

Instruction Manual
for
No.8264-00 Infrared Thermometer
Model SK-8920

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Introduction

Thank you for purchasing the Infrared Thermometer Model SK-8920.

- . This product is designed to measure temperature using a non-contact method. Do not use it for other purposes.
- . Read this manual thoroughly before using. Keep the manual in a safe place for future references whenever necessary.



WARNING



Beware of explosion!

The SK-8920 is not explosion-proof. Never use it in an atmosphere containing flammable gases.



Do not look into the laser marker or point it at anybody's eyes. Doing so may damage your eyes.

Keep the unit out of reach of children.

Notes on Use

Be sure to observe the following precautions in order to use this unit correctly.

- Do not use this unit as a clinical thermometer.
- This is a non-contact thermometer. Do not let the unit touch the object to be measured. If the unit touches a hot object, it may result in measurement errors or failure.
- Never disassemble or modify this unit. Doing so may result in failure.
- Do not drop this unit or apply vibration/impact to it. This unit is a precision instrument.
- This thermometer is designed for use in the ambient temperature range of 0 to 50°C at 80% RH or less. Using the unit outside the specified range will result in failure.
- Do not use this unit in a place exposed to direct sunlight or near heating equipment. Doing so may result in measurement errors or deformation/discoloring of the casing
- Do not use this unit in a dusty environment. The accuracy of measurement is affected by dust or dirt on the lens. Always wipe off dust and dirt after each use. For details, refer to "Maintenance".
- Do not touch the measurement window with a sharp or hard object. Doing so may damage the lens, causing loss of measurement accuracy.

- Do not use this unit in an environment where electrical noise is generated. Doing so may result in unstable display or larger errors. Also, do not bring the unit close to a charged object.
- Never allow the unit to become wet, as it is not waterproof.
- If this unit is not going to be used for a long time, always remove the battery from the unit. Otherwise, the battery may leak fluid, resulting in failure.
- Do not dispose of the used battery in a fire.
- Keep the battery out of the reach of children. If you have swallowed the battery accidentally, consult a doctor immediately.
- For environmental conservation purposes, dispose of the used battery in compliance with local rules and regulations.
- Do not wash or wipe this unit with alcohol, thinner, or other organic solvents. If the unit becomes dirty, wipe it with a tightly-wrung gauze or the like that has been dipped in warm water with neutral detergent.
- Do not wipe the temperature measurement section (infrared lens) directly with gauze. For details, refer to "Maintenance".
- Glass does not transmit wavelengths used by this thermometer. Therefore, when an object is placed beyond glass, this unit detects the temperature of the glass and displays its temperature reading.
- If the ambient temperature fluctuates excessively, the measurement accuracy may be affected. Wait for a while for the unit to properly adapt to the ambient temperature. For a change of temperature of 10°C or more, wait for at least 30 minutes before measurement.
- For repair or calibration, contact the dealer from which the unit was purchased, or our service network.

Overview

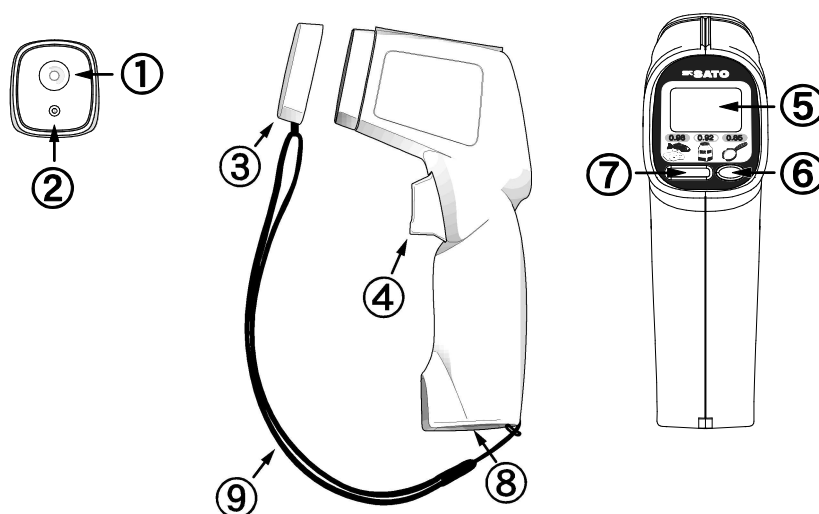
The SK-8920 is a non-contact type infrared thermometer, which detects the infrared energy emitted from an object and converts it into a temperature reading. The product can measure the temperature of the surface instantly without touching the object.

