SMART SENSOR®

MODEL: □ AS872D
□ AS872
□ AS882

Non-contact infrared thermometer
Instruction manual

CONTENTS

Specific Declarations:

a. Dispose of battery should in accordance with local laws and regulations.

b. The product design and the manual updating, repairing by technician authorized by us.

MAINTENANCE AND WARRANTY

Maintenance:

1. Remove the battery from the unit if it is not required for extended periods of time in order to avoid damage to the battery compartment and the electrode resulting from a leaking battery.
2. Do not store or use the unit in following locations where the unit may be subject to:
   a. Splashes of water or high levels of dust.
   b. Air with high salt or sulphur content.
   c. Air with other gases or chemical materials.
3. Do not disassemble the unit or attempt internal alterations.
4. Never use alcohol or thinner to clean the unit casing that will especially erode the LCD surface; just clean the unit lightly as needed with little clean water.

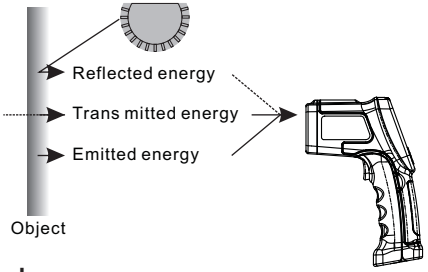
Warranty:

1. About relative warranties please read provided warranty card.

2. We disclaim any liability due to: transportation damages; incorrect use or operation; manipulation, alterations or repair attempts; without warranty card, invoice.

INTRODUCTION

Compact, rugged and easy to use. Just aim and push the button, read current surface temperatures in less than a second. Safely measure surface temperatures of hot, hazardous or hard-to-reach objects without contact.



How it works:

Infrared thermometer measure the surface temperature of an object. The units optical system sense the object's emitted energy with different wavelength.It is collected and focus onto a detector. The unit's electronics system translated the information into a temperature reading which is displayed on the unit.

Functions:

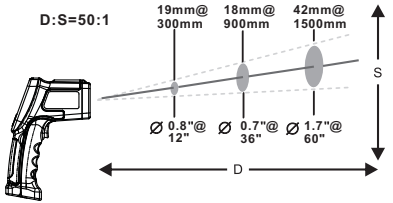
1. Laser indication
2. Backlight
3. High/Low temperature Alarm setup
4. Max/Min/AVG and difference temperature functions
5. Low battery indication
6. Metric and inch conversion
7. Data automatically store function

Specifications:

Specifications	AS872D	AS872	AS882
Temperature range	50℃~1150℃ 58℉~2102℉	18℃~1350℃ 0℉~2462℉	18℃~1650℃ 0℉~3002℉
Accuracy (In the condition of 23℃±3℃)	-50℃(-58℉) to -31℃(-23℉) ±5℃ -30℃(-23℉) to -1℃(31℉) ±3℃ 0℃(32℉)to 100℃(212℉) ±2℃ 100℃ hereinbefore ±2℃or±2% whichever is greater：25℃±3℃		
Distance to Spot Size	50:1		
Repeatability	1% of reading or 1℃		
Response time	500 mSec, 95% response		
Spectral response	8-14 um		
Emissivity	0.10 to 1.00 adjustable (pre-set 0.95)		
Ambient operating range	0 ~40℃ (32 ~ 104℉)		
Relative humidity	10-95% RH noncondensing		
Storage temperature	-20 to 60℃ (-4~140℉)≤85%RH, not including battery		
Weight/Dimensions	480G ; 220 x 134 x 60mm		
Power	9v Alkaline or NiCd battery		
Battery life (Alkaline)	Laser Models:12 hrs		

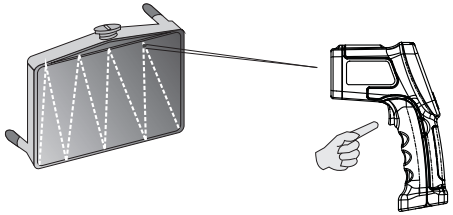
3. When take measurement, point thermometer toward the object to be measured and hold the yellow trigger. The object under test should be larger than the spot size calculated by the field of view diagram.

4. Distance & spot size: As the distance from the object increase, the spot size of measuring area becomes larger.



5. Field of view: Make sure the target is larger than the unit's spot size. The smaller the target the closer measure distance. When accuracy is critical, make sure the target is at least twice as large as the spot size.

