

INSTRUCTION MANUAL

SK-110TRH II Series Digital Thermohygrometers

SATO KEIRYOKI MFG. CO., LTD.

INTRODUCTION

Thank you for purchasing the SK-110TRHII series digital thermohygrometers.

- These products are designed to measure temperature and humidity of atmosphere. Do not use these for other purposes.
- Read this manual thoroughly before use. Keep the manual in safe place for future references.



WARNING

- Model SK-110TRHII series are not of explosion proof types. Never use them to measure gases including flammable gases.



DANGER – EXPLOSIVE There is a fear of explosion –



CAUTIONS

Observe the following points for the proper use of instrument.

- This instrument is delicately made. Be careful not to drop it or give shocks to it.
- The probe and main body are unified. The probe cannot be unfastened from the main body.
- Never disassemble or alter the unit to avoid the causes of trouble.
- These instruments are not waterproof. Never let them get wet.
- Never use the unit in an environment other than normal atmosphere.
- Don't use the unit at a place exposed to direct sunlight or near heaters. Doing so may result in failure or case will be deformed.
- Do not use the unit in the circumstances where electric noises are generated. Doing so may result in unstable display or large errors.
- Don't pull strongly, bend or bind the sensor cord. Don't put heavy things on the sensor cord or modify the sensor cord and the cord will be damaged.
- If the unit is not used for a long period of time, be sure to remove the batteries. Otherwise, liquid may leak and it results in failure.
- Do not dispose the used batteries in a fire.
- Keep the batteries out of reach of children. If swallowed the battery accidentally, consult a doctor immediately.
- Don't wash or wipe the unit with alcohol, thinner or other detergent etc. When the unit is stained wipe it with the following cloth. Dip a cloth into lukewarm water in which detergent is dissolved and squeeze it tight.
- When the condensing occurs during use of the unit, turn the power off and let the humidity sensor naturally at normal temperature.
- Type 2 has a pointed probe. Be careful in use as the sharp tip could cause accidental injuries.
- Do not bend the sensing stem or flexible tube in the type 2, they 3 and type 4.

DESCRIPTION

These SK-110TRHII series are the handy type Thermohygrometers with high accuracy and reliability capable of measuring relative humidity of 20 to 98% and temperature of -10 to 60°C.

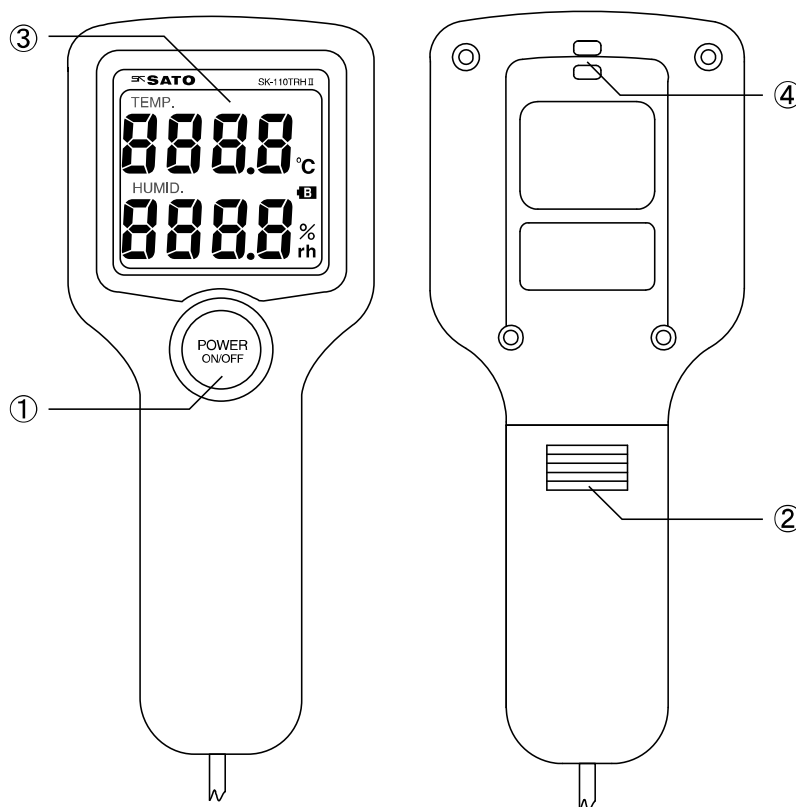
The traceability calibration, as part of the control of measuring instruments required by ISO, is available upon request. Please contact us or the retailer from which the unit was purchased.

