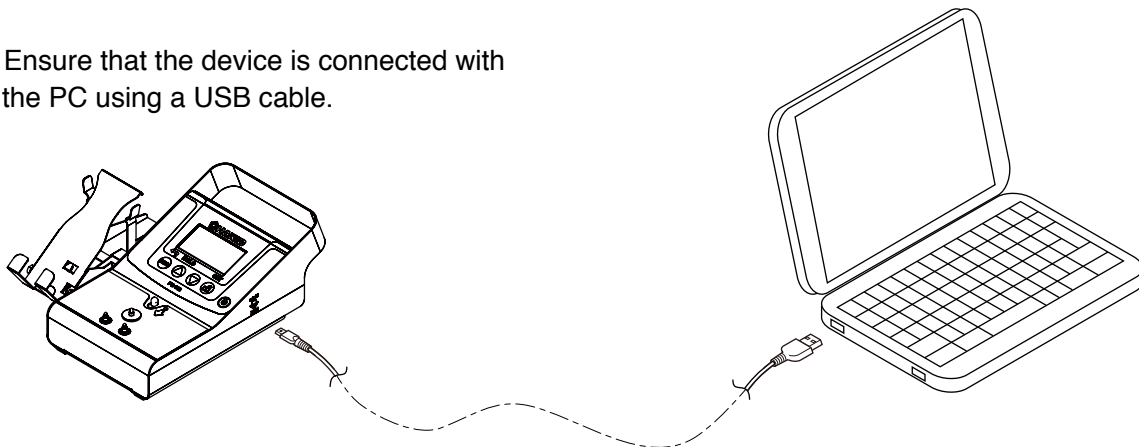
The image shows a rectangular screen with rounded corners. Inside, the text 'Last pass: ****' is displayed on the first line, and 'New pass: ****' is displayed on the second line. The asterisks represent masked characters.

Password setting screen

6. SAVING DATA ON THE PC

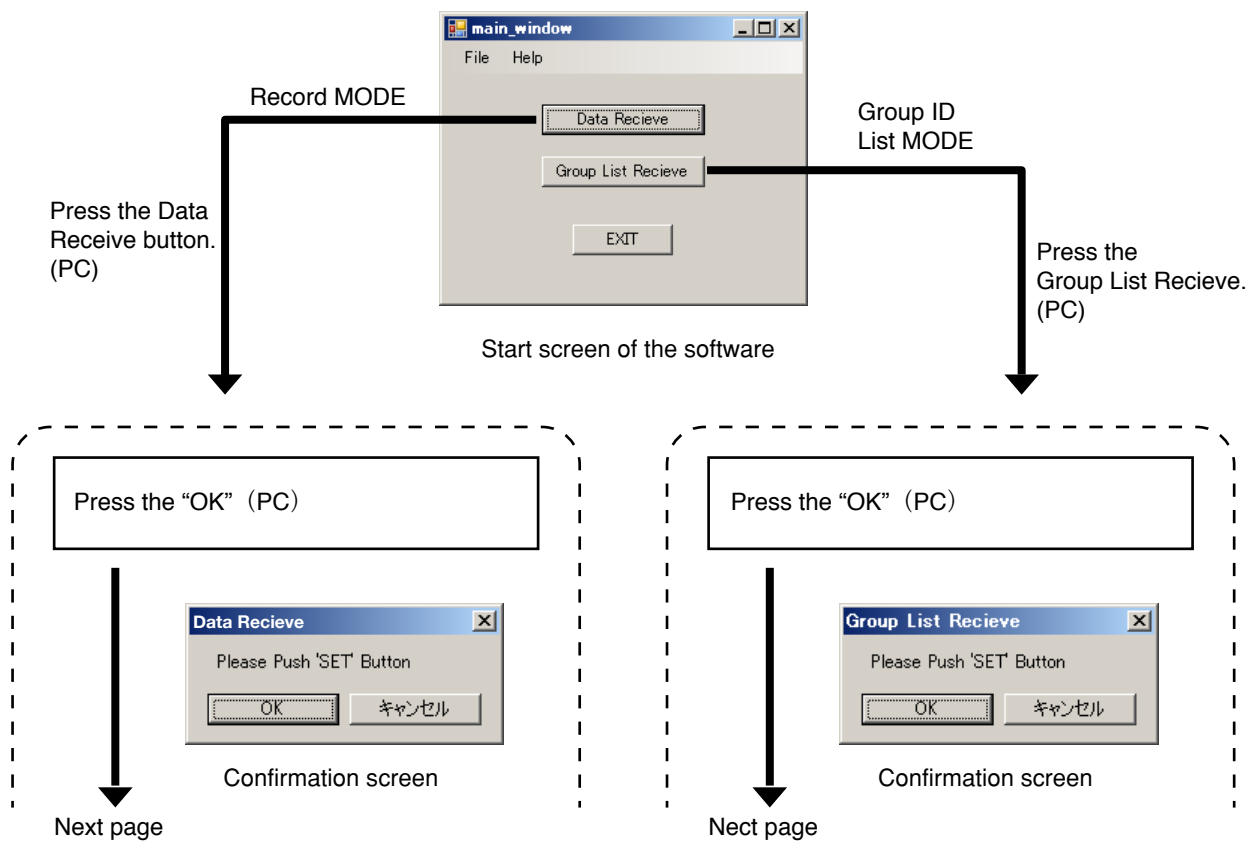
Each data recording mode and Group ID List mode, it is possible to transfer to the PC.

