INSTRUCTION MANUAL

HANDHELD THERMOMETER

HA-400 Series

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TO ENSURE SAFE AND RELIABLE OPERATION

Please observe the following matters toensure safe and reliable operation of products.

⚠Caution

- This product should not be used for any purpose except temperature measurement.
- Stop using as soon as any problems are discovered.
- Do not take the unit apart or remodeling.
- Use the specified battery cells or specified AC-Adaptor.
  ※This products is not rechargeable model.
- Under Electromagnetic environment, Instrument may measure unstably.

Concerning the battery cells

Please observe the following matters to guard the battery leakage, exothermic reaction and ignition.

⚠Warning

- Do not throw away the battery cells in the fire, and avoid short between electrodes.
- Do not charge or heat.
- Use the specified battery cells.

⚠Caution

- Set the battery cells correctly 「+」and 「−」.
- Remove the battery cells when the battery life is finished, or long time no using.
- Do not mix old and new, or variety battery cells.
- The battery life will be affected by the environmental temperature.

Preface

Thank you for purchasing this product from ANRITSU METER CO., LTD.
We prepared this manual so that you can use this product with ease and confidence.
Please read this manual carefully and understand each functions of this product for your safety and correct using.

Caution

- This contents and the specification of this product are subject to change without notice.
- Reproduction in part or whole of any material from this booklet is prohibited by low.
- We surely make this manual, however if there are any error or not clear, please contact the place of purchase or us.
- We are not responsible for the consequences of using this product.

Warranty and Aftersales Service

ANRITSU METER CO., LTD. ships products after severe company's inspection. Should you find any failure resulting from poor material and workmanship or accident during transportation, please contact the place of purchase or us.

We recommend that you may use the original packaging for this product when you send it to us for repairing or periodical checkup. If you no longer have the original carton, be sure to use plenty of wrapping to guard against damage during shipping.

CONTENTS

1. General····· e4

2. Unpacking

2.1. Unpacking····· ····· e4

2.2. Repacking····· e4

3. Name of Components

3.1. Name of Components····· e5

3.2. Display of all segments ····· e6

4. Preparation for Operation

4.1. Battery Installation ····· e7

4.2. AC-power Supply ····· e8

4.3. How to use Hand Strap····· e8

4.4. Sensor Setting····· e9

4.5. Soft case····· e9

5. Operation

5.1. Power ON / OFF····· e10

5.2. Hold····· e10

5.3. Automatic Power OFF ····· e11

6. Default Configuration·····e11

7. Indicator of Battery remain····· e12

8. Error Messages

8.1. Indication of Sensor Burnout····· e13

8.2. Indication of Over range····· e13

8.3. Indication of Error····· e13

8.4. Indication of Exhausted Battery····· e14

9. Maintenance

9.1. Storage····· e14

9.2. Case cleaning····· e14

10. In case of Trouble····· e15

11. Specification····· e16

1. General

This is a handheld thermometer by the latest microcomputer technology.
A microprocessor is used for constant compensation of zero-point and full scale, thus ensuring extremely stable, high precision measurement.

2. Unpacking

2.1. Unpacking

Open the carton and the check that the following are provided. If any of them is missing or out of order, please contact the place of purchase or us.

1. Main unit
2. Soft case
3. AA-size alkaline battery cells
4. Instruction manual
5. Warranty

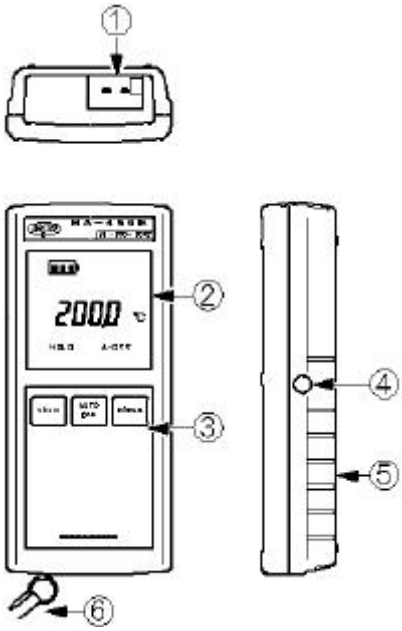
2.2 Repacking

Use the original carton of the instrument for its transportation by mail or car. If the original case is not available, carefully wrap the instrument in shock-absorbing material (polystyrene form and the like). Wrapping material should be dry and free of dust generation otherwise the instrument may be damaged.

