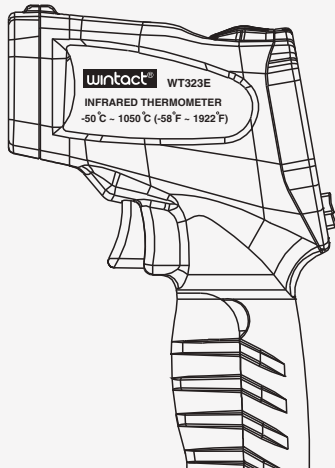


Infrared thermometer
Instruction manual



NDT KALA.CO
Non-Destructive Test (NDT) Equipment

تأمین تجهیزات و مواد مصرفی تست های غیر مخرب ایران
۰۲۱-۷۱۰۵۳۸۸۸ ۰۹۱۲۰۲۶۶۲۷۰

A. Introduction

This infrared thermometer is used for measuring the temperature of the object's surface, which is applicable for various hot, hazardous or hard-to-reach objects without contact safely and quickly.

This unit consists of Optics, Temperature Sensor Signal amplifier, Processing circuit and LCD Display. The Optics collect the infrared energy emitted by the object and focus it onto the Sensor. Then the sensor translates the energy into an electrical signal. This signal will be turned out to be digital shown on the LCD after the signal amplifier and processing circuit.

B. WARNING & CAUTIONS

1. Warning:

To avoid the potential situation that may cause harm or damage to people, please pay attention to the following items:

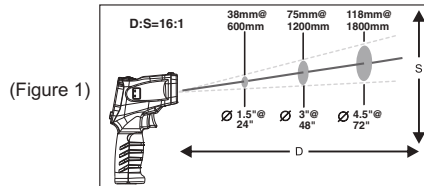
- Do not point the laser directly at the eye or indirectly at reflective surfaces.
- The unit cannot measure through transparent surfaces such as glass or plastic. It will measure the surface temperature of these materials instead.
- Steam, dust, smoke, or other particles can prevent accurate measurement by obstructing the unit's optics.

2. Cautions:

Infrared thermometers should be protected from the following:

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

C. Distance to spot size



- When taking measurements, pay attention to the Distance to Spot Size. As the Distance (D) from the target surface increases, the spot size (S) of the area measured by the unit becomes larger. The Distance to Spot size of the unit is 16:1. (Figure 1)

2. Field of view:

Make sure the target is larger than the unit's spot size. The smaller the target, the closer the measurement distance. When accuracy is critical, make sure the target is at least twice as large as the spot size.

D. EMISSIVITY

Emissivity: Most organic materials and painted or oxidized surfaces have an emissivity of 0.95 (preset in the unit). Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate for this, adjust the unit's emissivity reading or cover the surface to be measured with masking tape or flat black paint. Measure the tape or painted surface when the tape or paint reaches the same temperature as the material underneath.

Material	Emissivity	Material	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

E. Operation

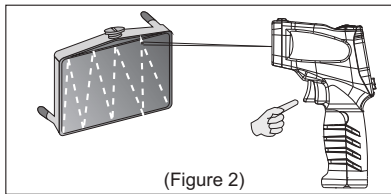
1. Operating the unit:

- Open the battery door and load two 1.5V AAA batteries.
- Pull the trigger to turn on the unit.
- Aim at the target surface and pull the trigger, then the temperature will be shown on the LCD.

This unit is equipped with a laser, which is only used for aiming.

2. Locating a Hot Spot:

To find a hot spot, aim the thermometer outside of the interest, then scan across with an up and down motion until you locate the hot spot. (Figure 2).



(Figure 2)

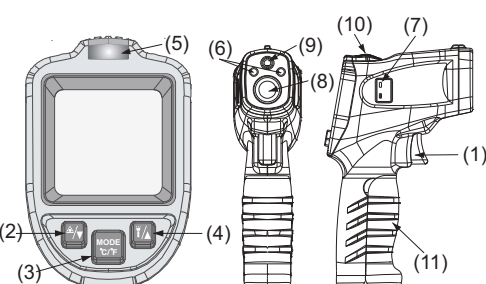
F. LCD display & buttons

1. LCD: as shown in Figure 3.

a. Turning on state indicator of laser positioning
b. Temperature measurement units
c. K-type thermocouple indicator
d. Data reading indicator
e. Emissivity
f. Data holding indicator
g. Low power indicator
h. Ambient temperature value
i. Ambient humidity value
j. Dew point temperature value
k. Surface temperature value (infrared temperature measurement)

(Figure 3)

2. Names and functions of parts: as shown in Figure 4.



(Figure 4)

(1) Measurement switch (trigger).