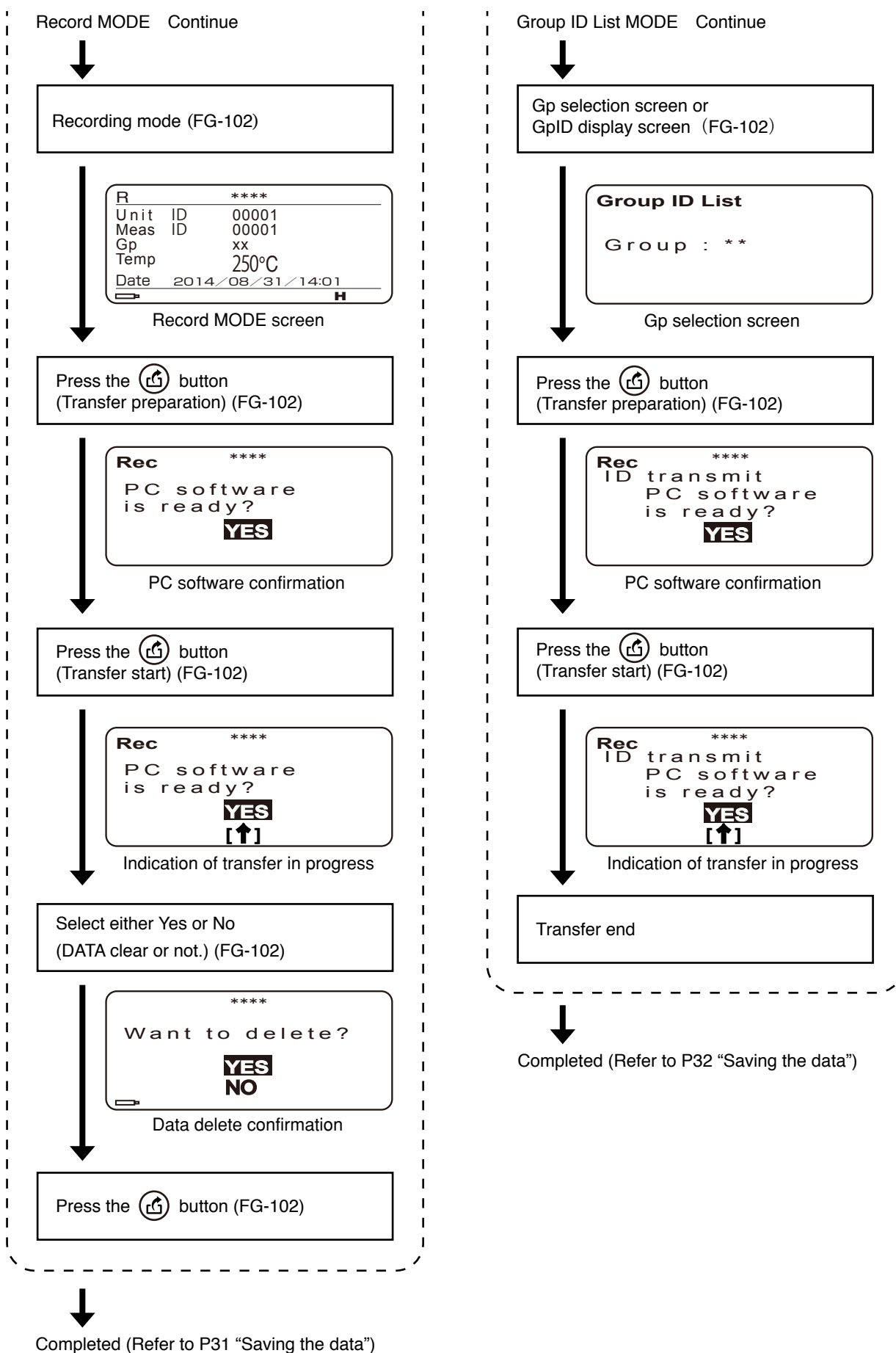
1. Ensure that the device is connected with the PC using a USB cable.