3. Name of Components

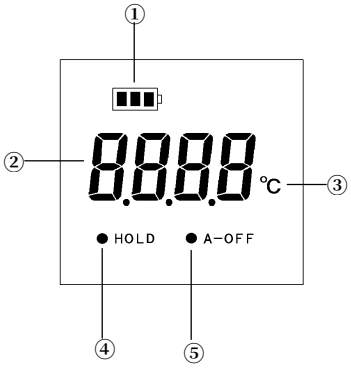
3.1. Name of Components

(MODEL: HA-4 **5**0**)**



① Sensor Input connector
② LED Display
③ Key switch panel
④ AC adaptor jack
⑤ Battery housing
⑥ Hand strap

3.2. Display of all segments

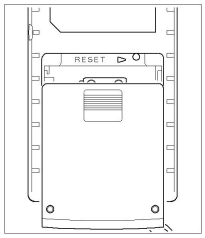


① Battery Indicator
② Main Display
③ ℃
④ Hold
⑤ Auto Power OFF

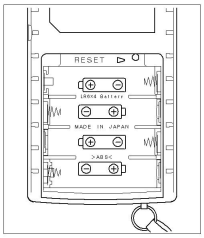
4. Preparation for Operation

4.1. Battery Installation

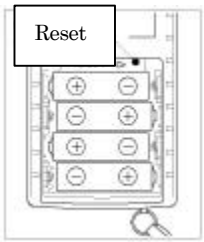
Be sure to keep the power OFF during the battery cells change.



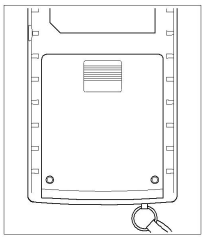
(1) Open the battery housing cover.



(2) Set battery cells correctly.



(3) After setting battery cells, press the Reset switch.

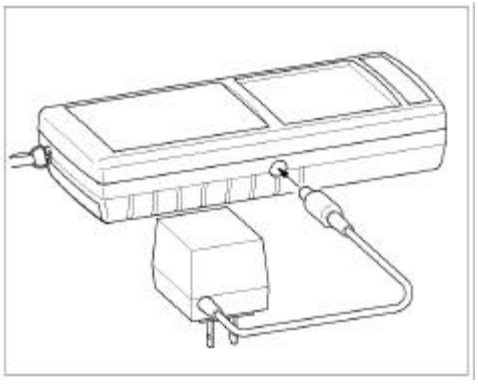


(4) Close the battery housing cover completely.

- The Reset switch is a small push button in the upper section of the battery housing. Use a thin stick to lightly press it.
- When the Rest button is pressed, operation begins in the same way as power is turned ON, and the instrument will be ready for measurement. When measurement is not intends after battery change, turn power OFF.

4.2. AC-power Supply

(1) After turning power OFF, connect the AC-adaptor connection plug to the main unit as shown.



(2) Connect the power plug of the AC-adaptor to commercial power (100V AC).

※ When the AC-adaptor is connected during operating the battery, the internal battery circuit will be cut OFF as same as Reset.

※ Be sure to use the specified AC-adaptor. The AC-adaptor for the HA series is available as an option.

4.3. How to Use Hand Strap

Hang the hand strap around the hand to prevent in advertent drop of the instrument.

4.4. Sensor Setting

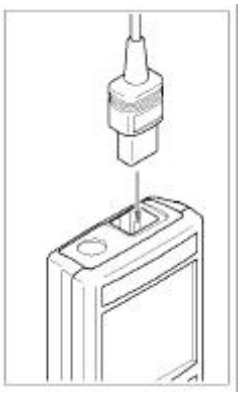
Set the sensor as shown.

