SK SATO

Instruction Manual of

Digital Thermohygrometer Model SK-110TRH-B-EX

Read this manual thoroughly before use, and keep it for future reference.

Overview

With a sensor probe connected, this portable thermohygrometer can store measured data and display them as dry and wet bulb temperatures, relative humidity, and dew point temperature. Various optional probes are provided to meet many applications.

Important Notices

⚠ Beware of Explosion

SK-110TRH-B is not explosion-proof. Never use it in an atmosphere containing flammable gases.

⚠ Cautions

To use SK-110TRH-B properly, follow the instructions below.

· Do not drop or give a shock to the device, as it is a sensitive instrument.

· Do not disassemble or customize the device, or it may cause malfunctions.

· Do not use the device under direct sunlight or aside a heat source, or it may lead to a deformation or malfunction.

· Do not use the device in an environment with electrical noise or near a device to emit electromagnetic waves such as televisions or induction heaters. The display may become unstable or the measurement error may increase.

· Do not use the device in dusty, powdery, or salty air, or any other non-standard atmosphere such as the air exposed to organic solvent, oil mist, or corrosive gas.

· Do not wet the device since it is not waterproof.

· Do not use the device out of the declared operation ambient or ranges.

- Do not forcibly pull, bend, bundle, heat, or put a heavy thing on the cable. Otherwise, the cable may get damaged.
- Do not touch the sensor element when installing or replacing a sensor filter.
- Do not leave the device in a place like an automobile on a fine summer day, or the extreme heat may damage it.
- Do not wash or wipe the device with alcohol, thinner, or other organic solvents. If the device becomes dirty, wipe it with a tightly-wrung towel that has been dipped in warm water with neutral detergent.
- Be aware of choking with a strap getting caught around the neck.
- For repair or calibration, or if the device is broken before use, contact us or a retailer from which you have purchased.

Disclaimer

We, Sato Keiryoki Mfg. Co., Ltd., have tested the device securely, however we do not guarantee its operation in all possible situations. We are not responsible for any damages caused directly or indirectly by use of the device.
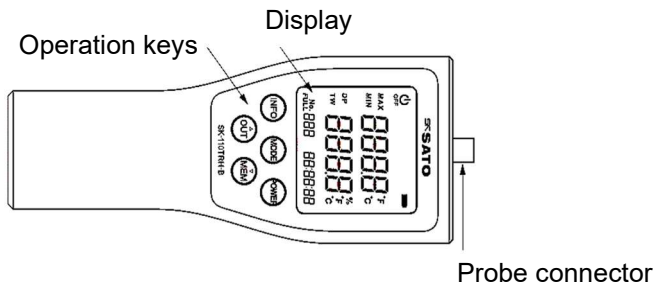
What's Inside

If you find any of the following items missing in the package, contact us or a retailer from which you have purchased.
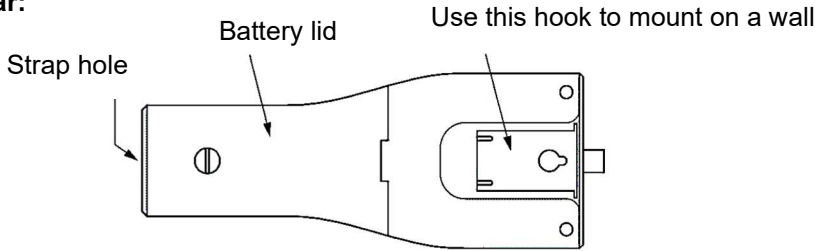
- 1 x Main unit of SK-110TRH-B
- 2 x AAA alkaline battery
- 1 x Neck strap
- 1 x This instruction manual

Names of Sections

Front:

Display

Operation keys

Probe connector

Rear:

Strap hole   Battery lid   Use this hook to mount on a wall

Display:

Auto power off is activated when this sign is shown

MAX = Maximum value
MIN = Minimum value

Low battery
sign

DP = Dew point
TW = Wet bulb temp.