Connected to a PC

2. Double click the software “FG102_DataSave.exe” and start it.

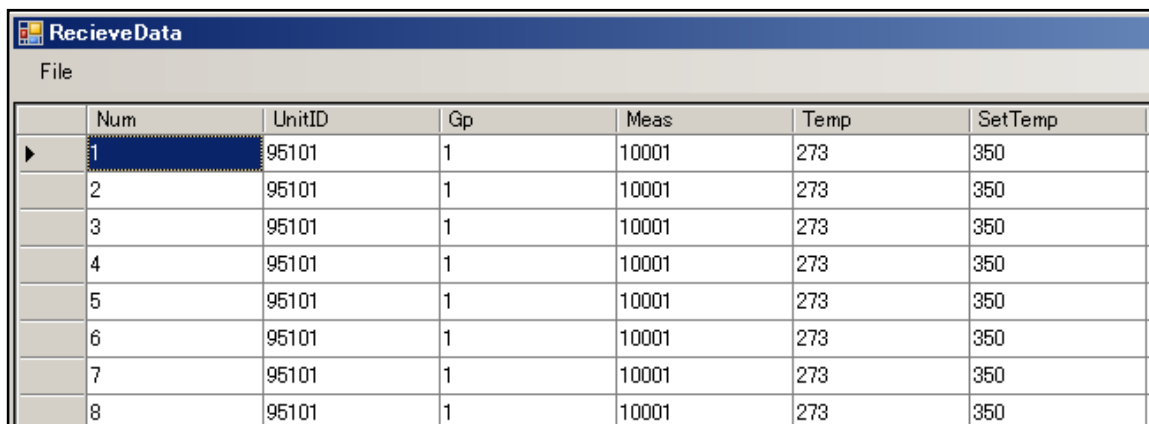




● Data received screen (Record MODE)

Once the data have been successfully transferred, the Receive Data screen as shown below will be displayed.

ReceiveData											
File	Num	UnitID	Gp	Meas	Temp	SetTemp	Month	Day	Hour	Min	OK/NG
1	95101	1	10001	273	350		25	2	25	25	NG
2	95101	1	10001	273	350		25	2	2	25	NG
3	95101	1	10001	273	350		25	2	2	25	NG
4	95101	1	10001	273	350		25	2	2	25	NG
5	95101	1	10001	273	350		25	2	2	25	NG
6	95101	1	10001	273	350		25	2	2	25	NG
7	95101	1	10001	273	350		25	2	2	25	NG
8	95101	1	10001	273	350		25	2	2	25	NG
9	95101	1	10001	273	350		5	25	2	25	NG
10	95101	1	10001	273	350		5	25	2	25	NG
11	95101	1	10001	273	350		5	25	2	25	NG
12	95101	1	10001	273	350		5	25	2	25	NG
13	95101	1	10001	273	350		5	25	2	25	NG
14	95101	1	10001	273	350		5	25	2	25	NG
15	95101	1	10001	273	350		5	25	2	25	NG
16	95101	1	10001	273	350		5	25	2	25	NG
17	95101	1	10001	273	350		5	25	2	25	NG
18	95101	1	10001	273	350		5	25	2	25	NG
19	95101	1	10001	273	350		5	25	2	25	NG
20	95101	1	10001	273	350		5	25	2	25	NG

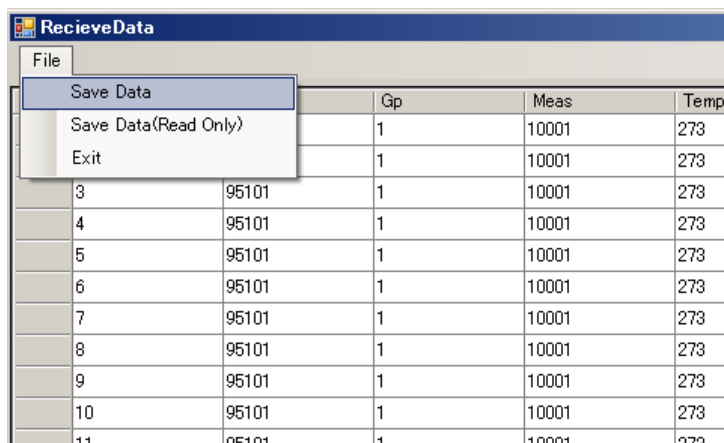


File	Num	UnitID	Gp	Meas	Temp	SetTemp
1	95101	1	10001	273	350	
2	95101	1	10001	273	350	
3	95101	1	10001	273	350	
4	95101	1	10001	273	350	
5	95101	1	10001	273	350	
6	95101	1	10001	273	350	
7	95101	1	10001	273	350	
8	95101	1	10001	273	350	