The plug is so designed that it will not be set when the polarity is reversed.

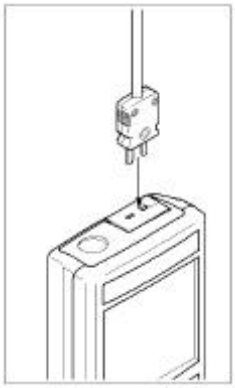
Forcible insertion will damage the instrument.

Be sure to check the polarity.

[HA－４００]



[HA－４５０]



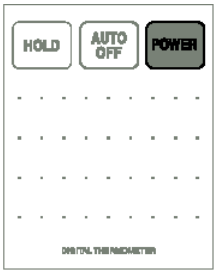
4.5. Soft case

Use the attached soft case for protection instrument against dirt or flaw.

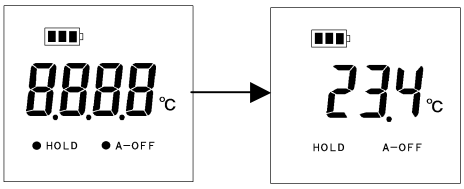
In case of the combined use attached Soft case and the AC-adaptor, please bore the hole at the AC-adaptor jack part of Soft case by scissors, etc.

5. Operation

5.1. Power ON／OFF

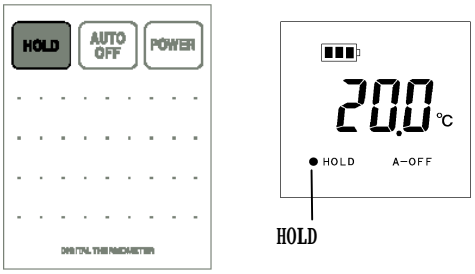


Press the Power key to turn power ON and all segments appear on the display for 1 second, and start measurement as shown below.
Press the key again to turn power OFF.



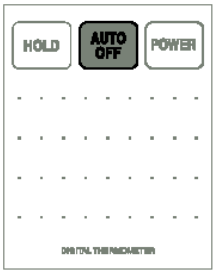
5.2. Hold

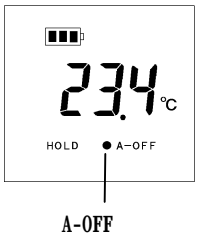
Press the HOLD key to stop measurement and show the measured Temperature on the display.
Then HOLD appears on the display.
Press the key again to return to the normal mode.



5.3. Automatic Power OFF

Press the AUTO OFF key to enter the Automatic Power OFF mode that is provided to automatically turn Power OFF after a certain period time (about 5 minutes) no key operation. Press the key again to return to normal mode.





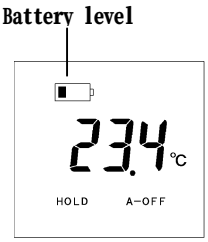
A-OFF

6. Default Configuration

When the instrument turns power OFF, Reset or Battery exchange, some setting will be canceled. Default Configuration is below tables.

Function	
HOLD	Cancel
Auto Power OFF	Default

7. Indicator of Battery remain



The battery level is indicated in the upper section of the display.
In accordance with operation hours, the indicator lights go out as shown below.

This table is tentative value because of the battery remains according to variety battery specification.

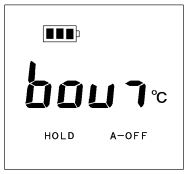
Indicator	Battery remain
	Over 60%
	60～10%
	Under 10%
 Blinks	Exhausted Battery

This instrument can work for a while after the Exhausted Battery sign appears. However, Change battery as soon as possible, otherwise satisfactory function will not be available.

8. Error Messages

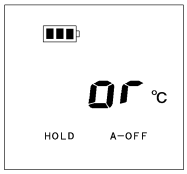
8.1. Indication of Sensor Burnout

If the sensor burns out or is not coupled, the Burnout display appears shown as right.
Check whether the sensor burns out or does not connect to instrument.