No. = Recorded data number
FULL = Memory is full

Time clock indicates the current time unless the device is in viewer mode to show the time when the data is recorded.
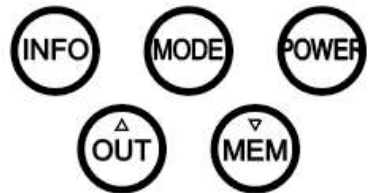
Operation Keys:

POWER: Turns on or off the power.
MODE: Confirms the value in a menu, or turns into a next menu.
INFO: Shows property information.
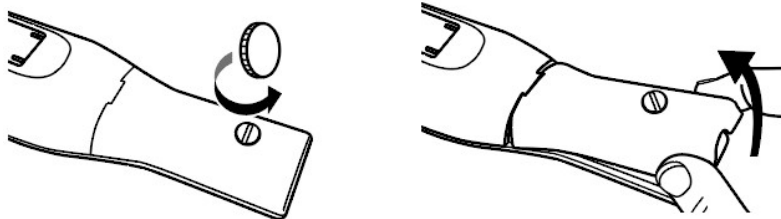OUT/△:   Clears out the recorded data, or changes the value in a menu.
MEM/▽:   Records the displayed data during measurement, or navigates in a menu.

How to Use

Replacement of Batteries:

To use the device for the first time, or when the low battery sign is displayed, put new batteries as per described below.

1. Turn the battery lid screw anticlockwise to loosen it and remove the lid. Be sure not to lose the packing seal on the groove. Note that the screw does not drop from the lid.
2. Exchange the batteries according to the sign of polarity in the battery box.
3. Confirm that the packing seal is firmly put into the groove, then close the lid and tighten the screw.
   The device is designed to keep the time clock for 2 minutes without batteries. However, check if the time is correct after replacing the batteries as it may fail to keep it owing to static electricity or such.

⚠ Cautions Related to Batteries

- Attach the battery lid firmly to the body with the packing seal put into the groove so that no water intrudes inside the device, and secure the screw. Otherwise, the device may result in malfunction, short-circuit, battery leakage, extreme heat, or explosion.
- Replacement batteries must be new and all the same type.
- Remove the batteries if not used for a long period.
- Do not dispose of batteries in a fire.
- Keep batteries out of the reach of children. If they are swallowed accidentally, consult a doctor immediately.
- For environmental conservation purposes, dispose of batteries in compliance with local rules and regulations.
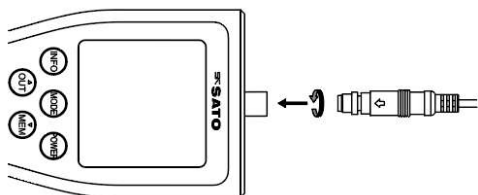
Attachment of Neck Strap:

Run the thin string of the neck strap through the strap hole, and then pass the other side of the strap through the ring of the string so that the strap is fixed.

Remove the battery lid temporarily if it is difficult to install the strap.

Connection of Probe:

1. While the device is turned off, insert the connector part of the probe into the probe connector on the main unit so that an arrow mark on the probe faces frontward.
2. Turn the nut on the probe clockwise until the probe is fixed. Do not try to turn other parts.
3. To disconnect the probe, switch off the power, then turn only the nut anticlockwise and pull the probe straightforward.

⚠ **Caution**

Do not wet or forcibly pull the probe when connecting or disconnecting it.

Hanging on Wall:

To mount the device on a wall, install a hook screw into the wall and put the rear side of the device on it. Check if it does not fall carefully.

