

kaise


DIGITAL TEMPERATURE METER

INSTRUCTION MANUAL




SK-6850

KAISE CORPORATION

FOR SAFETY MEASUREMENTS!!

To prevent an electrical shock hazard to the operator and/or damage to the instruments, read this instruction manual carefully before using the instrument. **WARNINGS** with the symbol  on the instrument and this instruction manual are highly important.

Important Symbols :

-  The symbol listed in IEC 61010-1 and ISO 3864 means "Caution (refer to instruction manual)".
-  **WARNING** : The symbol in this manual advises the user of an electrical shock hazard that could result in serious injury or even death.
-  **CAUTION** : The symbol in this manual advises the user of an electrical shock hazard that could cause injury or material damages.

INTRODUCTION

Thank you for purchasing KAISE "SK-6850 DIGITAL TEMPERATURE METER". To obtain the maximum performance of this instrument, read this Instruction Manual carefully, and take safe measurement.






1. UNPACKING AND INSPECTIONS

Confirm if the following items are contained in the package in good condition. If there is any damage or missing items, ask your local dealer for replacement.

- | | |
|-------------------------------|--------|
| 1. Digital Temperature Meter | 1 pce. |
| 2. Temperature Probe (818-02) | 1 pce. |
| 3. Carrying Case (1020) | 1 pce. |
| 4. Batteries (1.5V R6P) | 2 pcs. |
| 5. Instruction Manual | 1 pce. |

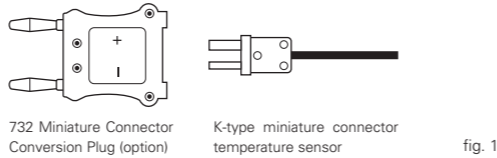
2. SPECIFICATIONS

2-1. GENERAL SPECIFICATIONS

- DISPLAY (LCD)**
 - Numerical Display** : Maximum reading 9999, 15mm high
 - Units and Symbols** : °C, °F, AUTO, , , MAX, MIN, AVG, T1, , 
- TEMPERATURE SENSOR** : Thermocouple, K type
- SAMPLING RATE** : 2 times/second
- RANGE SELECTION** : Auto-ranging
- MEASUREMENT UNIT** : °C / °F (selectable when turning on the power.)
- OVERLOAD INDICATION** : "OL" indication more than 1300°C (2372°F).
"–OL" indication at -100°C (-149°F) or less.
- BATTERY WARNING** :  indication at approx. 2.5V or less
- DISPLAY HOLD** : Hold indicating values by DH Key
- MAX/MIN/AVERAGE** : Measurable by REC Key
- SENSOR DISCONNECT INDICATION** : "----" is indicated on LCD.
- AUTO POWER OFF** : Power turns off automatically after approx. 30 minutes.
- OPERATING POWER SUPPLY VOLTAGE** : 2.5V to 3.6V
- DIELECTRIC STRENGTH** : 0.8kV 50Hz sine wave, for 1 minute (between circuit and case)
- OPERATING TEMPERATURE & HUMIDITY** : 0°C to 40°C, 80%RH or less in non-condensing
- STORAGE TEMPERATURE & HUMIDITY** : -20°C to 60°C, 70%RH or less in non-condensing
- TEMPERATURE COEFFICIENT** : 0°C to 18°C, 28°C to 40°C ; add accuracy at 23°C±5°C×0.1 / °C
- SAFETY LEVEL** : CE marking compliant
- POWER SUPPLY** : 1.5V R6P or LR6 (AA) batteries x 2
- POWER CONSUMPTION** : 10mVA max. (Approx. 1.4 μVA in power-off)
- CONTINUOUS OPERATING TIME** : Approx. 1000 hours (Alkaline), Approx. 330 hours (Manganese)
- DIMENSIONS & WEIGHT** : 148(H)×83(W)×33(D)mm, Approx. 185g
- ACCESSORIES** : 818-02 Temperature Probe, 1020 Carrying Case, 1.5V R6P (AA) Batteries x 2, Instruction Manual
- OPTIONAL ACCESSORIES** : 817-01 to 817-25 Temperature Probes (refer to '2-3. SENSOR SPECIFICATION'), 732 Miniature Connector Conversion Plug

732 Miniature Connector Conversion Plug (option)

Optional connector plug which is necessary to use an "K-type miniature connector temperature sensor" with SK-6850. Insert the miniature connector to 732 as following figure to convert it to the banana-plug.