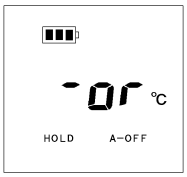


8.2. Indication of Over range

If the temperature exceeds the measurable range during measuring, the Over range display appears shown as right.



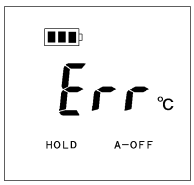
- If the sensor is almost cut, the Over range display sometimes appears.
  Please check the sensor cut if measuring temperature is in the range.



- The over range display does not damage the instrument, however the sensor will be exhausted. Avoid the sensor to the place in measurable temperature.

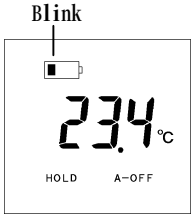
8.3. Indication of Error

The instrument is broken, please contact the place of purchasing.



8.4. Indication of Exhausted Battery

When the battery is exhausted, Battery indicator blinks.
Then replace the old battery cells with new ones.



9. Maintenance

9.1. Storage

Avoid places subject to the following when storing the instruments.

- Direct Sunlight
- Strong vibration
- High humidity (85% RH or more)
- Hot atmosphere (50℃ or more)
- Dust, corrosive gas, or salt
- Strong electromagnetic field

It is recommended to put the instrument in the original case when storing it for a long time.

9.2. Case cleaning

When the case is dirty, lightly wipe it with a cloth slightly impregnated with water or petroleum.
Do not use thinner or benzene, otherwise the case or keyboard may discolor or deform.

10. In case of Trouble

Issues of instruments operation trouble, please check follows. If your trouble is not solved, please contact the place of purchase or us.

(1) Display does not show any segments.

- Push the Reset switch
- Check the pole of battery cells
- Replace the old battery with new ones
- If you use the AC-Adaptor, please pull it out.

(2) Measurement value does not stable.

- If sensor is deformation or broken junction, please contact us for repairing.
- Pull out and put in the plug of the sensor with the instrument again.
- If the senor does not hold in the correct position, measurement value does not stable.
- If you measure in the environment of strong electromagnetic field (a big motor, etc.), please shield the instruments and the sensor against electrical noise.

(3) Measurement value error is too big (Not acceptable).

- If the thermocouple type of the sensor is not corresponded to the instruments, measurement value is not correct. Please replace the correct sensor.
- If sensor is deformation, please contact us

(4) The key switch is not operated

- When the Burn out display appears, no operation. Please put the sensor in, or check the sensor broken junction.

11. Specification

Display	7 segments LED
Operation key	Membrane switch
Linearizer	Digital (based on JIS C 1602-1995)
Sampling rate	Approximately 300 ms
Signal source resistance	500Ω
Power supply	Battery cells (AA) 4 pieces or AC adaptor
Battery life	Approximately 150 h
Environmental limit	Operation :0～40℃, 0～80% Storage : -20～50℃, 0～80%
Dimensions	71(W)×160(H)×35(D)mm
Weight	Approximately 250 g
Accessories	Soft case Instruction manual Battery cells (AA) 4 pieces

Accuracy

E	Measurement range *1	1℃	-200～800℃
		0.1℃	-100.0～500.0℃
	Accuracy 1℃ resolution	0～800℃ ±(0.1% of reading + 1℃) -200～ -1℃ ±(0.5% of reading + 1℃)	
	Accuracy 0.1℃ resolution	0.0～500.0℃ ±(0.05% of reading + 0.2℃) -100.0～0.1℃ ±0.5℃	
K	Measurement range *2	1℃	-200～1200℃
		0.1℃	-100.0～500.0℃
	Accuracy 1℃ resolution	0～1370℃ ±(0.1% of reading + 1℃) -200～ -1℃ ±(0.5% of reading + 1℃)	
	Accuracy 0.1℃ resolution	0.0～500.0℃ ±(0.05% of reading + 0.2℃) -100.0～0.1℃ ±0.5℃	
Accuracy Cold-junction compensation		0.2℃ at 25℃± 10℃	
Temperature coefficient		±0.01% of F/S／℃	

*1, *2: Indicator range is wider than measurement range. (approximately 2 ℃～5℃)