Measurement:

1. Turn on the device after the probe is connected.
2. Let the device adapt to the ambient atmosphere well, then read the shown value. To display wet bulb or due point temperature instead of humidity, refer to *Lower Row Display Switch* in this manual.
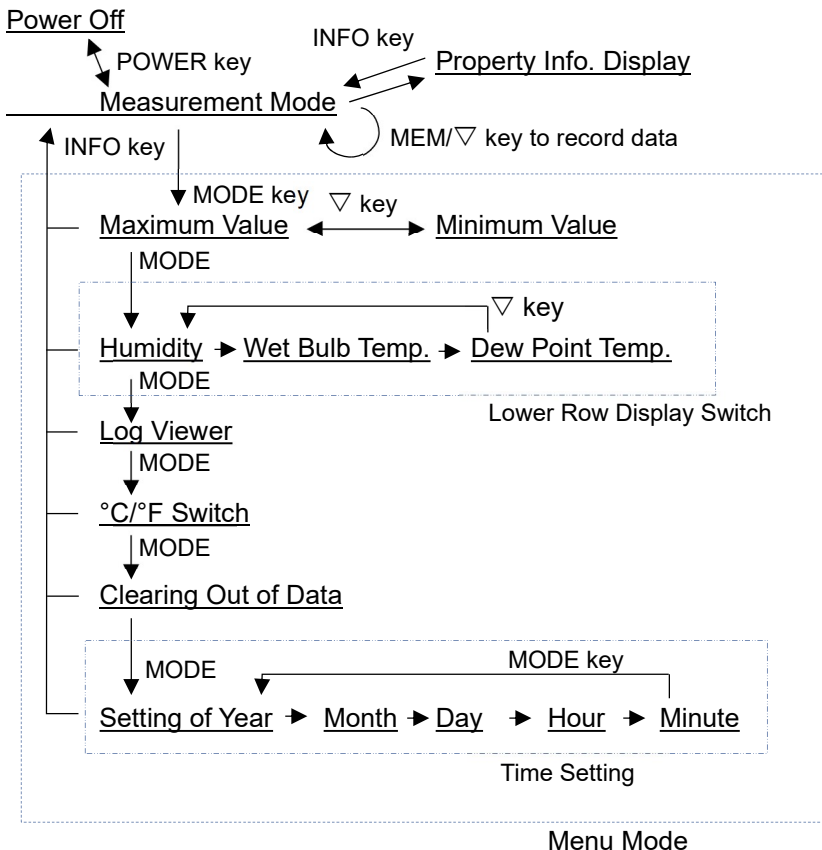3. Making idle time is advised if you measure extreme

high temperature after doing extreme low temperature, or vice versa. It also applies when the temperature varies suddenly.

4. To record the value, press MEM key. Refer to *Log Viewer* to see the recorded data. The memory gets full when 200 sets of data are stored.

5. Turn off the device after measurement.

Note that probes are consumables which deteriorate over time. A regular recalibration and replacement are advised.

Menus and Modes

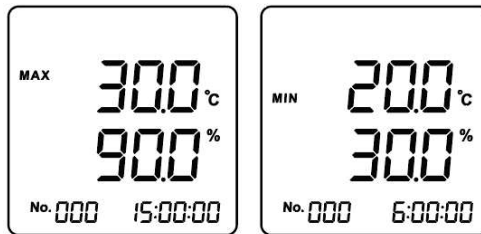Below shows the flowchart of the key operations.

Menu Mode

Pressing MODE key during measurement navigates to the menu mode. Within this mode, press MODE key to go to a next menu, or press INFO key to return to measurement. Keeping the device idle for 1 minute also leads to the measurement mode.

(1) Maximum Value/Minimum Value:

Press MODE key once during measurement to show the maximum value after the power is turned on or *(2) Lower Row Display Switch* is modified. Press MEM/▽ key to show the minimum value.

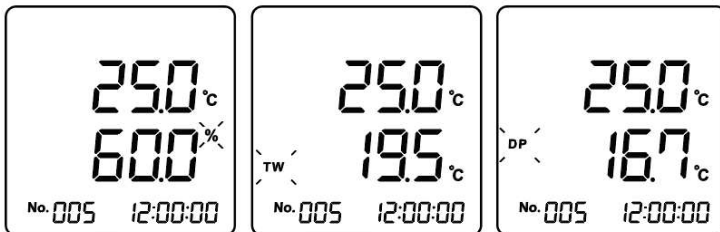　　These values can be reset by long press of MEM/▽ key while either value is shown.

