sauermann®

USER MANUAL

Si-TI3

INFRARED THERMOMETER

OneTemp pty ltd
measure | control | record

CE

1 - Instrument description

The Sauermann Si-TI3 is a non-contact infrared thermometer measuring instrument.

In addition to the measurement of infrared temperature, the Si-TI3 also measures ambiant temperature.

(A) LCD screen

(B) °C/°F Unit key

(C) Lock key

(D) Mode key

(E) Infrared lens

(F) Laser sighting

(G) Trigger

(H) Batteries cover

2 - Safety and environment

About this document
Please read this document and familiarize yourself with the product before putting it to use. Keep this document on hand so that you can refer to it when necessary. Pass this documentation on to any subsequent users of the product.

⚠️ **Avoid personal injury/damage to equipment**

- This device has been developed for infrared and ambiant temperature measurement for an indoor use. Please always use the device in accordance with its intended use and within parameters described in the technical features in order not to compromise the protection ensured by the device

- Please remember to keep away the instrument from children and do not use it for safety related applications.

- Do not take any measurement on metal or shiny or reflective

- Do not measure through transparent surfaces such as glass, for example.

- Water vapor, dust, smoke, etc. may prevent correct measurements because they obstruct the optic of the instrument.

- Only the accessories provided with the device or available as an option must be used.

- Never store the product together with solvents, acids or other aggressive substances.

- Only carry out maintenance and repair work that is described in the documentation. Follow the detailed steps when doing so. Use only original spare parts from Sauermann.

- If the device falls or in case of similar inconveniences, or if an irregular malfunction appears, please do not use the device and bring it back to your distributor to ensure your own safety.

- The device must not be used in ATEX zones according to applicable standards.

- Do not use the device next to explosive gases, vapor or dust.

- The device does not contain any internal part repairable by the user. Do not open the instrument.

⚠️ **WHEN DEVICE IS IN USE, DO NOT LOOK DIRECTLY INTO THE LASER BEAM–PERMANENT EYE DAMAGE MAY RESULT.**

⚠️ **USE EXTREME CAUTION WHEN OPERATING THE LASER.**

⚠️ **NEVER POINT THE DEVICE TOWARDS ANYONE'S EYES.**

Exclusions and restrictions of liability

The application operation is under the exclusive customer or user entity responsibility, who acknowledges using this system at his/her own risks. The customer or user entity explicitly exclude Sauermann, and every other company through which the it could have been sold of any kind of responsibility or warranty regarding any direct, indirect, accidental, consecutive or non-consecutive damage that could have been subjected, for some or all, by partial or total non-respect, voluntary or involuntary, of recommendations, conditions and prerequisites indicated hereafter.

Symbols used

For your safety and in order to avoid any damage of the device, please follow the procedure described in this user manual and read carefully the notes preceded by the following symbol:

The following symbol will also be used in this user manual, please read carefully the information notes indicated after this symbol:

Protecting the environment

Send back the device at its end of working life in a waste collection centre for electrical and electronic components (according to local regulations), or send it back to your distributor to ensure a required waste collection in the respect of the environment.

3 - Technical specifications

Parameters	Measuring units	Accuracy*	Measuring range	Resolution
Infrared temperature	°C / °F	±(2% of value +2°C) ±(-2% of value +4.3°F) from -40 to 32°F ±(2% of value +3°F) from 32 to 932°F	From -40 to +500°C From -40 to 932°F	0.1°C 0.1°F
Ambient temperature**	°C / °F	-	From 0 to 50°C From 32 to 122°F	0.1°C 0.1°F

Under the electromagnetic field of 3V/m from 200 to 600 MHz, the maximum error is 10°C (18°F).

*All the accuracies indicated in this technical datasheet were stated in laboratory conditions, and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.

**Only available on the app

⚠️ EMC/RFI: Readings may be affected if the unit is operated within radio frequency electromagnetic field strength of approximately 3 volts per meter, but the performance of the instrument will not be permanently affected.

4 - General features

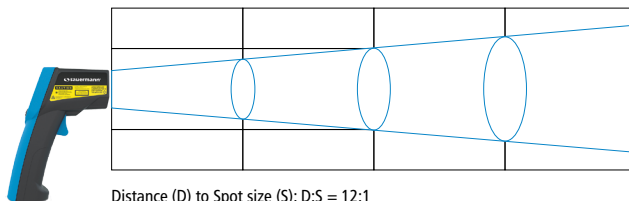|	
Emissivity	Adjustable from 0.10 to 1.0 (pre-set at 0.95)
Response time T$_{90}$	1 second
Optical	D.S 12 : 1
Laser sighting	1 point
Display	Integrated 3-line monochrome display with backlight
Housing	ABS-PC
Keypad	1 Mode button, 1 Unit button, 1 Lock button and 1 Measurement button
Standards & Directives	2011/65/EU RoHS II; 2012/19/EU WEEE; 2014/53/EU RED
Power supply	2 alkaline batteries LR03 AAA 1.5 V
Supply voltage	3 V ⎓
Consumption	135 mW
Battery life	14 hours* (without backlight)
Wireless communication	Range frequency from 2402 MHz to 2480 MHz with a transmit power of 0 dBm. Range up to 15 m (98 ft), depending on smartphone radio strength. Minimum required versions: Android 5.0, iOS 12.4, BLE 4.0
Ambiance	Air and neutral gas
Operating conditions	From 0 to 50°C (32 to 122°F) In non condensing conditions Altitude: from 0 to 2000 m (6561')
Storage temperature	From -10 to +60°C (14 to 140°F)**
Auto shut-off	15 seconds
Weight (with batteries)	145 g (5.1 oz)