Pull the trigger to display the temperature value, and "SCAN" appears on the screen at the same time; when the trigger is released, the temperature reading is displayed, and data is automatically maintained. The instrument automatically shuts down after about 30 seconds of operation.

(2) Laser switch/Down button.

(3) MODE (mode switch button) / temperature unit switch button

Press the MODE button to cycle through four modes, MODE 1 → MODE 2 → MODE 3 → MODE 4.

a. Mode 1: Mildew alarm mode.

Under this mode, the current ambient temperature, humidity, dew point temperature, and surface temperature are displayed. Pull the trigger to measure surface temperature.

Note: The instrument decides whether the measured object is easy to mildew according to the surface temperature of the measured object and the dew point temperature of the current environment. The indicator light turns green for normal state. If the measured object tends to mildew, the indicator light turns yellow; if already mildew, the indicator light turns red.

b. Mode 2: Temperature difference alarm mode.

Under this mode, pull the trigger to display the current ambient temperature and the surface temperature of the measured object. When the surface temperature of the measured object is close to ambient temperature, the indicator light turns green; if much higher than or lower than ambient temperature, the indicator light turns red. Otherwise, the indicator light turns yellow.

c. Mode 3: K-type thermocouple temperature measurement mode.

Under this mode, the temperature of the K-type thermocouple is measured and the thermocouple icon is displayed. Before the measurement, insert the K-type thermocouple probe into the thermocouple socket. Pull and hold the trigger, and the thermometer displays both surface temperature and K-type thermocouple temperature.

d. Mode 4: Emissivity setting mode.

Under this mode, press the up/down button to set emissivity within the range of 0.10~1.00 by decreasing or increasing the value.

e. Temperature units switch: Pull and hold the trigger, then press this button to switch units.

(4) UV light button / Up button.

Press this button to turn on/off the UV light, which can be used for fluorescent leakage detection.

(5) Alarm light indicator

(6) UV light

(7) K-type thermocouple socket

(8) Infrared temperature sensing area

(9) Laser (assisted positioning)

(10) Temperature/humidity sensing area

(11) Battery door

G. Maintenance

1. Lens Cleaning:

Blow off loose particles using clean compressed air. Gently brush remaining debris away with a moist cotton swab. The swab may be moistened with water.

2. Case cleaning:

Clean the case with a damp sponge/cloth and mild soap.

Note:

- Do not use solvent to clean plastic lens.
- Do not submerge the unit in water.

H. Specification

LCD	Colorful LCD
Temperature measurement range	-50°C~1050°C (-58°F~1922°F)
Temperature display accuracy	0.1°C
Temperature measurement error	-50°C~0°C(-58°F~32°F): ±3°C (±5°F) 0°C~1050°C(32°F~1922°F): ±1.5% rdg or ±1.5°C (±2.7°F) Take the bigger value
K-type thermocouple measurement range	-40°C~500°C (-40°F ~ 932°F)
Repeatability	1% rdg or 1°C Take the bigger value
Response time	0.5s, 95% Response
Emissivity	0.10~1.00 Adjustable (preset as 0.95)
D:S	16:1
Response wavelength	8um~14 um
Laser	Ring light spot
Flashlight	UV light
Ambient temperature measurement range	-20°C~60°C (-4°F ~ 140°F)
Ambient temperature measurement accuracy	±1°C(2°F)
Relative humidity measurement accuracy	±5% RH
Dew point temperature measurement	-10°C~50°C(14°F~ 122°F): ±1.5°C/3°F
Operating Temperature	0°C~40°C (32°F ~ 104°F)
Operating Humidity	10% RH~90% RH non-condensable
Storage Temperature	-10°C~ 60°C (14°F~140°F)
Batteries	1.5V AAA battery*2(No.7 battery)
Low power indicator	Low power indicator for power below 2.4V
Overload indicator	"Hi"/"Lo" displayed on LCD
Weight/dimensions	202g(including batteries) /108*49*177 mm

Specifications of K-type thermocouple

Measurement range	0°C~250°C (300°C for short time)
Measurement error	±2.5°C or 0.75% rdg Take the bigger value
Thermal response time	<10s

Specific Declarations:
Our company shall hold no responsibility resulting from using output from this product as an direct or indirect evidence. We reserves the right to modify product design and specification without notice.