MAX	30.0 ℃	MIN	20.0 ℃
	90.0 %		30.0 %
No. 000　15:00:00		No. 000　6:00:00	

　　　　Maximum　　　　　　　　Minimum

(2) Lower Row Display Switch:

Press MODE key twice during measurement to open this menu. Then, press MEM/▽ key to change the value to be displayed in the lower row from relative humidity to wet bulb temperature or due point. Finally, press MODE key to confirm the change and move to the next menu.

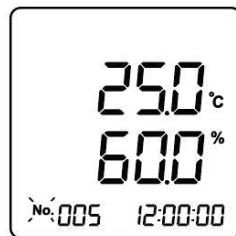　　Note that the upper row is always for dry bulb temperature.

25.0 ℃	25.0 ℃	25.0 ℃
60.0 %	TW 19.5 ℃	DP 16.7 ℃
No. 005　12:00:00	No. 005　12:00:00	No. 005　12:00:00

　Relative humidity　　Wet bulb temp.　　　Dew point

(3) Log Viewer:

Press MODE key for three times during measurement to view recorded data with a serial number. Press OUT/△ or MEM/▽ key to browse the data chronologically from No. 001. Long-press the same keys to fast-feed the display.
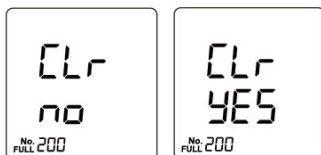
(4) °C/°F Switch:

Press MODE key for four times during measurement to open this menu. Press MEM/▽ key to select either Celsius or Fahrenheit, then press MODE key to confirm it and exit the menu.
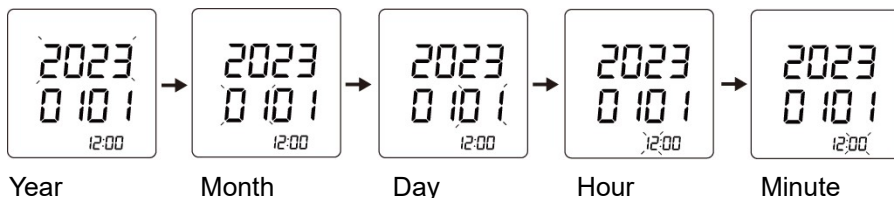
(5) Clearing Out of Data:

Press MODE key for five times during measurement to open this menu. Press MEM/▽ key to navigate the display to "Yes", then press OUT/△ key to clear out all data.

This process is essential if "FULL" is indicated in the bottom left, which means 200 sets of data are already stored, and you wish to record another datum.
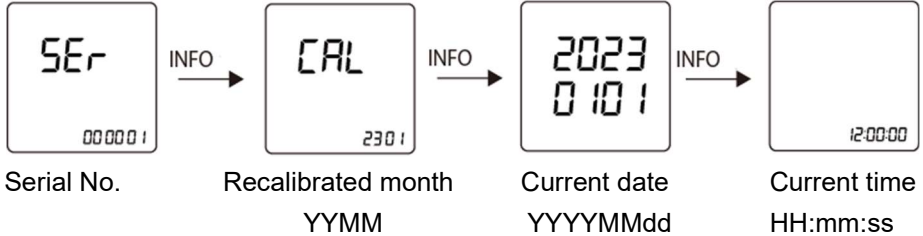
(6) Time Setting:

Press MODE key for six times during measurement to set the current time. Press OUT/△ or MEM/▽ key to increment or decrement, then press MODE key to fix each unit of time. When minute is determined, the clock restarts with 00 seconds.