Features

- Measures surface temperature instantly:
The advantage of the non-contact infrared method is quick-response measurement, and the single-hand-held unit allows easy operation by using trigger type measurement button.
- Non-contact, clean measurement:
Ideal for food processing industries where clean and hygienic measurement is required.
- Selectable emissivity
Emissivity is selectable by button among 0.98, 0.92 and 0.85.
- Easily visible measurement spot
With the laser marker set on, a laser sighting is output so that you can instantly identify the spot being measured.
- Auto power-off function:
The power will be turned off automatically if the unit is not operated for approximately six seconds, thus conserving battery power if you forget to turn the power off.
- Auto Hold function:
A measured value of temperature is automatically held (fixed) for approximately six seconds.
- Putting the cover on top and grip of the unit will protect the unit from becoming dirty during use and absorb shock in case the unit is dropped accidentally.
- Top and grip covers
Protects the unit from dirt or dust.

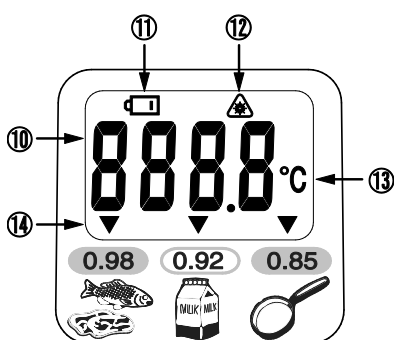
1. Names and Functions of Components

1-1. Main unit



- (1) Temperature measurement (infrared radiation sensing) section
: Detects the infrared energy emitted from the object.
- (2) Laser sighting section
: Pressing the measurement key and the laser marker key simultaneously activates laser sighting.
- (3) Lens cap
: Used to protect the lens from dust or foreign matter in the measurement window. Also, it protects users from viewing the laser in case the laser marker is activated accidentally.
- (4) Measurement trigger
: Pull the trigger to turn on and activate temperature measurement.
- (5) LCD: Displays the temperature reading and other related information.
- (6) Laser marker レーザー key: Sets the laser marker function on or off.
- (7) Mode 測定物選択 key: Use this key to select emissivity
- (8) Battery lid: Houses a 9-V battery 6F22 (006P).
- (9) Hand strap: Use this strap through your wrist.

1-2. LCD



- (10) 7-segment display : Displays the temperature reading.
- (11) Low-battery mark : Lit when battery power is insufficient.
- (12) Laser sighting mark : Lit while laser marker is activated.
- (13) Unit of measurement : Temperature is displayed in Celsius
- (14) Emissivity setting mark : The emissivity selected is displayed.

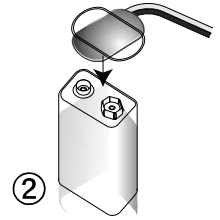
2. Loading the Battery

When using the unit for the first time or when the low battery mark lights up, replace the battery with a new one as described below.

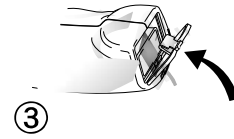
(1) Open the battery lid.



(2) Check both polarities (+/-) of the battery snap fasteners and a 9V battery 6F22 (006P). Insert the battery in place.



(3) Close the battery lid so that it clicks.



Cautions

- Replace the battery immediately when the low-battery mark on the LCD lights.
- Measurements while the low-battery mark is lit may affect the accuracy, possibly resulting in malfunction of the thermometer.
- Do not dispose of the used battery in a fire.
- The battery is a factory set. The battery was used for monitoring and its battery life may be shortened

3. Putting Vinyl Cover on Thermometer

It is recommended to use the thermometer putting the vinyl cover on top and grip of the unit. The cover will help absorb shock in case the unit is dropped accidentally, and protect the unit from becoming dirty during use. The thermometer is shipped being put the cover on.

