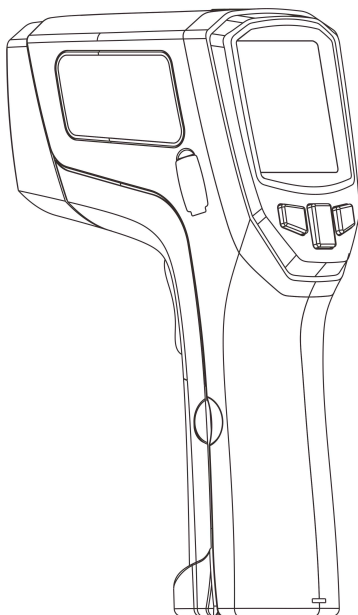# Non-contact infrared thermometer

User's Manual

Please read this user's manual thoroughly before using this unit and keep it properly for your future reference

Contents

1. Introduction

Congratulations on your purchase of our professional non-contact infrared thermometer. These units can provide fast, easy and accurate temperature readings. With the non-contact (infrared) technology, they can be used to measure the surface temperature of hard-to-reach objects like electrified equipment or moving objects, without any damage or pollution to them.

2. Features

➢ Fast and precise non contact measurement and K temperature measurement

➢ Built in laser circle with 13 laser spots increase the target accuracy

➢ SD card to store data, Format: CSV

➢ Records IR and TK data transfer to PC in real time by USB

➢ Adjustable emissivity: 0.1 ~ 1.0

➢ MAX, MIN, DIF, AVG temperature display

➢ LCD display with backlight

➢ Automatic measurement range selection with

   resolution 0.1℃/℉

➢ Trigger lock

➢ High/Low Alarm

➢ Auto power off

3. Application

These units are widely used in Food preparation, Safety and Fire inspection, Plastic molding, Asphalt, Marine, Printing ink and dryer temperature,   Diesel and Fleet maintenance,   etc.
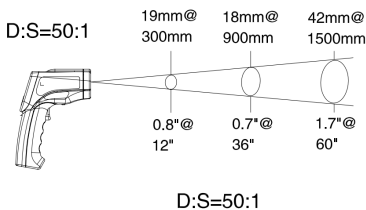
4. Safety

● Use with extreme caution when the laser beam is turned on.

● Do not point the beam towards eye of anyone or any animals.

● Do not allow the beam to strike the eye from a reflective surface.

● Do not use the laser near explosive gases.

CAUTION

Don't target human and animal's eyes

WEAVELENGTH 630–670nm
OUTPUT:<1mW
CLASS II LASER PRODUCT
EN 60825–1:1994/A11:1996/A2:2001/A1:2002

5. Distance & Spot Size

The meter's field of view is 50:1, for example, if the meter is 50 inches from the target spot, the diameter of the target must be at least 1 inch. Other distance ratios are shown below in the field of view diagram.

D:S=50:1

| 19mm@ 300mm | 18mm@ 900mm | 42mm@ 1500mm |

0.8"@ 12"   0.7"@ 36"   1.7"@ 60"

D:S=50:1

6.Specifications

Model		IRX-67	IRX-68	IRX-69
Range	IR	-50℃~1380°F	-50℃~1980°F	-50℃~2280°F
		-58℃~2516°F	-58℃~3596°F	-58℃~4136°F
	TK	-50℃~1370°F/-58~2498°F		
IR accuracy		-50℃~0℃/-58 ~ 32°F:±4℃/7.2°F		
		0~500℃/-58~932°F:±1.5% or reading ±2℃/3.6 °F		
		Above 500℃/932°F: ±2.0% or reading ±2℃/3.6°F		
TK accuracy		-50℃~1370℃/-58~2498°F :±1.5% or reading±1℃/1.8 °F		
D:S		50:1		
Emissivity		Adjustable：0.10 ~ 1.0		
Resolution		0.1℃(0.1°F) <1000 , 1℃(1°F) >1000		
Response time		< 250ms		
Spectral response		8 ~ 14um		
Diode laser		Output<1mW, 630~670nm, class 2(l)laser		
Auto power off		Meter shuts off automatically after 20 seconds		
Operation Temp.		0℃~50℃（32°F~122°F）		

| Storage Temp.	-20℃~60℃（-4°F~140°F）
Relative humidity	Operating:10% ~ 90%RH; Storage:<80%RH
Power	9V battery, NEDA 1604A or IEC 6LR61, or equivalent
Weight	286g
Dimensions	198*120*59mm

7. Meter Description

① Laser Pointer

② IR Sensor

③ USB/SD interface

④ Trigger Button

⑤ Battery Compartment

⑥ Tripod Nut

⑦ Sling hole

⑧ Up down button

⑨ Mode button

⑩ Set button

⑪ LCD display

⑫ K type probe interface
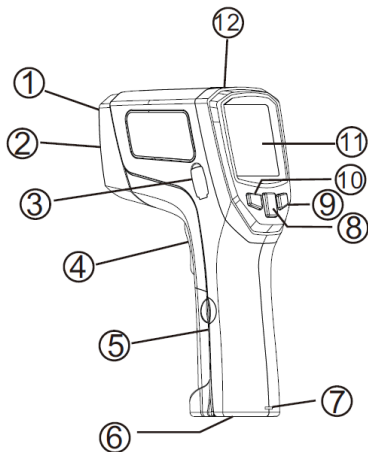
8. LCD display Description

① Measurement Icon and Data hold Icon

② Current temperature value

③ Functions Icon

④ Date. Time

⑤ Low Battery Icon

⑥ USB symbol

⑦ SD symbol

⑧ High/Low Alarm Icon

⑨ Temp. values for the MAX, LAL. and TK

⑩ Temperature Unit(°C/°F)

⑪ Backlit Icon

⑫ Laser Icon

⑬ Emissivity value
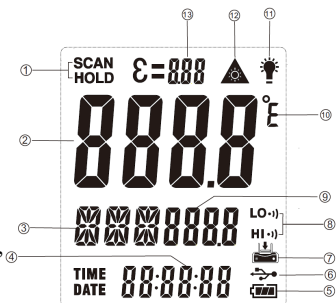
9. Operating Instruction

1. Operating steps:

① Hold the meter by its handle grip and point it toward the surface to be measured.

② Pull and hold the Trigger to turn the meter on, the "SCAN" icon will appear and begin testing.

③ The surface temperature being tested will be displayed on the LCD screen.

④ Release the trigger, the "HOLD" icon will appear, the readings will be frozen

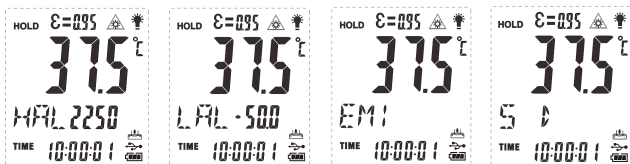⑤ The meter will automatically shut off after 7 seconds after the trigger is released.(Unless the unit is locked on)

Measurement Note：If the meter used in an ambient temperature with wide temperature change, wait it at least 30 minutes to adjust it.

The laser is designed for aiming only; it can be shut off while operating in short distance to save the battery.

2 . Button Function

2.1 [SET] KEY

2.1.1 In "HOLD" mode, press "[SET]"key, digits flashes on the
sub-display. Meter enters into set mode with High alarm
setting, Low alarm setting, Emissivity setting, SD card
setting. As shown below.

HOLD ε=0.95 ⚠ ☀	HOLD ε=0.95 ⚠ ☀	HOLD ε=0.95 ⚠ ☀	HOLD ε=0.95 ⚠ ☀
37.5°C	**37.5**°C	**37.5**°C	**37.5**°C
HAL 225.0	LAL -50.0	EMI	S ▷
TIME 10:00:01	TIME 10:00:01	TIME 10:00:01	TIME 10:00:01

2.2 [MODE] KEY

2.2.1 In "HOLD" mode, press "[MODE]"key, meter enters into
MAX value, MIN value, AVG value, HAL value, LAL
value, TK value in turn. As shown below.

$$\boxed{MAX} \to \boxed{MIN} \to \boxed{AVG} \to \boxed{HAL} \to \boxed{LAL} \to \boxed{TK}$$
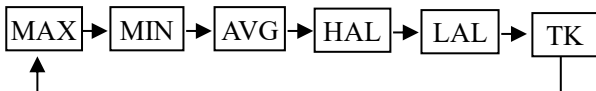
2.3 ⬆⬇ KEY

2.3.1 In "SCAN"mode, press "▲", temperature unit switches to C, press "▼", temperature unit switches to F.

2.3.2 In "HOLD"mode, press "▲", it can turn on/turn off laser point.

2.3.3 In mode of "High alarm setting" "Low alarm setting" "Emissivity setting", press "▲" to increase values, press "▼" to decrease values.

2.3.4 In "SD card setting"mode, press "▲", choosing to store data in the TF card, press "▼", canceling this function, Note：this setting is valid only when TF card is inserted.

3.TF card data storage functions

3.1 when TF card is inserted in card slot, "🖳"appear in the right lower corner of the LCD, in setting mode, press "▲", choosing to store data in the TF card, "🖳"appear in the LCD。press "▼", canceling this function, "🖳"appear in the LCD.

3.2 When the data is stored in the TF card, symbol "⬇"inside "🖳"flashes.

4．Battery Replacement

4.1 When the battery is not sufficient, " +/- " appears in the LCD,

one new 9V battery is required.

4.2 Open the battery compartment, replace the 9V battery and

close the battery compartment.

10. Software installation

Insert the CD into the CD-driver, the software will run the setup

file directly, pls follow the installation tips to install software. if

the software do not run the setup file directly, pls Eject the CD

content and double click   setup   to install. pls follow the

installation tips to install software after running.

Note: After the installation is complete. Need to run the software

as "administrator" when you open the software at first time.

Note: USB driver need to be installed after install the PC software
successfully

Open the installation disk file, find"Silabs-CDC-Install" and open
it, select the corresponding drive application based on the PC
system, double-click the file to install the driver.

11. Software interface introduction

11.1 Toolbar functions introduction：

11.1.1 open file

Open the saved data file, after opening, data and graphs presented on the surface of the PC interface, so that the staff can analyze the data and make assessments

11.1.2 save file

Save the current measured data to a PC's hard drive, you can customize the address and name of file to be saved.

11.1.3 Set up parameter

this button is for real time transmission parameter setting, click this key, a sub-dialog will pop up, it can set emissivity, date, time, temperature unit, laser and backlight. As shown below.
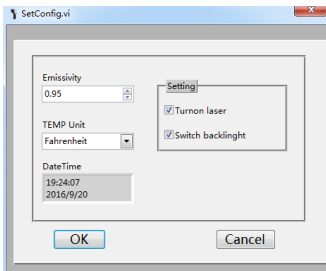
11.1.4 ⎙ print file

Click this key, it can print the graph curve of the software interface

11.1.5 ▷ Start

Click this key, the meter begin to transmit data to the PC in real time.

Note: pls set up required parameter before performing this function

11.1.6 ⊗ Turn off

Click this key, the meter shuts off real time data transmission.

12. Notes

(1) Work principle

- The infrared thermometer is designed for measuring surface temperature of an object.

- The optical sensor can emit, reflect and transmit energy, which is collected and focused on a detector, then translate it into the temperature reading by electronics and displayed on the LCD screen.

- The laser is used for aiming the target object only.

(2) Field of View

- The object under test should be larger than the spot size calculated by the field of view diagram.

- The smaller the target object is, the closer the meter should be to it for accurate measuring.

- When accuracy is critical, make sure the target is at least twice as large as the spot size.

(3) Distance& Spot Size

As distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger.

(4) Locating a hot Spot

To find a hot spot, first aim the thermometer to the outside of target area, then scan across in an up and down motion until the hot spot is located.

(5) Notice

- Not recommend for measuring shiny or polished metal surfaces like stainless steel, aluminum, etc.

- Do not make measurement through transparent surface such as glass

- If the surface of the object under test is covered with frost, oil, grease, etc., clean it before taking measurement.

⑹ **Maintenance**

● Do not use volatile liquids to clean the unit, wipe it with dry soft cloth.

● Do not disassemble the unit, repair it by qualified person

● Do not immerse it in water.

● Do not store it in high temperature or humidity.

⑺ **Emissivity**

Emissivity is a term used to describe the energy-emitting characteristics of materials. Most (90%) organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit).

13.Accessories

① User's Manual
② Tripod
③ 9V Battery
④ USB Cable

Emissivity Table

Substance	Thermal	Substance	Thermal
Aluminum	0.30	Glass	0.90 to 0.95
Asphalt	0.95	Iron oxides	0.78 to 0.82
Concrete	0.95	Lacquer	0.80 to 0.95
Leather	0.95	Plastic	0.85 to 0.95
Ceramic	0.95	Paper	0.70 to 0.94
Copper	0.50	Sand	0.90
Brick	0.90	Rubber	0.95
Carbon	0.85	Timber	0.94
Fat-lute	0.94	Textiles	0.94
Frozen food	0.90	Lead	0.50
Hot food	0.93	Marble	0.94
Ice	0.98	Cloth(black	0.98
Snow	0.90	Plaster	0.8 0to 0.90
Human skin	0.98	Water	0.93