6. Locating hot / cold spot: To find a hot spot aim the thermometer outside the area of interest, then scan across with up and down motions unitl you locate the hot spot. If do not need hot spot , press the hot spot convert to switch.



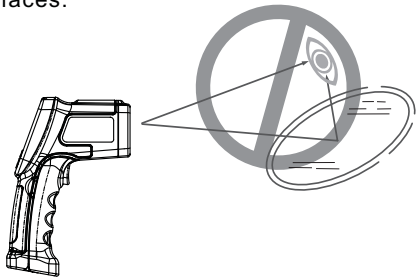
CAUTIONS

Infrared thermometer should be protected for the following:

1. EMF (electro-magnetic fields) from arc welders, induction heaters.
2. Thermal shock (cause by large or abrupt ambient temperature changes allow 30 minutes for unit to stabilize before use).
3. Do not leave the unit on or near objects of high temperature.
4. Static electricity.

Warning:

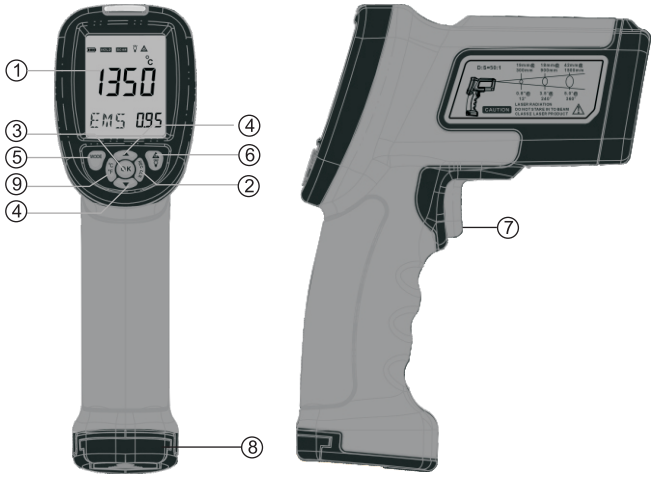
Do not point laser directly at eye or indirectly off reflective surfaces.



Others:

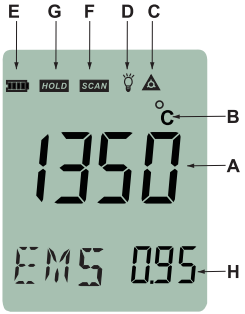
1. The unit cannot measure through transparent surfaces such as glass or plastic. It will measure the surface temperature of these materials instead.
2. Steam, dust, smoke, or other particles can prevent accurate measurement by obstructing by the units optics.

Unit Diagram:



1. LCD display
2. STO/CAL: Data store / clear key
3. SET: Set ensuring key
4. ▲ /▼: Parameter selecting key
5. MODE: Mode switching key
6. LASER/BACKLIGHT: Laser point and backlight switch
7.Measurement trigger
8. Battery door
9. Metric and inch conversion

LCD display:



A: Measuring reading
B: Temperature unit
C: Laser point ON icon
D: Backlight ON icon
E: Battery power indication icon
F: Scanning icon
G: Data hold icon
H: Mode / emissivity indicator

Low battery indication:

The amount of battery icon bar will decrease as the battery voltage descend, as the voltage is on7.2V±0.2V, the LCD will show the symbol indicating that you should replace the battery to prevent inaccurate measuring.

Battery symbol shows as following 5 grades:

:battery is sufficient
:battery is comparative sufficient
:battery is nearly deficient
:battery is nearly exhausted, need to have a replacement
:battery is exhausted completely.

LASER ON → LASER OFF
BACKLIGHT ON → BACKLIGHT ON

LASER ON → LASER OFF
BACKLIGHT ON → BACKLIGHT OFF

Circulate in turn, and the symbol ⚠ and 💡 will display or disappear.

Backlight : When backlight is turn on, every push on the measurement trigger or any other six functional key will active the backlight for 20 seconds.

Laser : When Laser is turn on, every push on the measurement trigger will start the laser.

Data storage:

Press the MODE key until the symbol STO flashes; press the SET key to confirm with the symbols 001. After temperature read out,press the CAL/ STO key to store the data in memory 1, then turn to be 2--- quickly, totally 12 units (AR882+:200units) can be stored in temperature measurement.