1) Hold the opening of the cover wide when inserting the unit.

2) Fix the snap fastener (button) on the cover to secure the unit.

NB. * When removing the cover, take off the lens cap first from the hand strap. Be careful not to lose it.

* When using the cover, static electricity may be charged inside the cover, and the indicated value may become unstable. In that case, remove the cover and use.

4. How to Measure

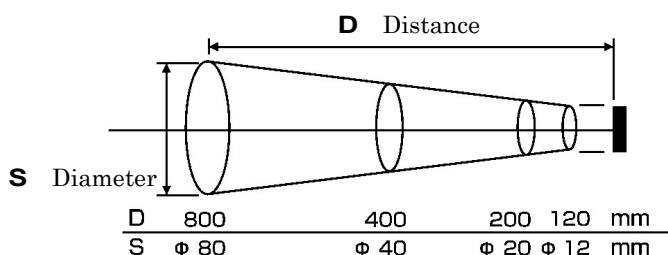
- (1) Remove the lens cap.
- (2) Prior to measurement, set the laser marker and emissivity.
- (3) Direct the thermometer at an object and pull the trigger. Then, the measured temperature is displayed on the LCD.

NB.: Infrared rays in this measurement wavelength range do not penetrate glasses. When measuring the object through the glass, it detects the surface temperature of the glass.

- (4) Release the trigger. The measured value can be held for approximately six seconds after the trigger is released.
 - * Keep pulling the trigger to continuously measure temperature every one second.
- (5) After six seconds, the power is automatically turned off (auto power-off function).
 - * Auto-power function cannot be released.
- (6) After the measurement, put the lens cap on the measurement window

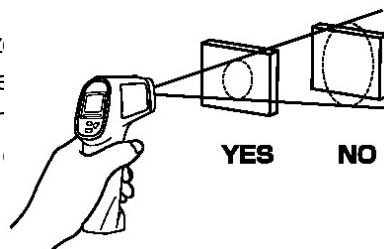
4-1. Measurement Spot Size

The measurement spot size of this thermometer changes in accordance with the distance as shown below.



The diameter of the measuring spot shown above is defined on the basis of the area that receives 90% or more of the energy. The D:S ratio, which is the ratio of the distance between the object and the thermometer to the size of the spot, is preset at 10:1 (D = measuring distance, S = diameter of spot). For example, for the distance of 200 mm, a spot circle of diameter 20 mm can be measured. If the object is too small, make the distance smaller by bringing the thermometer closer to the object. For higher accuracy, make sure that the area of the object is at least twice as large as the spot being measured.

Note: If the area of the object is much larger than the spot size, the accuracy of measurement is affected. Also, if the area of the object is much smaller than the spot size, the accuracy of measurement may be affected by inclusion of a part that is not supposed to be measured.



4-2. High-Temperature Measurement

Operating the thermometer continuously to measure a high-temperature (200°C or more) object at a short distance (30 mm or less) for a long time (three minutes or more) may cause a drop in the performance of the infrared lens. When measuring a hot object of 200°C or more, the distance should be 30 mm or more and operation should be completed within a short time.

There is also the risk of burning your hand by accidental contact with an excessively hot object. Secure a safe distance from the object if the object is known to be hot.

Note: Measuring high temperature object may damage the infrared lens and cause loss of measurement accuracy. Never measure an object whose temperature is outside the allowable temperature range state.

4-3. Low-Temperature Measurement

The operation ambient is 0 to 50°C. The measurement in the lower than 0 °C state such as in a refrigerator cannot be done.

If the ambient temperature fluctuates excessively, the measurement accuracy may be affected. Wait for a while for the unit to properly adapt to the ambient temperature. For a change of temperature of 10°C or more, wait for at least 30 minutes before measurement.

5. Emissivity

The emissivity of this thermometer is preset at 0.92.

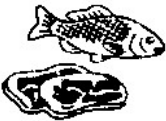


Infrared radiation is naturally emitted from all objects, but the emissivity value depends on the type of object to be measured. For accurate measurement, see the table 1.

5-1. Setting the emissivity



Emissivity is selectable among 0.98, 0.92 and 0.85. While pulling the trigger, select the emissivity with MODE 測定物選択 key.


