

# H-767

## THERMOMETER for SOLDERING IRON

Thank you for purchasing the HOZAN H-767 THERMOMETER for SOLDERING IRON. With proper care and handling, this fine instrument will provide years of trouble-free operation. Please read this entire instruction manual carefully before attempting to place this instrument in service. Please keep this instruction manual available for reference.

### Identification of parts



The loaded battery is not warranted in its life since just a testing battery.

### Specifications

Measurement range	0 to 500°C	Sampling rate	1.25 times/second
Sensor	H-768	Power supply	9V Laminated (6F22) battery X 1
Resolution	1°C	Battery life	Approx. 100 hours (continuous use)
Accuracy	$\pm(1\%rdg + 1dgt)$	Outer dimensions	110(W) X 66(H) X 155(D) mm
Max. reading	1999 count	Weight	345g

## Warning and caution symbols

These symbols are used throughout the instruction manual to alert the user to potential safety hazards as follows :

### **Warning**

... Notice when incorrect handling could cause the user's death or serious injury.

### **Caution**

... Notice when incorrect handling could cause injury to the user or material damage.

Even if the instructions do not have **Caution** mark, there are some possibilities for a serious situation. Follow the instructions.

## Precautions

The H-767 is a thermometer only for soldering irons. Do not use for any other purpose.

### **Warning**

Do not touch the sensor immediately after measuring. Otherwise, this could cause a burn.

### **Caution**

1. Do not press hardily the center of the sensor. The sensor will wear out in a short period.
2. The measuring range of this instrument is 0~ 500°C. Do not use with soldering irons exceeding 500°C.
3. Place the instrument on a level and stable place.
4. The H-767 is a precision instrument. Do not drop or apply a strong impact. This could damage the H-767.
5. While opening the bottom lid, do not touch anything else except the battery holder or the snap connector when replace battery. This could cause a malfunction.

## Operation

- 1 Place the instrument on a level and stable place.  
Turn the power switch on, then the display will show the ambient temperature immediately.
- 2 Make sure that the temperature of the soldering iron tip is high enough melting any solder.



## Operation

- 3 Gently place the tip of energized soldering iron on the center of the sensor. Note the reading. To improve heat transfer from the soldering iron tip to the sensor, apply a small amount of solder.



### Caution

Do not apply the iron tip onto the sensor wire excessively force. This could damage the sensor wire. Weighed 50 to 100g is recommended.

- 4 Solder flux builds up on the sensor. Wipe off periodically with suitable cleaning liquid such as the HOZAN Z-293 FLAX REMOVER or Z-275 FLUX CLEANER.
- 5 The sensor is a consumable item. If worn out, simply remove the sensor as illustrated, and replace it with a new sensor.



## Replacement sensor



H-768  
(Standard accessory  
/ for fine iron tip)



H-763  
(Option)

## Replacing the battery

- When "LO BAT" is displayed, replace the battery with new one. Prepare a Phillips screwdriver no. 1.

- 1 Turn the power switch off.
- 2 Turn the unit upside down. Remove one set screw of the bottom lid, and open the cover.
- 3 Pull the battery out from the battery holder.
- 4 Set a new battery to the snap connector.
- 5 Close the bottom lid.

## Indication of error

If the display shows "1", it indicates an error related to the sensor. This message is displayed when the sensor is not set or is worn out. If worn out, simply remove the sensor as illustrated, and replace it with a new sensor.



## Calibration

Ask HOZAN dealer for calibration and adjustment. We are able to issue test data, calibration certificates and traceability charts on request.

You can perform calibration (judging if the unit is correct) and adjustment by yourself, but it is not recommended for precise measuring and we are not able to guarantee its result. Only calibrating procedures are written as follows. We send a detailed manual for adjustment when requested.

Prepare a standard generator or direct current power supply and a voltmeter for calibration and adjustment.

Recommended ambient temperature : 23°C or closer

Preparation : Leave the thermometer to be calibrated as well as the instruments to use for calibration for 30 minutes.

### ● Calibration of standard contact temperature setting

**1** While installing the sensor, turn the power on with wiring nothing. After ten minutes of warm-up, make a comparison between displayed temperature and the actual ambient temperature.

**2** If the difference is  $\pm 2^{\circ}\text{C}$  or less, the instrument is correct.

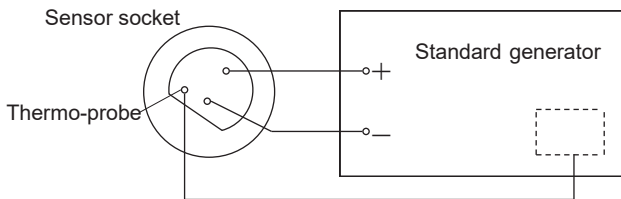
 **Caution** Do not touch the sensor during this work.  
We recommend to short-circuit the connect pins removing the sensor.

# Calibration

## ● Calibration

In case of using a DC standard generator for testing thermoelectric thermometer

- 1 First, check if the standard contact temperature given above is correct.
- 2 Pull out the sensor and wire like below figure. Turn the power of the instrument on. Follow the instructions of the standard generator regarding its handling. (The H-767 has a function of compensating ambient temperature automatically. Use a proper standard generator with a thermo-probe.)

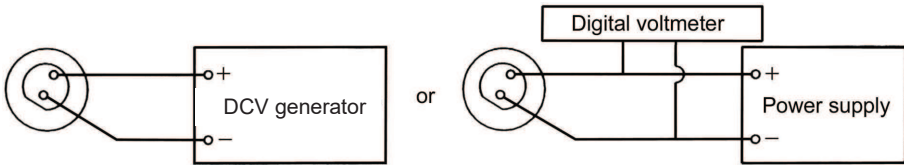


- 3 Apply voltage corresponding to 400°C from the standard generator.
- 4 If the instrument displays  $401^{\circ}\text{C} \pm (1\% \text{rdg} + 1 \text{dgt})$ , it is correct.
  - \*1 1%rdg...1% of displayed value
  - \*2 1dgt...a piece of least significant digit
- 5 The instrument which is correct at the point of 400°C indicates 503°C when it applied voltage corresponding to 500°C. Similarly it indicates 298°C when 300°C, 199°C when 200°C and 101°C when 100°C. This is not unusual, but a result upon the characteristic that the relation between temperature and thermoelectric power is not perfectly linear.

# Calibration

In case of without using DC standard generator for testing thermoelectric thermometer

- 1 First, check if the standard contact temperature given above is correct.
- 2 Pull out the sensor and wire like below figure. Turn the power on.



- 3 Note the reading of ambient temperature. Refer to the cross-reference table (for K type thermocouple) to get mV value from ambient temperature.

Ambient temperature(°C)	Thermoelectric power(mV)
20	0.798
21	0.838
22	0.879
23	0.919
24	0.960
25	1.000
26	1.041

- 4 Subtract the mV value resulting in 3 from the voltage corresponding to 400°C in the right table to get the applying voltage. Apply it voltage to the circuit and read the display.

Check temperature(°C)	Thermoelectric power(mV)
500	20.640
400	16.395
300	12.207
200	8.137
100	4.095
0	0

(Based upon JIS C 1602)

- 5 If the instrument displays  $401^{\circ}\text{C} \pm (1\% \text{rdg} + 1 \text{dgt})$ , it is correct.

## Maintenance

As extended use, engagement of the sensor and the sensor base could become loose (tight). If so, adjust it as follows:

To be tight, widen the gap of the contact pins on the sensor base with a Phillips screwdriver and such.



To be loose, narrow the gap of the contact pins on the sensor base with pliers and such.



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