OPERATION MANUAL

INFRARED THERMOMETER

Model: ■ 8881
      ■ 8882
      ■ 8885
      ■ 8886

Thank you for purchasing the Infrared Thermometer . Recommend you to read the operation manual before using the meter . Specially peruse the caution paragraph and follow tthe safety rule .

Wide range of application:
Food preparation, Safety and Fire inspectors , Plastic molding, Asphalt, Marine and Screen printing, measure ink and Dryer temperature, Diesel and Fleet maintenance .

Package Contents

1. Protective Gift box.
2. Either the 8881 or 8882 or 8885 or 8886 meter.
3. Operating instruction manual.
4. One battery 9 volt x 1.
5. Lanyand x 1.
6. Pouch x 1.

INTRODUCTION

Features

◆Switchable °F or °C readings (8882 and 8886).
◆Distance to Spot =8:1
◆Quick and simple operation
◆Back-light
◆Long battery life
◆Temperature range of -4°F to 788°F (-20°C to 420°C)
◆On-board nine measurement memory & 0.3~1.0 emissivity adjustable . (8882 and 8886)
◆Laser targeting (8885 and 8886)
◆User programmable alarm (8886 only)

- Precise non-contact Measurements
- Switchable C/F Temperature units
- Automatic Data Hold
- Laser target pointer
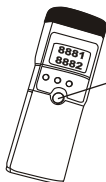- The meter at 8 inches away measure 1 inch target .

SAFETY RULES

⚠ Caution

◆ This equipment is intended for use by industry professionals who know their professional environments.
  Temperature measurements are often taken in potentially hazardous areas. Know and use the safety standards prescribed by your profession.

Laser Safety

◆ Do not point the laser toward the eyes or face of a person or animal. Laser light can cause eye injury, if the beam makes direct eye contact.

◆ Reflected Laser light can also cause damage, if a mirror or a glass-like surface reflects the beam directly into the eye. Laser's potential to cause damage is retained for hundreds of feet.

◆ The meter complies with FDA radiation performance standrad 21CFR Sub-chapter J , is CLASS II laser product , ,less than 1mini walt output at 675nm wavelength .

Feature	8881	8882	8885	8886
Shape	Pocket size			
Temp. Rangr	-20°C ~ 420°C (-4 ~ 788°F)			
Accuracy	+/-3°C, ± 3%	+/-2°C, ± 2%	+/-3°C, ± 3%	+/-2°C, ± 2%
Emissivity	Fixed	Adj. 0.3-1.0	Fixed	Adj. 0.3-1.0
Distance/ Spot ratio	8:1	8:1	8:1	8:1
C/F Switchable	NO	YES	NO	YES
Backlite	YES	YES	YES	YES
Max./Min/ Delta T/Avg	NO	YES	NO	YES
9 point Memory	NO	YES	NO	YES
Laser Sighting	NO	NO	YES	YES
Packing	NO	NO	NO	YES
Audio Alarm	Gift box	Gift box	Gift box	Gift box
Keys	2Keys	4Keys	3Keys	5Keys
Function	ON/ BKLITE	MODE/CF /LITE/ON	ON/LITE /LASER	MODE/CF /LITE/ON
Dimension	156 X 33 X 52.6mm (L X W X H)			
Weight	1 8 0 g			
8881	8882	8885	8886

Power / Hold
Press-button

3.

DISTANCE / SPOT RATIO

To take temperature measurements , point the meter at the surface to be measured and press the Power push-button. There are some other factors may impact the measurement accuracy , so the target must completely fill the spot diameter seen by the infrared sensor, otherwise ,the readings will be influenced by the surface surrounding the target .

The ratio of the distance to the size of the spot being measured is 8:1 .
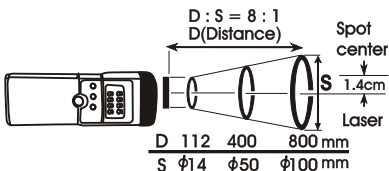For example , an object's diameter is 100mm can be accurately measured from 800mm away.
Please see the diagram below :
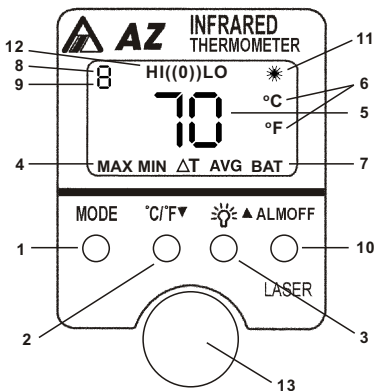
Model: 8881.8882

Model:8885.8886

4.
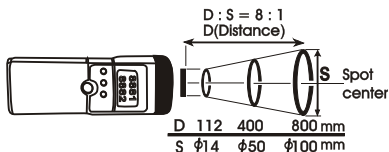
SYMBOLS

Laser Splash: ☀

Indicates the use of laser equipment and the category of laser used.

CONTROLS AND INDICATORS

8881,8882,8885 and 8886

1. Temperature display mode select, memory recall and programming select push-button.

2. Fahrenheit / Centigrade select push-button, and mode down/decrease push-button.(8882 and 8886)

3. Backlight push-button, and up/increase selector.

4. Temperature display mode indicator.

5. Temperature measurement.

6. Fahrenheit / Centigrade scale indicator. (8882 and 8886 models)

7. Low battery annunciator.

8. Memory location annunciator. (8882 and 8886 models only)

9. Emissivity annunciator. (8882 and 8886 models only)

10. Laser targeting on/off push-button. (8885 and 8886)

11. Laser on annunciator. (8885 and 8886)

12. Alarm mode indicator.(8886 only)

13. Power, HOLD Key

OPERATING INSTRUCTIONS

This instrument's light weight, raised push-buttons, and large LCD display make it convenient for most temperature measurement needs and accessible to processes not suited for conventional "contact" temperature measurements.

Taking Measurement Samples

Emissivity of an object will also affect accuracy.

This instrument is sensitive to electro-magnetic interference (EMI), such as that generated by spark plug wires, radio transmitters and welders. Do not use this instrument in close proximity to equipment that may produce such interference.

While the power key is pressed, a temperature sample is taken at a minimum of once every 1/2 second (500 milliseconds).

SELECTING FAHRENHEIT (°F) OR CENTIGRADE (°C)

Scales

Select the scale you prefer to use (°F or °C) by pressing the ("°C/F ▼") push-button after the power key pressed °F or °C is in flashing.

Backlight Operation

To toggle the backlight on or off, press the pushbutton with the backlight (☀) symbol. Once the backlight has been turned on, it will come on each time the power key pressed. until it is toggled off.
Please note that this feature significantly reduces the battery's life.
The instrument must be used within the ambient temperature range.

Measurement Modes
(8882 and 8886)

This instrument allows you to select display modes. You can cycle through the modes in this order:

◆ Real-time temperature measurements
◆ Maximum temperature measured (MAX mode).
◆ Minimum temperature measured (MIN mode).
◆ Calculated (time weighted) average temperature (**AVG** mode)

◆ Temperature difference between
  MAX and **MIN**($\triangle$**T** mode)

◆ The last mode selected will remain
 selected the next time you power on
  the meter.

(A) Real-time Temperature Measurement Mode

◆ This display mode shows the actual
  temperature of surfaces measured.
  This value is updated at least once
  every 1/2 second. When the
  instrument is powered up for the first
  time, this mode is preset.

(B) Maximum Temperature (MAX) Mode (8882 and 8886)

◆ To enter the "MAX" display mode,
  press and release the MODE push
  button repeatedly until you see the
  word "MAX" displayed on the LCD.
  (See Fig.1) In the "MAX" mode the
  highest temperature measurement
  taken, is displayed on the LCD. The
  temperature reading will update each
  time a higher temperature is measured.

Fig.1 ➲

$$28 \, ^\circ\text{C}$$

MAX

$$18 \, ^\circ\text{C}$$

MIN

➲ *Fig.2*

8.
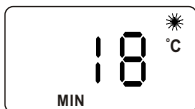
(C) Minimum Temperature (MIN) Mode (8882 and 8886)

To enter the "**MIN**" display mode, press and release the **MODE** key. Push-button repeatedly until you see the word "**MIN**" displayed on the LCD. (See Fig.2) In the "**MIN**" Mode, the lowest temperature measurement taken , is displayed on the LCD.
The temperature reading will update each time a new lowest temperature is measured.

(D) Average (AVG) Mode (8882 and 8886)

To select the "**AVG**" display mode, press and release the **MODE** push-button repeatedly until "**AVG**" is displayed on the LCD (See FIg.3). The term "**time**" weighted in reference to the averaging mode means all temperature measurements taken, from the time the power key was first pressed, are averaged together. Actual surface temperature is not displayed while taking measurements in this mode. If you were to walk along a wall for one minute taking readings that were generally 72 degrees, then walk by a spot for 1/2 second that was 20 degrees, no significant change in average temperature would be displayed.


Fig.3

(E) Temperature Differential (△T)
Mode (8882 and 8886)

To select the temperature differential
display mode (△T), press and release
the mode push-button repeatedly until
"△T" is displayed on the LCD.(See
Fig.4)

The display value is the difference figure
during measurements between the max .
and mini. readings .

This display mode is used to determine
the net temperature difference between
two surfaces.This is particularly valuable
when calculating net heating or cooling,
since ambient temperature is effectively
removed from the equation.

Fig.4 ➲
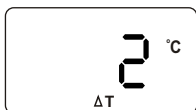
Recalling Memory Points (8882 and 8886)

With each press of the power key, four
values are recorded in memory:

◆ The highest temperature measured
◆ The lowest temperature measured ?
◆ The time weighted average
   temperature ?
◆ The value last displayed before
   releasing the trigger

A total of **9** sets of these four values
(**MAX,MIN,** $\triangle$**T , AVG**) representing nine
power key pressed, are available for
recall. To review recorded values, start
with the instrument off , (power off and
nothing visible on the LCD) ,then press
and release the **MODE** push-button. The
number "**1**" will appear on the display
,indicating the latest of the **9** sets of
values recorded in memory. (See Fig. 5)
Press yellow button (🔆 ▲) to view
next value until 9th reading , or press
blue button (**C/F** ▼) to view the value
until first reading is shown .

You may now either cycle through each
of the four values recorded during the
last power key press, or go to one of the
four values, then select the number of
the power key press you wish to review.

Fig.5 ➲
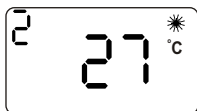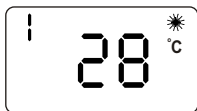
➲ *Fig.6*

For more examples, to select the high
temperature measured three power key
press ago, you may either:

1. Press the **MODE** push-button once.
The number "**1**" and a value appears.

2. Press the (☀/▲) push-button twice. The number "3" and a value appears.

3. Press the **MODE** push-button once again. The word "**MAX"** appears in the lower left of the LCD, along with the highest temperature recorded three power key pressed prior.

Or:

1. Press the MODE push-button once. The number "1" and a value appears.

2. Press the MODE push-button once again. The word "MAX" appears in the lower left of the LCD, along with the highest temperature recorded during the power key press.

3. Press the (☀/▲) push-button twice. The number "3" and the value of the highest temperature recorded from three power key press ago appears.

To maneuver up and down through recorded values, press the appropriate (°F/°C/▼) or (☀/▲) push-button to view the different readings on the LCD.

Audible Alarms **(8886 only)**

The 8886 will sound an audible alarm at both an upper and a lower temperature limit, which you set.
To adjust the alarm, *start with the instrument's power turned off*.

Fig.8 ➲

$$\begin{array}{c} \mathsf{I} \\ \mathsf{28} \ ^{\circ}\mathsf{c} \end{array}$$

12.
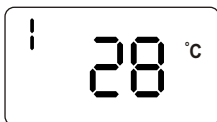
Press and hold the **MODE** push-button.
Either "**HI**" or "**LO**" will be displayed
on the LCD, (See Fig.9) along with a value
to the right. *Do not press the power key.*
Select the mode (**HI** or **LO**) you want
the instrument to provide the alarm
for by pressing either the (°F/°C/▼) push
-button to select the low temperature
alarm or the (☀/▲) push-button to
select the high temperature alarm.
Note:
Operate every step in 4 seconds, otherwise
,the meter will be turned off automatically
for saving battery's life.

Fig.9 ➲

HI ((0)) (LO)
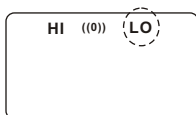
Once the instrument indicates the alarm
mode you want to set, press the **MODE**
push-button again. You're now ready to
adjust the alarm's threshold value,
displayed on the LCD.

HI ((0))
256 °C

➲ *Fig.10*

Fig.11 ➲

E
0.95

13.
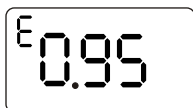
To decrease the value press the (°F/°C/ ▼) push-button. To increase this value, press the (☀ /▲) push-button. To lock this value in, once again, press the **MODE** push-button.(See Fig. 10) "E" ,"0.95" (pre-set emissivity) are shown on the top left of the screen (See Fig. 11) . Escape emissivity adjustment , press MODE again , the display turns off now .

The alarm settings (whatever is displayed at the time) are instantly saved if, at any time during the alarm setting process, the instrument either shuts off after4-5 seconds of inactivity or the power key is pressed.

Emissivity Adjustment (8882 and 8886)

When a process calls for repeated measurements of like materials, such as evaluating a plastic's solidity at a processing plant, the best method of attaining quick, reliable temperature readings is to adjust the emissivity setting of your meter.

Fig.12 ➲
$$\begin{array}{|c} ^E\\ \mathsf{0.95} \end{array}$$
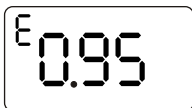
To set emissivity you must pass through the alarm setting function. As described earlier, press and hold the **MODE** push-button, and the LCD displays the alarm adjustment function. Do not press the power key, or let the instrument time-out and turn off. Press the **MODE** push-button once more to display the current emissivity value.

To decrease the value press the (ºF/ºC/▼) push-button.
To increase this value, press the (☀/▲) push-button.
To exit and save the newly set value, press the **MODE** push-button again, let the instrument time-out in **five** seconds, or press the power key.

The value last entered for emissivity will become the instrument's default next time it is used. If the instrument will be used on various surfaces or by various people for different applications, it is a good practice to reset the emissivity value to **0.95** before returning it to storage. Knowing the emissivity value your instrument is set at may prevent the collection of erroneous data that could result in unnecessary, time consuming and costly process step adjustments.

EMISSIVITY VALUES

Typical Emissivity Values-Metals

SURFACE	EMISSIVITY
Iron and Steel	
Cast iron (polished)	0.2
Cast iron (tumed at 100ºC)	0.45
Cast iron (tumed at 1000ºC)	0.6 to 0.7
Steel (ground sheet)	0.6
Mild steel	0.3 to 0.5
Steel plate (oxidized)	0.9
Iron plate (rusted)	0.7 to 0.85
Cast iron (rough)rusted	0.95
Rough ingot iron	0.9
Molten cast iron	0.3
Molten mide steel	0.3 to 0.4
Stainless steel (polished)	0.1
Stainless steel (Various)	0.2 to 0.6
Aluminum	
Polished aluminum	0.1*
Aluminum (heavily oxidized)	0.25
Aluminum oxide at 260ºC	0.6
Aluminum oxide at 800ºC	0.3
Aluminum Alloys, various	0.1 to 0.25
Brass	
Brass (polished)	0.1*
Brass (roughened surface)	0.2
Brass (oxide)	0.6
Copper	
Copper (polished)	0.05*
Copper (oxide)	0.8
Molten copper	0.15
Lead	
Leadr (polished)	0.1*
Leadr (oxide at 25ºC)	0.3
Leadr (oxide)	0.6
Nickel and its alloys	
Nickel (pure)	0.1*
Nickel plate (oxide)	0.4 to 0.5
Nichrome	0.7
Nichrome (oxide)	0.95

EMISSIVITY VALUES

Typical Emissivity Values-Metals

SURFACE	EMISSIVITY
Zinc (oxidized)	0.1*
Galvanized iron	0.3
Tin-plated steel	0.1*
Gold (polished)	0.1*
Silver (polished)	0.1*
Chromium (Polished)	0.1*

Emissivity Values-Non-Metals
Refractory & Building Materials

Red brick (rough)	0.75 to 0.9
Fire clay	0.75
Asbestos	0.95
Concrete	0.7
Marble	0.9
Carborundum	0.85
Plaster	0.9
Alumina (fine grain)	0.25
Alumina (coarse grain)	0.45
Silica (fine grain)	0.4
Silica (coarse grain)	0.55
Zirconium silicate up to 500°C	0.85
Zirconium silicate at 850°C	0.6
Quartz(rough)	0.9
Carbon (graphite)	0.75
Carbon (soot)	0.95
Timber (various)	0.8 to 0.9

Miscellaneous

Enamel (any color)	0.9
Oil paint (any color)	0.95
Lacquer	0.9
Matte black paint	0.95 to 0.98
Aluminum lacquer	0.5
Water	0.98
Rubber (smooth)	0.9
Rubber (rough)	0.98
Plastics(varous,solid)	0.8 to 0.95

Plastics films(.05 mm thick)	
Polythene film(.03 mm thick)	
Rubber (smooth)	0.9
Rubber (rough)	0.98
Plastics(varous,solid)	0.8 to 0.95
Plastics films(.05 mm thick)	0.5 to 0.95
Polythene film(.03 mm thick)	0.2 to 0.3
Paper and cardboard	0.9
Silicone polish	0.7
*Emissivity varies with purity	

Reflected laser light, from mirrors, glass, etc. can also cause eye damage. Laser is effective for hundreds of feet.
Be aware of what or who is in your line of sight.