*Battery life given at 20°C (68°F) with alkaline batteries
**If the instrument is stored outside the operating temperature (for example in a van, a warehouse, etc.), please wait for 10 minutes in its operating temperature before starting and using it.
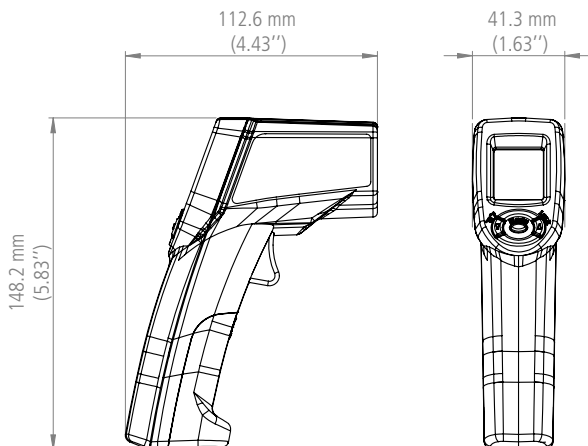
5 - Distance from target

Infrared thermometers measure the surface temperature of an object. Make sure that the target is larger than the spot size. To get a correct reading make sure that between the instrument and the object being measured there is no particles of dust or dirt, no humidity (rain, steam) and no gases. The laser is used for aiming purposes only. This infrared thermometer mainly fits for measurements at short or medium distances.

Distance	(in)	24	36	80
	(m)	0.6	1	2
Diameter	(in)	2	3	6.67
	(m)	0.05	0.08	0.17

Distance (D) to Spot size (S): D:S = 12:1

6 - Dimensions

112.6 mm
(4.43'')

41.3 mm
(1.63'')

148.2 mm
(5.83'')

7 - Accessories

Name	Reference
Softcase	SIACCSC

8 - Operating instructions

Insert the batteries
- Remove the batteries cover.
- Insert the 2 alkaline batteries LR03 AAA 1.5 V.
- Carefully respect the polarity.
- Replace the batteries cover.

Turn on the device
- Press any key to switch the device on.
- The device has an automatic auto shut-off set to 15 seconds. Once switched off, press any key to turn back the device on.

Perform a measurement
- Aim the thermometer at the measure target with infrared lens.
- Press the trigger to display the surface temperature.
  The Distance:Spot is 12:1. Please make sure the target area is within the field of view.

Select the unit
- The device is turned on and is in Emissivity, Max, Min, Dif or Avergare mode.
- Press °C/°F Unit key to switch between °C and °F.

Activate the wireless communication
- When the device is turned on, wireless communication is automatically activated.
- Wireless communication is automatically deactivated when the device is turned off.

Activate/deactivate the Backlight
- With the device turned on.
- First hold the trigger then press Hold key to activate or deactivate the backlight.

Switch between measurements
- With the device turned on and measured values are displayed.
- Press Mode key to display successively

current emissivity, emissivity to set, max temperature, min temperature, difference between max and min temperatures, average temperature, high alarm, low alarm.

Hold values
- With the device turned on and is in emissivity, Max, Min, Dif or Average mode.
- Press Lock key to freeze measurement values display or restore live measurement values display.

Set emissivity
- With the device turned on.
- Press Mode key then use Lock key to increment or Unit key to decrease the emissivity value.
- The emissivity can be changed from 0.10 (10E) to 1 (100E).
- Press Mode key to confirm.

Max/Min/Dif/Avg modes
- With the device turned on.
- Press Mode key to successiveley display the maximum, minimum, difference between maximum and minimum and average modes.
- During the measurement, the special modes reading will be displayed beside the mode icon.

High alarm & low alarm
- With the device turned on.
- Press Lock key or Unit key to change the high alarm or low alarm.
- Press the trigger key to confirm it.
- When the reading is outside the high or low alarm limit, you will hear a beep sound.

ⓘ The alarm stops when temperatures returns inside the high or low alarm limit.

Activate/deactivate the laser function

- With the device turned on.
- First hold the trigger then press the Unit key to activate or deactivate the laser function.

Memory

- With the device turned off.
- Press Mode key to recall the last reading memory.