FEATURES

- Measuring operation is simple by pressing the POWER ON/OFF button
- Large LED (font height: 13 mm) for easy reading
- Low battery mark **B** blinks when the batteries are insufficient
- A hand strap for easy carrying
- Five types of sensors to suit every measurement need

NAME OF SECTION

● Main housing



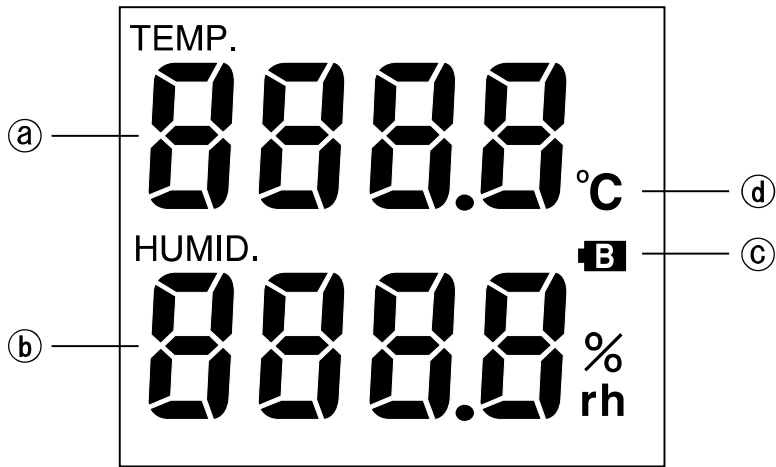
(1) POWER button: Press this button for 1 second or more to turn the power on.
Press the button again for 1 second or more and the power will be off.

(2) Cover for battery compartment

(3) Display section

(4) Hook for hand strap

● **Display**

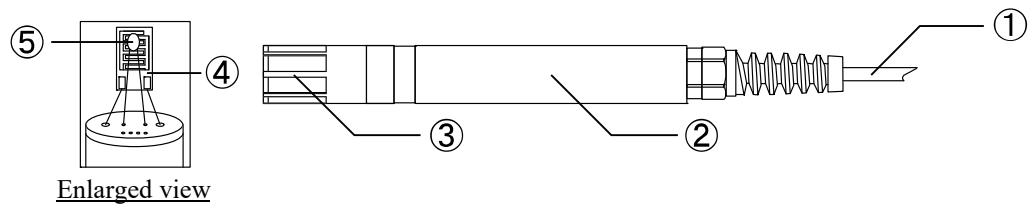


- (a) Display of the temperature value (TEMP.)
- (b) Display of the humidity value (HUMID.)
- (c) Low battery mark
: blinks at one second interval when the batteries are exhausted.
Replace the batteries with new ones.

● **Probes**

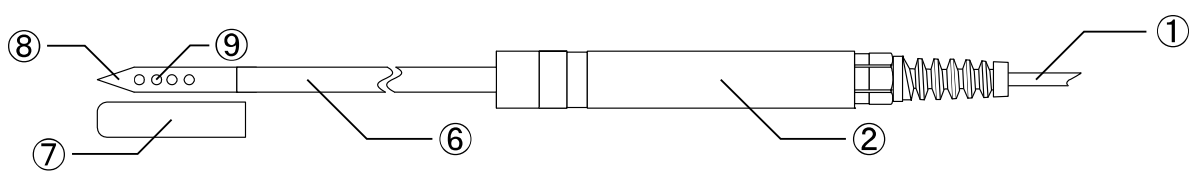
Type 1: Standard type

* General purpose: monitoring environment in computer operation rooms, factories and laboratories