RecieveData screen

● Saving the data (Record MODE)

- Select 'File - Save Data' on the RecieveData window.
 - Select 'File - Save Data(Read Only)' on the ReceiveData window.
- (You can save the data with read-only protection.)



File	Num	UnitID	Gp	Meas	Temp
1	95101	1	10001	273	
2	95101	1	10001	273	
3	95101	1	10001	273	
4	95101	1	10001	273	
5	95101	1	10001	273	
6	95101	1	10001	273	
7	95101	1	10001	273	
8	95101	1	10001	273	
9	95101	1	10001	273	
10	95101	1	10001	273	
11	95101	1	10001	273	

The data saving window will open.
Enter the file name in the filename field and press the Save button.

Save Data selection

● Data received screen (Group ID List MODE)

Once the data have been successfully transferred, the Receive Data screen as shown below will be displayed.

GpNum	SetTemp	MaxTemp	MinTemp	InstId1	InstId2	InstId3	InstId4	InstId5	InstId6
1	0	0	0	95001	95002	95003	95004	95005	95006
2	0	0	0	95101	95102	95103	95104	95105	95106
3	0	0	0	95201	95202	95203	95204	95205	95206
4	0	0	0	95301	95302	95303	95304	95305	95306
5	0	0	0	95401	95402	95403	95404	95405	95406
6	0	0	0	95501	95502	95503	95504	95505	95506
7	0	0	0	95601	95602	95603	95604	95605	95606
8	0	0	0	95701	95702	95703	95704	95705	95706
9	0	0	0	95801	95802	95803	95804	95805	95806
10	0	0	0	95901	95902	95903	95904	95905	95906
11	0	0	0	95001	95002	95003	95004	95005	95006
12	0	0	0	95101	95102	95103	95104	95105	95106
13	0	0	0	95201	95202	95203	95204	95205	95206
14	0	0	0	95301	95302	95303	95304	95305	95306
15	0	0	0	95401	95402	95403	95404	95405	95406
16	0	0	0	95501	95502	95503	95504	95505	95506
17	0	0	0	95601	95602	95603	95604	95605	95606
18	0	0	0	95701	95702	95703	95704	95705	95706
19	0	0	0	95801	95802	95803	95804	95805	95806
20	0	0	0	95901	95902	95903	95904	95905	95906

GpNum	SetTemp	MaxTemp	MinTemp	InstId1	InstId2	InstId3	InstId4	InstId5	InstId6
1	0	0	0	95001	95002	95003	95004	95005	95006
2	0	0	0	95101	95102	95103	95104	95105	95106
3	0	0	0	95201	95202	95203	95204	95205	95206
4	0	0	0	95301	95302	95303	95304	95305	95306
5	0	0	0	95401	95402	95403	95404	95405	95406
6	0	0	0	95501	95502	95503	95504	95505	95506
7	0	0	0	95601	95602	95603	95604	95605	95606
8	0	0	0	95701	95702	95703	95704	95705	95706

Group List Recieve screen

● Saving the data (Group ID List MODE)

- Select 'File - Save Group List' on the RecieveData window.
- Select 'File - Save Group List(Read only)' on the ReceiveData window.
(You can save the data with read-only protection.)

GpNum	SetTemp	MaxTemp	MinTemp
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0

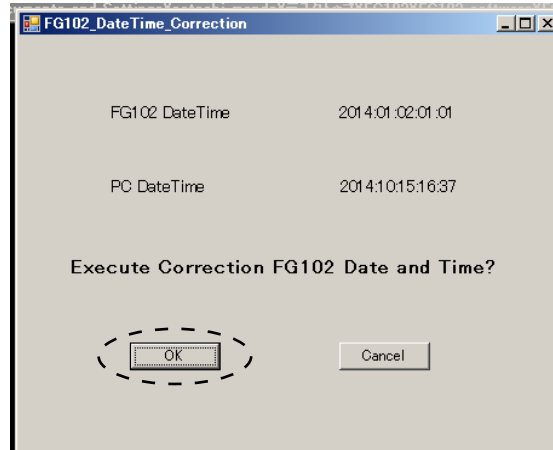
The data saving window will open.
Enter the file name in the filename field and press the Save button.