5-2. Emissivity

Table 1

Emissivity	0.98 	0.92 	0.85 
Object	Meat Fish Vegetable Fruit Bread Wheat Grain	Paper Drink box	Frying pan Cast-Iron pan

6. Setting the Laser Marker

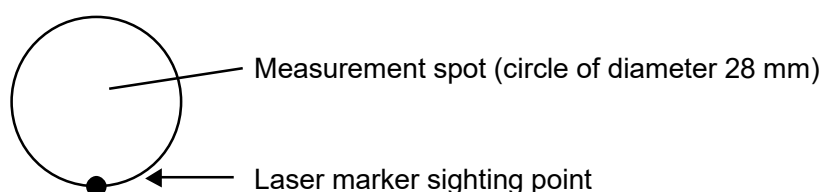
While pulling the trigger, press the laser marker  key simultaneously to set the laser marker on or off. While the laser marker  key is ON, the laser marker can be output. While the laser marker key is OFF the laser marker is not output.

NB. Laser sighting mark  is lit while laser marker is activated. When the laser marker key is OFF, the laser marker is not output even if the trigger is pulled.


6-1. Positional Relation Between Distance and Sighting Point

This is a one-point laser-sighting thermometer. The laser mark is sighted approximately 14 mm below the center of the spot.

Example: When the distance is approximately 280 mm



When the measurement distance is approximately 280 mm, the laser marker is output aiming at the point illustrated above. Refer to the figure as a guide.

 Do not look into the laser marker or point it at anybody's eyes. Doing so may damage your eyes.
Keep the unit out of reach of children.

Standard for Safe Use of Laser Products (JIS C6802): "Class II" is defined as follows:

A visible light (of wavelengths in the visible region: 400 nm through 700 nm) with an output level (approx. 1 mW or less) that is normally regarded harmless with respect to humans' physical defense capabilities.

7. Maintenance



The accuracy of measurement is affected by dust or dirt on the surface of the infrared lens. Prevent dirt or dust from adhering to the surface of the lens during use or storage.

When removing dirt from the infrared lens, use a blower for camera lenses. If stubborn stains persist, clean the surface of the lens softly with a swab moistened with lens cleaning liquid.

NB: Never clean the infrared lens with water or detergent. Doing so may affect the performance of the lens and cause inaccurate measurements.

8. Error Message

When an abnormality occurs in the unit error message is displayed on the LCD.

Error message	Cause and Countermeasure
	Measuring temperature is lower than -40.1°C or higher than 301 °C. The possible measuring range is -40°C and 300°C. The temperature of the object must be within the measuring range
	The element inside the unit may have been damaged. Contact with the deal from which the product was purchased or our service network.

9. Specifications

Cat. No.	: 8264-00
Name	: Infrared Thermometer
Model	: SK-8920
Measuring range	: -40 °C to 250 °C
Accuracy (at 23 °C ± 5 °C)	: -40 °C to -20 °C : ± 3 °C -19.9 °C to 250 °C : ± 2 °C (Calibrated by Black body emissivity at 0.95)
Resolution	: 1 °C at higher than 100 °C 0.1 °C at other than above
Emissivity	: Selectable among 0.98, 0.92 and 0.85
Distance to Spot size (D:S)	: 10 : 1
Detector	: Thermopile
Spectral response	: 8 to 14µm
Response time	: 0.5 second
Laser sighting	: 1 point • Class II Laser (use less than 1mW of power) Wave length : 650 nm Output : less than 1mW
Operating ambient	: 0 to 50 °C, less than 80% of R. humidity
Storage ambient	: -20 to 50 °C, less than 90% of R. humidity (no condensing)
Power requirements	: One 9-V battery (included)
Power consumption	: Max. 28mA (when Laser ON)
Battery life (at normal temperature)	: approx. 8 hours (Laser ON) approx. 70 hours (Laser OFF)
Dimensions	: 46(W) x 78(D) x 160(H) mm
Weight	: approx. 157g (with a battery)
Materials	: Unit: ABS resin Covers: PVC resin
Standard accessories	: 2 pcs. of 9-V battery (One pc. is factory set), Hand strap soft pouch, vinyl cover (top and grip cover)

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