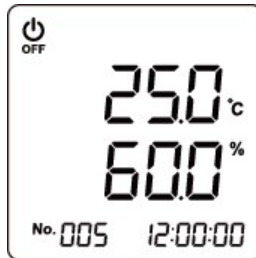| Year | Month | Day | Hour | Minute |

Property Information Display

Press INFO key during measurement to view some property information. Each press of INFO key changes the displayed content in the following order. Keeping the device idle for 1 minute leads to the measurement mode.

5Er 00.00.0 1	INFO →	**CAL** 23.0 1	INFO →	**2023** **0 10 1**	INFO →		12:00:00
Serial No.		Recalibrated month YYMM	Current date YYYYMMdd	Current time HH:mm:ss

Recalibrated year and month are displayed only after recalibration is performed by the manufacturer.

Auto Power Off

When auto power off is activated, idling for 60 minutes makes the device turned off automatically to reduce the loss of battery. To enable it, long-press MEM key and then long-press POWER key while holding MEM key when the power is off. The device will be turned on with a sign shown in the upper left corner.

⏻
OFF

25.0 ℃
60.0 %

No. **005**   12:00:00

To disable auto power off, do the same key process while the power is off.

Preset Configuration:

Item	Value
Recalibrated month (YYMM)	- - - -
Time (YYYY.MM.dd HH:mm:ss)	2022.01.01 00:00:00
Recorded data no.	000
Lower Row Display	Relative humidity
Temperature unit	Celsius
Auto power off	Disabled

Recalibrated month is recorded once the device is recalibrated by us.

Error Codes

Recording is unavailable when an error code except Hi or Lo is shown.

Code	Definition	Solution
Er	Measured value is out of range.	Use within the range.
Hi	Measured value exceeds the display range.	
Lo	Measured value is below the display range.	
Er0	An error occurs in the internal IC.	Remove the batteries once, wait for a while, and put them back to restart. Exchange batteries if the above measure does not solve the issue.
Er1	Abnormal signals have come from the probe.	Turn the power off, confirm the connection of the probe, and turn it on again.
Er2	No probe is connected or detected.	Confirm the connection and then turn the power on. If this code remains, the probe may be in failure. Contact us or the retailer.
Er6	MEM/▽ key is pressed when the memory is full.	Clear out the logged data before recording more.

Specifications

Product name	Digital Thermohygrometer Model SK-110TRH-B-EX
Catalog no.	8138-00
Display range	Depends on a probe connected Refer to the manual attached to each probe.
Display accuracy	±0.2°C (0 to 40°C), ±0.3°C (other) ±0.2°%rh (0 to 40°C), ±0.3°C (other) Total accuracy depends on a measuring accuracy of a probe connected. Refer to the manual attached to each probe.
Resolution	0.1°C 0.1%rh
Sampling rate	Approx. 1 second
Display items	Auto power off, recorded data number, time clock, low battery sign, set values in each menu
Operating ambient	−10 to 60°C, less than 80%rh without condensing
Storage ambient	10 to 60°C without condensing
Power	2 x AAA alkaline battery
Battery life	Approx. 1000 hours Attached batteries are for test purpose and may last shorter.
Material	PC resin
Dimensions	65 (W) x 168 (H) x 35 (D) mm Except protrusion
Weight	159 g including batteries
Accessories	2 x AAA alkaline battery, 1 x neck strap

Wet bulb temperature and dew point are calculated from measured dry bulb temperature and relative humidity.

Specifications and appearance are subject to change without notice.

Visit our website https://www.sksato.co.jp/en/ for the latest information.

Warranty Policy

Our products are warranted to be free from defects in materials and workmanship for a period of one year from date of delivery. If repair is necessary and has not been the result of misuse, force majeure, or transportation arranged by yourself within the one-year period, please return the products on freight prepaid basis. Correction of the defect will be made without charges. We alone will determine if the product problem is due to deviations or customer misuse.

Out-of-warranty products will be repaired for a fee.

Before returning, request for our acknowledgement first.

For details, contact us or a retailer from which you have purchased.

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https://www.sksato.co.jp/en/