SMART SENSOR ®

Mode：AR872D⁺

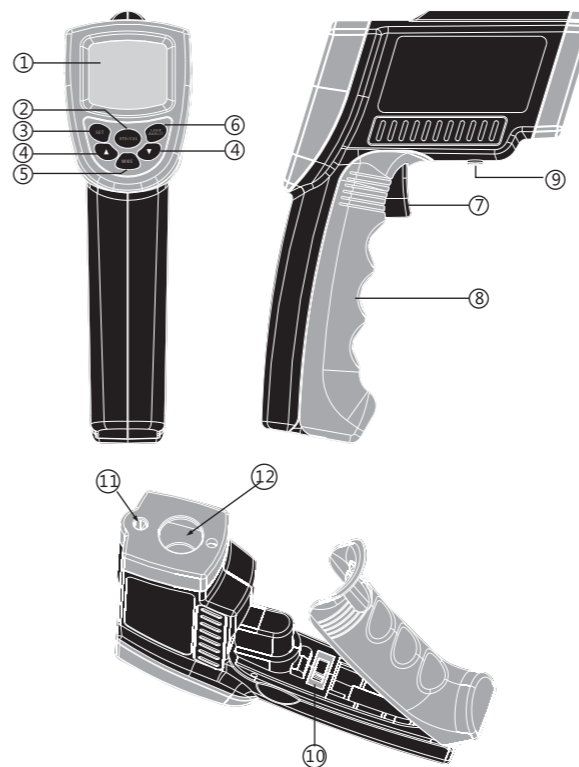### Non-contact infrared thermometer Instruction manual
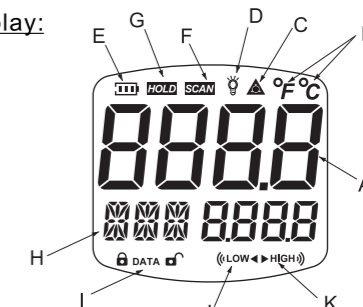
Version Number：SZ872D⁺-13

CONTENTS

MAIN PARTS DESCRIPTION:

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. Battery door lock button
10. ℃/℉ Switch
11. Red laser point
12. Detection hole

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 indicator
I: Data store / read icon
J: Low temperature alarm icon
K: High temperature alarm icon

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.

Reflected energy
Tranamitted energy
Emitted energy
Object
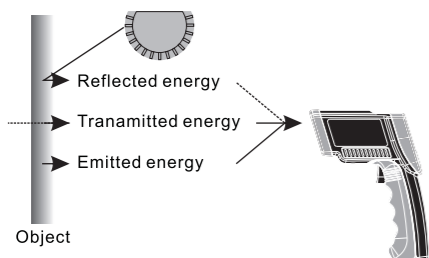
How it works:

Infrared thermometer measures the surface temperature of an object. The unit's optics sense emitted, reflected, and transmitted energy which is collect and focused onto a detector. The unit's electronics translate the information into a temperature reading which is displayed on the LCD. For increased ease and accuracy the laser pointer makes aiming even more precise.

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. Clesius / Fahrenheit selection
7. Data store / recall function

Specifications:

Specifications	
Temperature range	-50 ~ 1150℃ (-58 ~ 2102℉)
Accuracy (In the condition of 23℃ ±3℃)	-50℃(-58℉) to -32℃(-25.6℉)±5℃ -32℃(-25.6℉) to 0℃(32℉) ±3℃ 0℃(32℉) to 100℃(212℉) ±2℃ 100℃ hereinbefore ±2℃ or ±2% whichever is greater Test temperature：23℃ ±3℃
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, @ upto 30℃ (86℉)
Storage temperature	-20 to 60℃ , ≤85%RH, without battery
Weight/Dimensions	480G ; 220 x 134 x 60mm
Power	9V Alkaline or NiCd battery
Battery life (Alkaline)	Laser Models:12 hrs
Distance to Spot Size	20:1

OPERATION INSTRUCTION

Temperature measurement:

▶ Open the battery door,insert the 9V battery into the battery compartment.

▶ " LASER BACKLIT" key: press it to turn on the laser; press it again,the backlight opened;press it once more, both opened;the forth press will make the two turned off, these operations repeat in turn.

▶ ℃/℉ key: measuring unit switch.

▶ Press the measuring key(see figure 2),a measured temperture value will display on the place where the 7 pointing.

▶ The unit will auto power-off without any operation for 30sec.

▶ Please remove the batteries if there is no use for a long time.

Mode conversion:

Press the MODE key, LCD sub-display blinks segment MAX-MIN-DIF-AVG-HAL-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:

Marterial	Emissivity	Marterial	Emissivity
Aluminum	0.30	Iron	0.70
Asbestos	0.95	Lead	0.50
Asphalt	0.95	Limestone	0.98
Basalt	0.70	Oil	0.94
Brass	0.50	Paint	0.93
Brick	0.90	Paper	0.95
Carbon	0.85	Plastic	0.95
Ceramic	0.95	Rubber	0.95
Concrete	0.95	Sand	0.90
Copper	0.95	Skin	0.98
Dirt	0.94	Snow	0.90
Frozen food	0.90	Steel	0.80
Hot food	0.93	Textiles	0.94
Glass(plate)	0.85	Water	0.93
Ice	0.98	Wood	0.94

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 the 2 key, the LCD will display following states in turn for transition:

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 will active the backlight for 7 seconds.
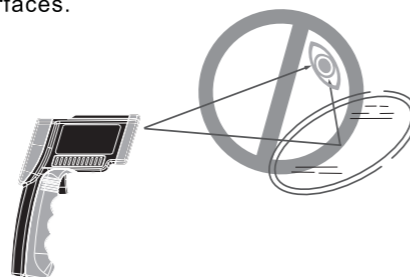Laser : When Laser is turn on, every push on the measurement trigger will start the laser.

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.

D:S=20:1   19mm@ 380mm   56mm@ 1120mm   94mm@ 1880mm
Ø0.75"@ 15˝   Ø2.25"@ 45˝   Ø3.75"@ 75˝

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 a hot 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.
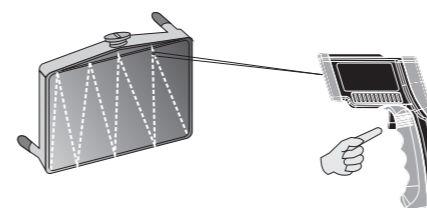
Maintenance:

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.

Data storage:
Press the MODE key until the symbol STO flashes; press the SET key to confirm with the symbols LOCK, DATA and 1--- displayed. After temperature read out,press the STO/CAL key to store the data in memory 1, then turn to be 2--- quickly, totally 12 memory units available for the data storage.

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.

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

Clearing the stored data:
On power-on state, press the key for 3 seconds can clear all stored data.

Low battery indication:
The amount of battery icon bar will decrease as the battery voltage descend, as the battery power 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.

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.
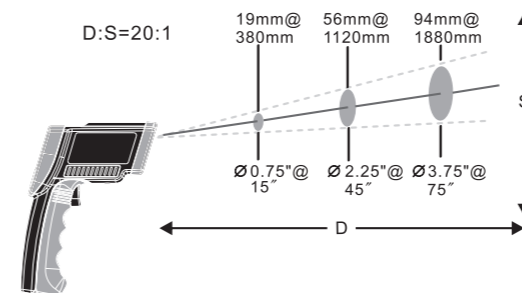4. Static electricity.

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.

📄 Specific Declarations:

a. The product design and the manual updating, repairing by technician authorized by us, do not try any alternations or repair attempts.

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

IntelliSafe   CE   ISO 9001   UKAS