2-2. MEASUREMENT SPECIFICATION (23°C±5°C, <80%RH in non-condensing)

Range	Accuracy	Resolution	Maximum Input
-99.9°C to 199.9°C	±0.5%rdg±0.8°C	0.1°C	1300°C
190°C to 1300°C	±0.5%rdg±1°C	1°C	
-148°F to 2372°F	±0.5%rdg±2°F	1°F	

K-type thermocouple. Sensor accuracy is not included.

2-3. SENSOR SPECIFICATION

818-02 (STANDARD ACCESSORY)

Measurement Range	Sensor Accuracy
-50°C to 100°C	The greater of ±2.5°C(4.5°F) or ±0.75% of measured temperature

OPTIONS


Model	Type	Dimension (Sensor)	Measurement Range	Application
817-01	Sheath	3.2 φ×250mm	-50°C to 800°C	Liquid temperature
817-03		5 φ×500mm	-50°C to 1150°C	Liquid temperature
817-17		1.6 φ×150mm	-50°C to 600°C	Liquid and internal temperature
817-19	Surface	3.2 φ×150mm	-50°C to 750°C	Internal temperature
817-24		4.5 φmm	0°C to 600°C	Surface temperature
817-25	Sheath	3.2 φ×150mm	0°C to 200°C	Air temperature (like air conditioner)


Compensation Lead : Conventional type (-20°C to 90°C) 1.5m
Sensor Accuracy : The greater of ±2.5°C(4.5°F) or ±0.75% of measured temperature

3. SAFETY PRECAUTIONS






To avoid unexpected danger such as operator's injury or damage to the instrument, read the following precautions carefully.

3-1. WARNINGS

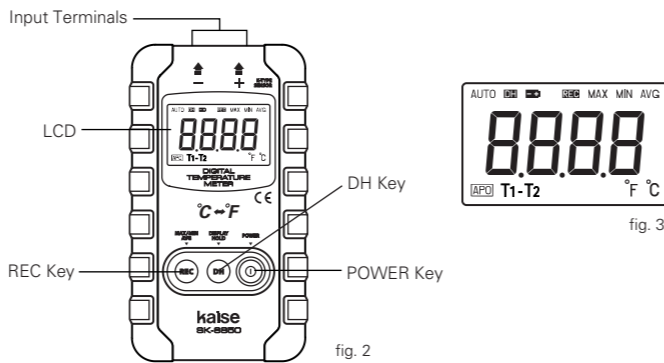
 **WARNING 1. Checks of Instrument**
Before measurement, check if there is no damage to the instrument. Dust, grease and moisture must be removed.

 **WARNING 2. Maximum Input Observance**
Do not measure any temperature that might exceed the specified maximum input value.





3-2. GENERAL WARNINGS AND CAUTIONS

-  **WARNING 1.** Children and the persons who do not have enough knowledge about electric measurements must not use this instrument.
-  **WARNING 2.** Do not measure the electricity in naked of barefooted to protect yourself from electrical shock hazard.
-  **CAUTION 1.** Away the instrument from hot and humid conditions like in the car. Do not apply hard mechanical shock or vibration.
-  **CAUTION 2.** Do not polish the case or attempt to clean it with any cleaning fluid like gasoline or benzine. If necessary, use silicon oil or antistatic fluid.
-  **CAUTION 3.** Remove the batteries when the instrument is out of use for a long time. The exhausted batteries might leak electrolyte and corrode the inside.

4. NAME ILLUSTRATION




4-1. LCD ※Refer to fig. 2

- | | |
|--|--|
| AUTO : Auto-ranging measurement | MIN : Lights up when minimum value is displayed |
|  : Lights up in display hold function | AVG : Lights up when average value is displayed |
|  : Low battery warning |  : Lights up when auto power off is activated |
|  : Lights up in MAX/MIN/AVERAGE measurement | T1 : Lights up when OL or –OL are input in measurement |
| MAX : Lights up when maximum value is displayed | °C : Temperature in degrees centigrade |
| | °F : Temperature in degrees Fahrenheit |


4-2. POWER Key

- Power ON/OFF**
Press this key for 0.5 seconds or less to turn on. To turn off, press it for 1 second or more.
- Change the Measurement Units**
Turn the power on holding down REC Key. Measurement unit is changed into another one, either °F or °C.
NOTE : Factory default setting is " °C ".

4-3. DH Key : Display Hold


Holds LCD displayed value by pressing this key for 0.5 seconds or less. ( lights up)
To release it : Press DH Key again for 0.5 seconds or less.

4-4. REC Key : MAX/MIN/AVERAGE measurement


Press this key for 0.5 seconds or less to start MAX, MIN and Average measurements ( lights up). To view each value, press this key for 0.5 seconds or less during MAX/MIN/AVERAGE measurement.
To return to the normal measurement mode : Press REC Key for 1 second or more.
※ For details of this function, read "5-3. MAX/MIN/AVERAGE Measurement".

5. MEASUREMENT PROCEDURES

5-1. PREPARATION FOR USE

1. INSTRUCTION MANUAL 
Read INSTRUCTION MANUAL carefully to understand the specification and functions properly. "3. SAFETY PRECAUTIONS" is very important for safety measurement.

2. BATTERY INSTALLATION

Before starting measurement, install 2 pcs of 1.5V R6P or LR6 batteries referring to "6-1. BATTERY REPLACEMENT". Replace them in the same way when  lights up on LCD.


3. OVERLOAD INDICATION

LCD displays "OL" when measurement value exceeds 1300°C (2372°F), and displays "–OL" if it becomes -100°C (-149°F).

4. SENSOR DISCONNECT INDICATION



LCD displays "----" when temperature probe is not connected to the instrument or the probe is disconnected.

5. AUTO POWER OFF

Power turns off automatically after approx. 30 minutes of the last key operation.
NOTE : Approx. 1.4 μVA is consumed even in the power-off condition.
NOTE : Auto power off is cancelled under MAX/MIN/AVERAGE measurement.
To cancel it : Turn the power on holding down DH Key. Auto power off is disabled and  disappears from LCD.

6. SYMBOL MARK

The following symbol marks shown on the instrument and instruction manual are listed in IEC 61010-1 and ISO 3864.

	Caution (refer to instruction manual.)
	CE Marking Conformity

5-2. TEMPERATURE MEASUREMENT (°C / °F)

WARNING
● Read "3. SAFETY PRECAUTIONS" carefully to avoid any measurement accidents and damage to the instrument.
● Do not measure any temperature that might exceed the specified measurement range of the instrument and temperature probes.

- Connect temperature probe to the input terminals. Insert "–" side or black plug into – terminal, and insert "+" side or red plug into + terminal.
- Press **POWER** Key for 0.5 seconds or less and turn the power on.
- Confirm if the appropriate measurement unit, °C or °F is displayed on the LCD. Measurement unit can be changed by the following procedures.

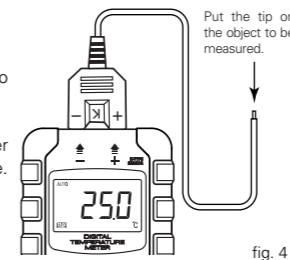
How to change the measurement unit :

- Turn the power off once by pressing **POWER** Key for 1 second or more.
- Hold down **REC** Key and press **POWER** Key for 0.5 seconds or less.
- Power turns on again, and another measurement unit is displayed on LCD.

NOTE : Factory default setting is "°C".
NOTE : The changed measurement unit is displayed from the next power-on.

- Put the tip of temperature probe on the object to be measured.
- Read the measurement value on LCD.
- After finishing the measurement, turn the power off by pressing **POWER** Key for 1 second or more.

Available Functions :
MAX/MIN/AVERAGE Measurement (refer to 5-3),
Display Hold (refer to 4-3)






NOTES FOR THE MEASUREMENT

- When measuring internal temperature by sheath type temperature probes, insert the sensor into the depth of 15 to 20 times of its diameter size.
- For surface type temperature probes, touch the sensor vertically on the object to be measured.
- Do not measure strong alkaline or strong acid liquid.
- Heat resistance limit of the grip of temperature probe is 150°C. Be careful when measuring high temperature that might exceed 150°C.
- Sensor Disconnect Indication may not work properly when using non-optional temperature probes.