Read out the stored data:

On normal measuring mode, press the STO/CAL key to recall the stored data in turn with the symbol displayed. Turn to next page by ▲/▼ key.

Clearing the stored data:

On power-on state, press the STO/CAL key for 3 seconds can clear all stored data.

Operate instruction

Temperature unit conversion:

Open the battery door, select your desired temperature (℃/℉) unit by pushing the slide switch.

Temperature measurement:

Insert the 9V battery into the battery compartment, start the unit by pushing the measuring switch, the LCD will show the symbol 1000 and VERXX for 1 second, aim the unit at the object surface to be measured, and push the measuring switch to take measurement, the LCD will show the measuring value with the symbol SCAN / EMS＜0.95 pre-set. displayed, that will turn to be HOLD and measured temperature if release the measuri-ng switch and the symbol SCAN will disappear at the same time with Bi-Bi sound, and the measured value will be hold for 7 seconds automatically, if no any operation for 30 seco-nds, the unit will auto power-off.If there is no memory setting or all the settings have been cleared after power-on, the little numbers on the LCD bottom will not be shown, if there is memory setting, the LCD will show a symbol DATA and last operating state of measurement.

Mode conversion:

Press the MODE key, LCD sub-display blinks segment MAX-MIN-DIF-AVG-HAL-LAL-STO-EMS，(only main display mean normal measuring mode), press the SET to select function.

a. MAX: measuring maximum temperature
b. MIN: measuring minimum temperature
c. DIF: Basic on the reading before press SET key, compute the difference of current reading.
d. AVG: measuring average temperature
e. HAL: high temperature alarm--when selected HAL, press ▲ / ▼ keys to set high temperature alarm trigger and confirmed by pressing SET key.
f. LAL: low temperature alarm--when selected LAL, press ▲ / ▼ keys to set low temperature alarm trigger and confirmed by pressing SET key.
g. STO: data storage
h. EMS: Emissivity setup-- press ▲ / ▼ key for emissivity settings, press SET key to save set up and back to normal status.

Most organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit). Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate for this, adjust the units emissivity reading (see table below and 5.3 settings) or cover the surface to be measured with masking tape or flat black paint. Measure the tape or painted surface when the tape or painted reach the same temperature as the material underneath.

Table of approximate emissivity:

Material		Emissivity	material		Emissivity
Aluminum	unoxidised	0.1-0.2	molybdenum	unoxidised	0.5-0.9
	oxidised	0.4		oxidised	0.25-0.35
Alloy A3003	oxidised	n.r	brass copper	highly polished	0.8-0.95
	roughly polished	0.2-0.8		Roughly polished	n.r
	highly polished	0.1-0.2		oxidised	0.6
Chromium		0.4	metal		0.3
Brass	highly polished	n.r	hastelloy alloy	alloy	0.5-0.9
	roughly polished	n.r	chromium nickle metal alloy	oxidised	0.4-0.9
	oxidised	0.2-0.8		sand blasting	0.3-0.4
	electrical tag board	n.r		electric polishing	0.2-0.5
Iron	oxidised	0.4-0.8	cast iron	oxidised	0.7-0.9
	unoxidised	0.35		unoxidised	0.35
	rusted	n.r		molten	0.35
	molten	0.35	forge iron	surface	0.9
Aluminum	highly polished	0.35	magnesium		0.3-0.8
	roughly polished	0.65	mercury		n.r
	oxidised	n.r	monel metal(ni-cu)		0.3
Nickle	oxidised	0.8-0.9	platinum	black	n.r
	electrolyze	0.2-0.4	silver		n.r
Copper	cold roling	0.8-0.9	stainless steel		0.35
	polished	n.r	tin	unoxidised	0.25
	polishing plate	0.35	asbestos		0.9
	molten	0.35	ceramic		0.4
	oxidised	0.8-0.9	concrete		0.65
Titanium	deshPoli	0.5-0.75	tungsten		n.r
	oxidised	n.r		polished	0.35-0.4
Zinc	oxidised	0.6	carbon	unoxidised	0.8-0.95
	polished	0.5		plumbago	0.8-0.9

Temperature alarm:

1. HAL: When selected alarm and measured temperature highter than the alarm point, LCD display HI icon with BiBi audio sounds.
2. LAL: When selected alarm and measured temperature lower than the alarm point, LCD display LOW icon with BiBi audio sounds.

Every press “Laser / Backlight” key , the LCD will display following states in turn for transition: