

SENTRY
SENTRY®

SENTRY OPTRONICS CORP.

**Gun-Type Professional
Infrared Thermometer**

MODEL: ST 652

CE



**Instruction
Manual**



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Version-01 04/NOV.

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1.Product Introduction

Thank you for purchasing the infrared thermometer. The Infrared Thermometer is non-contact infrared temperature measuring instruments. Features include a 4 digits backlit LCD, scan/hold/auto function and auto power off (6 seconds). To measure a temperature, point the unit at the object, pull the measuring trigger and hold on till the end of shot. Make sure the target area is larger than the unit's spot size.

1-1 Features

- New series includes high performance, general purpose.
- Ultra low power consumption in shutdown mode.
- Extended long time measuring reliability.
- Laser sighting On/Off is switchable.
- Backlit LCD display.
- °C or °F selectable.
- Electronic trigger lock.
- Temperature data storage.
- Audible alarms


1-2 Applications

- Electrical troubleshooting.
- Automotive repair and maintenance.
- Air conditioner.
- Science experiment.
- Manufacturing processes of semiconductor technology.
- Test terminals on circuits.
- Food safety and processing.
- Perform HVAC energy audits.

2. Safety Information

Read the following safety information carefully before attempting to operate or service the meter. Only qualified personnel should perform repairs or servicing not covered in this manual.


Laser Warning Note!


 Do not aim laser spot directly at human eye, keep it away from the area that children can fetch.

2-1 Cautions!

- DO NOT submerge the unit in water.
- This product is not designed for use in medical evaluations. The product can only be used to measure body temperature simply for reference. They are meant for industrial and scientific purposes.

2-2 Safety symbols

 Dangerous, refer to this manual before using the meter.

 CE Certification.

This instrument conforms to the following standards:

EN61326:Electrical equipment for measurement, control and laboratory use.

IEC61000-4-2:Electrostatic discharge immunity test.

IEC61000-4-3: Radiated, radio-frequency, electromagnetic field immunity test.

IEC61000-4-8: Power frequency magnetic field immunity test.

Tests were conducted using a frequency range of 80-1000MHz with the instrument in three orientations. The average error for the three orientations is $\pm 0.5^{\circ}\text{C}$ ($\pm 1.0^{\circ}\text{F}$) at 3V/m throughout the spectrum. However, between 781-1000MHz at 3V/m, the instrument may not meet its stated accuracy.

3. Specifications

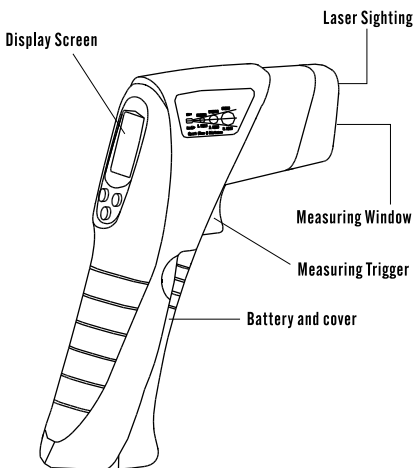
Distance/Spot Ratio	12:1
Temperature Range	-32~535°C(-25~999°F)
Accuracy (Assumes Operation Ambient Temperature of 25°C/77°F)	±3°C(±5°F) From -32~-20°C(-25~-4°F) ±2°C(±3°F) From -20~100°C(-4~212°F) ±2% From 100~535°C(212~999°F)
Thermopile	5~14 μm
Repeatability	±1 °C (±2 °F)
Resolution	0.1 °C (0.1 °F)
Response Time	500 ms.
Operation Temp.	0~50°C(32~122°F), 10~90%RH
Auto Power Off	Automatically after approx. 6s.
Emissivity	Fixed at 0.95
°C/°F Switchable	YES
Backlight	YES
Laser Sight Switchable	YES
Max/Min/Avg./ ΔT	YES
Auto-measuring	YES
10 point memory	YES
Audio Alarm	YES
Battery Type	9V(006P, IEC6F22, NEDA1604)
Battery Life	16 hrs.
Dimensions	170x133x45mm (6.69"x5.23"x1.77")
Weight	187g Approx.
Accessory	9V Battery, Instruction manual, Carrying case.

4. Operation of Instrument

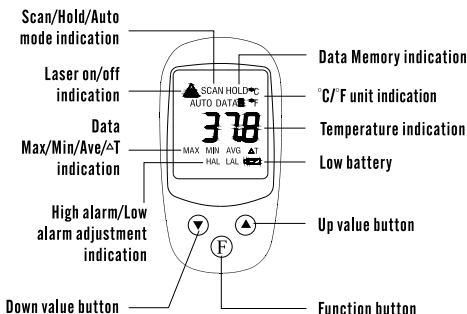
4-1 Quick Start

To measure a temperature, point the unit at the target you want to measure, pull the trigger and hold on till the end of shot. In **SCAN** mode, the LCD displays either the current temperature in Celsius or Fahrenheit. The unit will **HOLD** the last reading for about 6 seconds after the trigger is released; the word **HOLD** appears. Be sure to consider the target area inside the angle of vision of this instrument. The single spot of laser is used for aiming only.


4-2 Unit Diagram



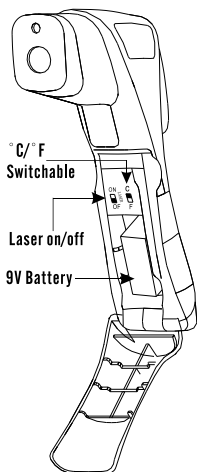
LCD Display



4-3 $^{\circ}\text{C}/^{\circ}\text{F}$ and Battery Change

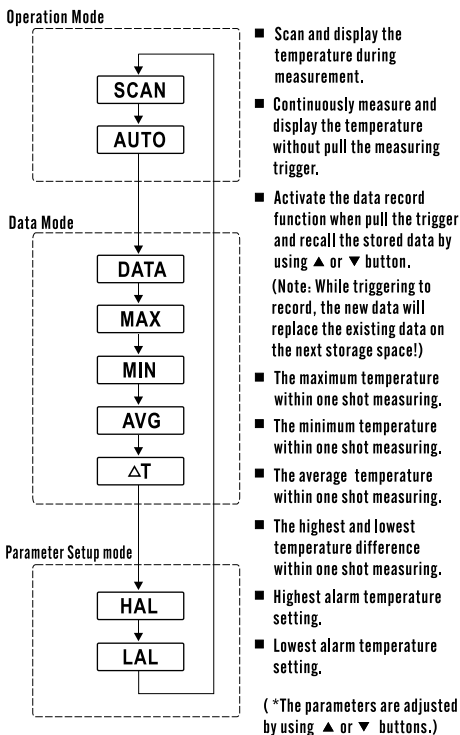
The unit is powered by 9V battery and displays temperatures in either $^{\circ}\text{C}$ or $^{\circ}\text{F}$. The user has to replace the battery when the battery voltage drops below the voltage for reliable operation and at the same time the low battery symbol  will appear.

To change the 9V battery, pull open the unit's handle by using the finger. Change the 9V battery with a new one and push the battery cover back.



4-4 Advance Function

To operate more advance functions, it is simply by using "F" button to change. The sequential operations and the corresponding explanations are shown in the following flow-chart.



Remarks

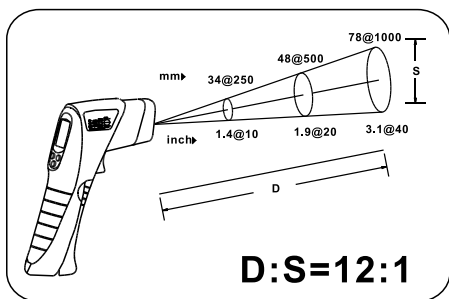
If you want to know more details of our tender considerations for users on the operations, please read the following contents.

- No matter you push the measuring trigger or not, when the unit's power is on, you can change the functions or adjust the parameters.
- To avoid dummy operations, the setup of functions can be performed, only after the unit wakes up by the measuring trigger to make sure the correct operations.
- To avoid careless touch, some power management designs have to be implemented.
 - **Auto** function allows you continuously measure the target temperature and you don't have to keep pulling the measuring trigger all the time.
 - **Auto** function can be only setup when both the measuring trigger and the **F** function button are pressed at the same time.
 - The unit is totally power off, no more standby current when storage, to keep battery last much longer.

5. Techniques Of Infrared Thermometer

5-1 Field of view(FOV) ratio =Distance to diameter (DS) ratio

The field of view is the angle of vision at which the instrument operates, and is determined by the optics of the unit. The FOV is the ratio of the distance from the target to the target diameter. The smaller the target, the closer you should be to it. When the target diameter is small, it is important to bring the thermometer closer to the target to insure that only the target is measured, excluding the surroundings.



5-2 Emissivity

Emissivity is the ability of an object to emit or absorb energy. Perfect emitters have an emissivity of 1, emitting 100% of incident energy. An object with an emissivity of 0.8 will absorb 80% and reflect 20% of the incident energy. Emissivity is defined as ratio of the energy radiated by an object at given temperature to the energy emitted by a perfect radiator at the same temperature. All values of emissivity fall between 0.1 and 1.0.

Noncontact temperature sensors measure IR energy emitted by the target, have fast response, and are commonly use to measure moving and intermittent targets, targets in a vacuum, and targets that inaccessible due to hostile environments, geometry limitations, or safety hazard. The cost is relatively high, although in some cases is comparable to contact devices.

6.Maintenance

Cleaning the lens: Blow off loose particles using clean compressed air. Gently brush remaining debris away with a camels hair brush. Carefully wipe the surface with a moist cotton swab. The swab may be moistened with water.

NOTE:

DO NOT use solvents to clean the lens.

Cleaning the housing:

Use soap and water on a damp sponge or soft cloth.



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