5-3. MAX/MIN/AVERAGE MEASUREMENT


MAX, MIN and Average measurement is possible by **REC** Key.

- Press **REC** Key for 0.5 seconds or less during normal measurement.  lights up on LCD and starts MAX/MIN/AVERAGE measurements.
NOTE : Auto power off is cancelled in this function.
- Press **REC** Key to view MAX, MIN, and Average values.
"MAX" (maximum value) → "MIN" (minimum value) → "AVG" (average value) are displayed on LCD each time the key pressed.
- To return to MAX/MIN/AVERAGE measuring mode, press **REC** Key in "AVG" display.
- To return to the normal measurement mode, press **REC** Key for 1 seconds or more. MAX/MIN/AVERAGE measurement is finished and  disappears from LCD.
NOTE : Auto power off is recovered after returning to the normal measurement mode.
NOTE : The instrument does not memorize MAX, MIN and Average values after finishing this function.
NOTE : MAX/MIN/AVERAGE measurement is stopped when Display Hold is activated.
NOTE : When "OL" or "–OL" are input during this function, measurement is stopped and LCD display becomes as follows ( lights up on LCD). To reset this, restart MAX/MIN/AVERAGE measurement.
 - "OL" input : Minimum value is shown in MIN display. The other values are "OL".
 - "–OL" input : Maximum value is shown in MAX display. The other values are "–OL".**NOTE** : When sensor disconnect happens during this function, "----" is displayed and stop measurement. To reset this, restart MAX/MIN/AVERAGE measurement.

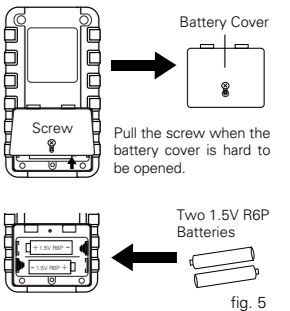
6. MAINTENANCE

6-1. BATTERY REPLACEMENT

WARNING
For safety, turn the power off and detach Temperature Probe from the instrument when to replace the batteries.

Replace the batteries when  lights up on LCD.

- Stop measurement and turn the power off.
- Loosen a screw of battery cover and open it.
- Remove the exhausted batteries.
NOTE : Pull the screw when the battery cover is hard to be opened.
- Insert 2 pcs of new 1.5V R6P or LR6 batteries in correct polarity.
- Fix battery cover and tighten the screw.



NOTE : Remove the batteries when the instrument is out of use for a long time. The exhausted batteries might leak electrolyte and corrode the inside.


6-2. PERIODICAL CHECK AND CALIBRATION

Periodical check and calibration is necessary to make safety measurements and to maintain the specified accuracy. The recommended check and calibration term is once a year and after the repair service. This service is available at KAISE AUTHORIZED SERVICE AGENCY through your local dealer.

6-3. REPAIR

Repair service is available at KAISE AUTHORIZED SERVICE AGENCY through your local dealer. Pack the instrument securely with your name, address, telephone number and problem details, and ship prepaid to your local dealer.

Check the following items before asking repair service.

- Check the battery connection, polarity, and capacity ( lights up or not).
- Confirm that the keys are set correctly.
- Confirm that measured accuracy is adopted in the operating environment.
- Confirm that the body of this instrument has no cracks or any other damages.

WARRANTY

SK-6850 is warranted in its entirety against any defects of material or workmanship under normal use and service within a period of one year from the date of purchase of the original purchaser. Warranty service is available at KAISE AUTHORIZED SERVICE AGENCY through your local dealer. Their obligation under this warranty is limited to repairing or replacing SK-6850 returned intact or in warrantable defect with proof of purchase and transport charges prepaid. KAISE AUTHORIZED DEALER and the manufacturer, KAISE CORPORATION, shall not be liable for any consequential damages, loss or otherwise. The foregoing warranty is exclusive and in lieu of all other warranties including any warranty of merchantability, whether expressed or implied. This warranty shall not apply to any instrument or other article of equipment which shall have been repaired or altered outside of KAISE AUTHORIZED SERVICE AGENCY, nor which have been subject to misuse, negligence, accident, incorrect repair by users, or any installation or use not in accordance with instructions provided by the manufacturer.

KAISE AUTHORIZED DEALER



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Product specifications and appearance are subject to change without notice due to continual improvements.