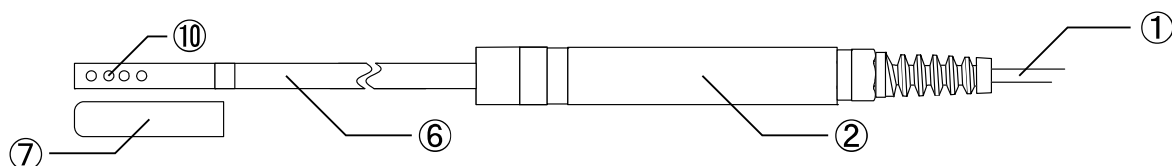
Type 2: Penetration type (point-end)

* Applicable for grains, powder and papers



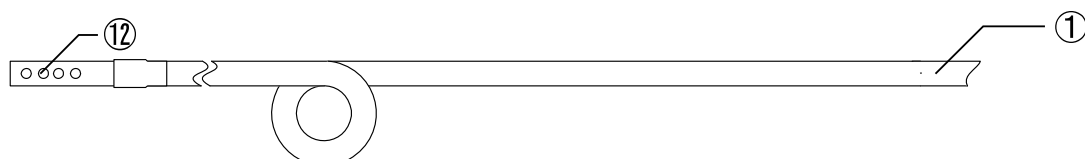
Type 3: Long stem type

* Applicable for ventilation of air conditioner



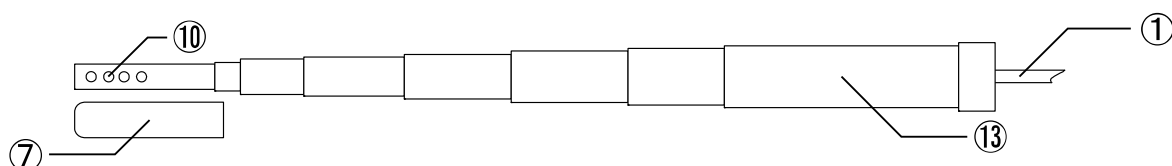
Type 4: Flexible type

* Usable at narrow openings



Type 5: Telescoping type

* Applicable for ventilation of air conditioner



(1) Sensor cord

(2) Grip

(3) Sensor cap

(4) Humidity sensor (HSK-III)

(5) Temperature sensor (Thermistor)

(6) Sensing stem

(7) Sensor protection cover

(8) Sensor cap (point-end type)

(9) Sensor filter (built-in)

(10) Sensor cap (L)

(12) Sensor cap (S)

(13) Telescoping type stem

HOW TO USE

● Loading batteries

(1) To remove the battery-cover at the rear of instrument, slide it to downward.

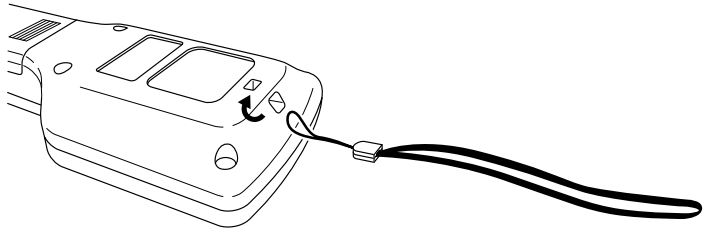
(2) Load 2 AAA batteries with correct polarity [(+) (–)] as instructed in the battery compartment.
N.B. Use new two batteries of the same kind.

(3) Close the cover and secure it in the reverse order of opening the cover.

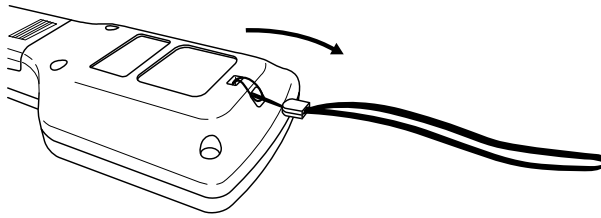
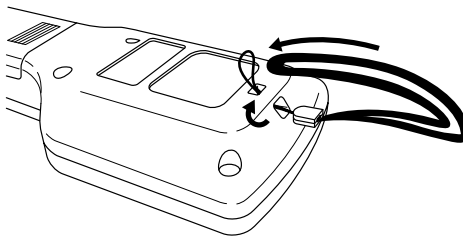
- **Installing the Hand Strap**

Install the attached hand strap as shown in the following figure.