Save Data selection

■ Clock synchronization with PC

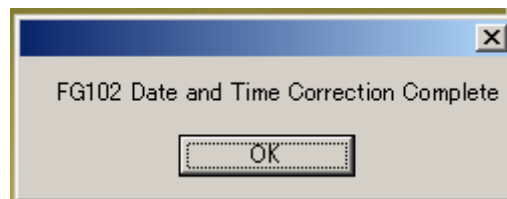
If, when the PC software has been started, any discrepancy of clock is detected between the HAKKO FG-102 main body and the PC, the clock synchronization screen will be shown.

1. To correct the discrepancy, click the OK button on the screen.



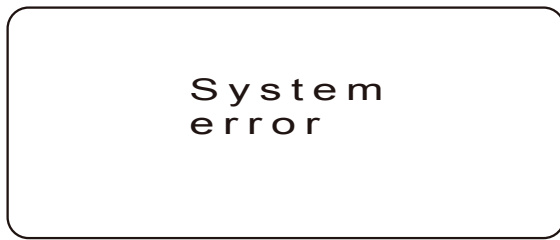
Correction confirmation screen

2. Set the clock of the device main body at the same time as the PC's.
(Refer to P21 "Setting date (Date setting)")
3. After the completion of the synchronization, the following screen will show up. Click the OK button once more to complete the procedure.



Correction complete screen

7. ERROR DISPLAY



System error display

When an abnormality is detected in the hardware and displays.

8. TROUBLESHOOTING GUIDE

The HAKKO FG-102 does not operate even when the power switch is turned ON.

CHECK : Is the battery attached in the battery box?

ACTION : Set the batteries.

CHECK : The orientation of the battery is correct?

ACTION : In accordance with the display of the battery box, please put in the correct orientation.

CHECK : The battery is not outdated.

ACTION : Please replace with a new battery.

Displays the burnout when it is hit with the tip of the soldering iron.

CHECK : Sensor is disconnected from the terminal?

ACTION : Please attach to the terminal sensor.

CHECK : Do not put in reverse the sensor?

ACTION : Please attach in the correct orientation sensor.

Can not read the ID.

CHECK : Connector of the bar code reader is disconnected?

ACTION : Please be attached to the connector body.

CHECK : NG lock function or does not have the ON?

ACTION : Do continue the measurement ID became NG until receive the OK determination, please turn OFF the function.

Displayed "The port is not assigned,"

CHECK : Do you have already connected the PC and the body?

ACTION : After closing once the software, please reconnect the USB cable.

CHECK : Is there a mistake on the setting of the port number?

ACTION : Check the port number from Device Manager, please set again.

Displayed "data. Invalid,"

ACTION : After closing once the software, please reconnect the USB cable.

Software does not start

ACTION : "The configuration of this application incorrect, it was not able to start the application. There are cases where the issue is resolved by installing the application again. ", "****".
Dll can not be found."

If the display such as leaves, the following software to the Microsoft home page Download from, please install.

- Microsoft Visual C++ 2010 Redistributable Package
- Microsoft .NET Framework 4 Redistributable Package

Microsoft web site : <http://www.microsoft.com/>

Can not set the date in the calibration date notification function.

CHECK : Do not try to set no date on the calendar?

ACTION : Please set the date on the calendar.

CHECK : Do not try to set an invalid date?

ACTION : The following cases are regarded as errors and any such date cannot be set.

- Next date Cal is earlier than Last date Cal.
- Last date Cal is ahead of the current time.
- The date & time setting is not present on the calendar.

Please set the date on the calendar.

It is not possible to set the date.

CHECK : Do not try to set no date on the calendar

ACTION : Please set the date on the calendar.

If any other failures are found, or if you cannot solve your problem with the suggestions above, contact your HAKKO representative.

9. REPLACEMENT PARTS/OPTIONS

● HAKKO FG-102

Part No.	Part name	Specifications
AS5000	Sensor/lead-free with certificate of conformance	
C5009	Bar code reader	
C5010	CD-ROM	
B5129	USB cable	1 m

● Optional Parts

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

* Remove the sensor, and connect the red connector of this option to the red terminal of the thermometer and the blue connector to the blue terminal.



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