Keep this device away from children, except under direct adult supervision.
To toggle the laser targeting feature on, or off depress the LASER push-button. You can engage the laser function from any of the five measurement modes . Once selected, the laser light is activated each time the button is pressed until it has been toggled off.
The laser remains on for approximately 1/2 second after the laser button is released.

Laser Targeting (8885 and 8886)
⚠ CAUTION

Do not point the laser at the eyes or face of any human or animal. Eye damage may result from direct exposure to laser light. Press yellow button (🔆 /▲), a
🔆 is shown on the right top of the screen.

Maintenance
TROUBLESHOOTING

? No display or erratic display:

Check the battery for proper voltage and
tight contact at the battery clip.
Ensure the unit is   at the specified
operating temperature.
Constant or spurious over-load (OL)
display: Check battery voltage. Check for
electromagnetic interference (EMI).
To   check for EMI, move the unit to
an open area, away from high voltage
and radio or radar transmitting sources.

?Erroneous temperature readings:

Inspect the infrared lens for blockage
or contamination. Check battery for
proper voltage and tight fit in the battery
clip.

? Meter does not turn on.

Check voltage and relace low battery.
Or check time delay which is allowed
1 second for data to appear on-screen.

**?Data flashing or laser comes on
but no data appears .**

Check battery voltage and then replace
low battery.

?Dashes appear on-screen.

Check extreme temperature ,measure
surrounding area to see if the target
exceeds the limit.

E4 . Need re-calibrate ,please return to
the store or authorized lab.

E6. Part damaged , return the unit to
the store you purchased for repairing.

Case cleaning :
Use caution with a damp cloth to clean
the exterior housing , ensure no water or
soap is allowed inside the meter ,or on
the infrared lens.

Lens cleaning :
WARNING : Recommend to clean the
lens after a time of period using the
meter and make sure the lens is clean
enough to ensure the reading accuracy.
.
By using low pressure compressed air
to remove any particles on the lens, if
the contamination can not be removed
with air, use a soft cotton swab.

Any swab should be slightly damp, and
very light pressure should be applied
to the lens. Do not use solvents to clean
the lens.

WARRANTY

The meter is warranted to be free from
defects in material and workmanship for
a period of one years from the date of
purchase.

This warranty covers normal operation
and does not cover batteries, misuse,
abuse, alteration, tampering, neglect,
improper maintenance, or damage
resulting from leaking batteries. Proof
of purchase is required for warranty
repairs.

RETURN AUTHORIZATION

Authorization must be obtained from the supplier before returning items for any reason .
When requiring a RA (Return Authorization) , please include data regarding the defective reason, the meters are to be returned along with good packing to prevent any damage in shipment and insured against possible damage or loss .

CE CERTIFICATION

The meter conforms to the following standards:

* EN 50081-1/1992 : EN 55022
* EN 50082-1/1997 : EN 55024
  (EN 61000-4-2/-3/-8,ENV 50204)

, the meter complies with the essential protection requirements of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

**Accuracy, the Zenith of
Measuring / Testing Instruments !**

⚠ Hygrometer/Psychrometer
⚠ Thermometer
⚠ Anemometer
⚠ Sound Level Meter
⚠ Air Flow meter
⚠ Infrared Thermometer
⚠ K type Thermometer
⚠ K.J.T. type Thermometer
⚠ K.J.T.R.S.E. type Thermometer
⚠ pH Meter
⚠ Conductivity Meter
⚠ T.D.S. Meter
⚠ D.O. Meter
⚠ Saccharimeter
⚠ Manometer
⚠ Tacho Meter
⚠ Lux / Light Meter
⚠ Moisture Meter
⚠ Data logger
⚠ Temp./RH transmitter
⚠ Wireless Transmitter ....

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