- (1) Run the string through the hook.



- (2) Pass the strap through the ring string.



HOW TO MEASURE

- (1) Press POWER ON/OFF button for more than 1 second and the measured temperature and humidity values will be displayed being ready for measurement.
- (2) Press POWER ON/OFF button again for more than 1 second and the display will disappear and power will be off.

NB: The probe and unit are unified. The probe cannot be unfastened from the unit.
Do not strongly pull the sensor cord. It may be a cause of trouble.

WARNING FOR LOW BATTERY

When the batteries are exhausted **B** mark will blink. Replace the batteries with new ones. Otherwise, measured value may display incorrectly.

ERROR MESSAGE

An error message appears on the LED.

Display	Cause	Action
Hi	Temperature or humidity reading is beyond the upper display limit.	Use only within the measuring range.
Lo	Temperature or humidity reading is beyond the lower display limit.	Use only within the measuring range.
Er	Temperature display side (while within the measuring range) Temperature sensor or sensor cord is faulty	The sensor probe may be faulty. Contact us or the retailer from which the unit was purchased.
	Humidity display side (while within the measuring range) Humidity sensor or sensor cord is faulty	

Note: When "Er" is displayed in the temperature side, "Er" displays in also humidity display side. When humidity value is out of the measuring range, "Er" is also displayed in the humidity side. Use only within the measuring range

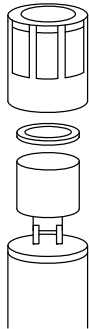
MAINTENANCE

- Install the glass filter (For Type 1) - Option -

Use the glass filter (option) in case circumstance for measurement is not good enough due to dusts etc.

- ① Remove the sensor cap and put the glass filter over the sensor section.
- ② Set the rubber cushion on the glass filter as the illustration, and put the cap on.
- ③ Maintenance of the sensor filter

When the glass filter becomes dirty response will become slow and correct value will not be detected. Cleaning of filter at an interval of fixed period is recommended. Wash the glass filter when it appears to be dirty. After immersing the filter into the detergent for a while washes it with pure water. After washing the filter dry it out.



CAUTIONS

- The filter is made of sintered glass. Be careful in handling.
- Response will be little slower when glass filter is attached. After washing the filter dry it out. Shake the probe softly so that it can acclimate to the atmosphere.

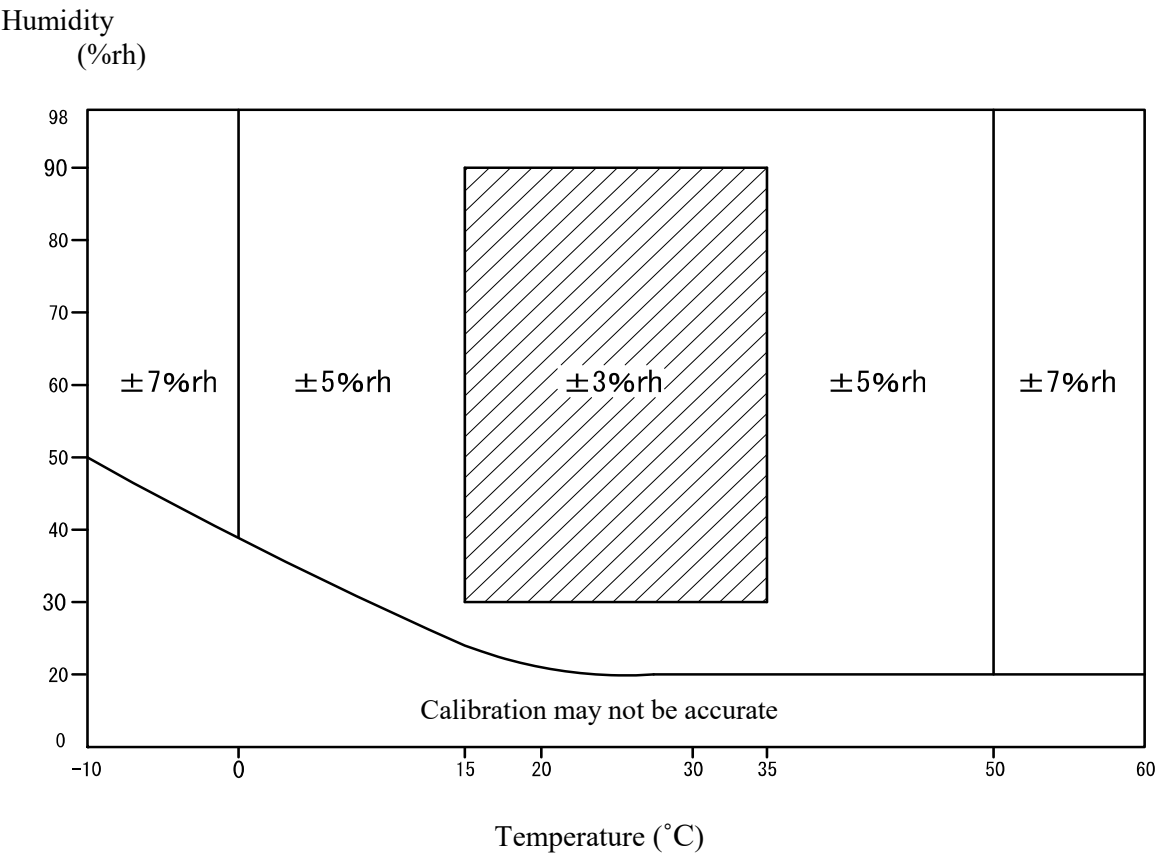
- Maintenance of filter (For Type 2)

When the filter becomes dirty, contact us or the retainer from which the unit was purchase. The filter in Type 2 is built-in type. Do not replace it by yourself.

SPECIFICATIONS

Model Name			Digital Thermohygrometer Model SK-110TRHII				
			Type 1	Type 2	Type 3	Type 4	Type 5
Cat. No.			8111-00	8112-00	8113-00	8114-00	8115-00
Measuring Range			Temperature : -10.0 to 60.0°C Humidity : 20.0 to 98.0%rh (at 23°C)				
Display Range			Temperature : -15 to 65.0°C Humidity : 0 to 99.9%				
Resolution			Temperature : 0.1°C (at higher than -9.9°C) 1°C (at other than above) Humidity : 0.1%rh (at higher than 15%) 1% rh (at other than above)				
Accuracy			Temperature : ±0.5°C (at +15.0 to +35.0°C) ±1°C (at other than above) Humidity : See the charts of Page 8				
Sensing elements			Temperature : Thermistor Humidity : High polymer resistance change humidity sensor				
Operating condition			Main body : 0 to +50°C, less than 80%rh (no condensing) Probe : -10 to +60°C (no condensing)				
Sampling time			About 1 sec.				
Functions			Low battery mark, dual display for temperature and R. humidity				
Power requirements			3VCD (2 “AAA” size alkali batteries)				
Battery life			About 600 hours continuous (in normal temperature state)				
Materials	Main body		ABS resin (case), Acryl (display section)				
	Probe	cap	Polyacetal resin	Stainless steel	Polyacetal resin	Polyacetal resin	Polyacetal resin
		grip	Aluminum			-	Brass
		cord	PVC resin				
Dimensions	Main body		70 (W) × 168 (H) × 26.5 (D) mm				
	Grip		Ø20 × 224 (L) mm				Stem (130-885mm)
	Sensing parts		---	Ø9 × 55mm	Ø8 × 338mm	Ø6 × 35mm	Ø8-18.7mm
	Cord		Ø4 × L1340mm	Ø4 × L960mm		Ø4 × L2500mm	Ø4 × L600-1350mm
Weight (approx.)			260g	330g		198g	310g
Standard Accessories			A hand strap, 2 alkali AAA batteries, test report, vinyl case				
Option			Glass filter (can be used for Type 1 only)				

ACCURACY OF R. HUMIDITY



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