Key operation

KEY	Main function	Other function
UNIT	Switches betwen °C and °F	Sets Emissivity, High alarm and Low alarm
MODE	Displays successively Current emissivity / Emissivity to change / Max temperature / Min temperature / Difference between max and min temperatures / Average temperature / High alarm / Low alarm	-
LOCK	Continuously displays measured temperatures	Sets Emissivity, High alarm and Low alarm
TRIGGER	Measures the surface temperature	Validates an Emissivity, a High alarm and a Low alarm.

CAUTION: LASER RADIATION. DO NOT STARE INTO BEAM. Max. output >1 mW. Wavelength: 635-660 nm. Complies with 21 CFR Chapter 1, subchapter J.

CLASS 2 LASER PRODUCT

Display

E	Emissivity data. Default emissivity: 0.95
ꞈE⁕	Emissivity to set
MAX	Max temperature
MIN	Min temperature
dIF	Difference between max and min temperatures
AVG	Average temperature
HAL	High alarm
LAL	Low alarm
	Laser function
	Backlight

LCD error messages

The thermometer incorporates visual diagnostic messages as follows:

Er2 'Er2' is displayed when the thermometer is exposed to rapid changes in the ambient temperature.

Er3 'Er3' is displayed when the ambient temperature exceeds 0°C (32°F) or +50°C (122°F). The thermometer should be allowed to stabilize to the working/room temperature during minimum 30 minutes.

Er Error 5~9, for all other error messages it is necessary to reset the thermometer. To reset it, please wait 15 seconds for auto shut-off, then remove the batteries and wait for a minimum of one minute. Reinsert the batteries and press any key to turn the device on. If the error message remains, please contact Sauermann for further assistance.

Hi Lo 'Hi' or 'Lo' is displayed when the temperature being measured is outside of the measurement range.

Batteries

The thermometer incorporates visual low battery indication as follows:

Battery OK: measurements are possible

Battery low: batteries need to be replaced, measurements are still possible

Battery exhausted: measurements are not possible.

⚠ When the low battery icon is displayed, batteries should be replaced immediately with AAA, 1.5V batteries. Please note: It is important that the instrument is off before replacing the batteries, otherwise the thermometer may malfunction.

⚠ Dispose of used batteries promptly and keep away from children.

9 - Emissivity

Emissivity is a term used to describe the energy-emitting characteristics of materials.

Most (90% of typical applications) 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, cover the surface to be measured with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material underneath it. Measure the temperature of the tape or painted surface.

See table below for values of emissivity of specific materials :

Material	Value	Material	Value
Aluminium	0.30	Ice	0.98
Asbestos	0.95	Iron	0.70
Asphalt	0.95	Lead	0.50
Basalt	0.70	Limestone	0.98
Brass	0.50	Oil	0.94
Brick	0.90	Paint	0.93
Carbon	0.85	Paper	0.95
Ceramic	0.95	Plastic	0.95
Concrete	0.95	Rubber	0.95
Copper	0.95	Sand	0.90
Dirt	0.94	Skin	0.98
Frozen food	0.90	Snow	0.90
Hot food	0.93	Steel	0.80
Glass	0.85	Textile	0.94
Water	0.93	Wood	0.94
Fresh foodstuffs between 0 and 5 °C			0.90

10 - Operating principle

Infrared thermometers can measure the surface temperature of an object. Its optic lens catches the energy emitted and reflected by the object. This energy is collected and focused onto a detector. This information is displayed as temperature. The laser pointer is only used to aim at the target.

Infrared sensor

Laser sighting

Emitted energy by the object in the form of radiation
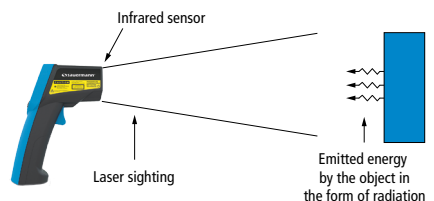
11 - Maintenance

Change batteries
- With the device turned off.
- Remove the batteries cover
- Remove used batteries and insert new batteries (2 alkaline batteries AAA LR03 1.5 V) respecting the polarity.
- Put back the batteries cover.

Clean the instrument
- Clean the housing with a damp cloth (soap suds) if it gets dirty.
- Do not use aggressive cleaning agents or solvents.
- The sensor lens is the most delicate part of the thermometer. The lens should be kept clean at all times, care should be taken when cleaning the lens using only a soft cloth or cotton swab with water or medical alcohol, allowing the lens to fully dry before using the thermometer. Do not submerge any part of the thermometer.

12 - Warranty

Instruments have 2-year guarantee for any manufacturing defect.

13 - Mobile App

The **Si-HVACR Measurement MobileApp** allows to view and record measurements in real-time.

Main features:
- Easily view different parameters
- Browse saved measurements history and data graphs (average, min & max values, etc.)
- Create reports (PDF, CSV or XML format) and add up to four (4) photos

Download the **Si-HVACR Measurement MobileApp**

Download the MobileApp **user manual**

OneTemp pty ltd
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⚠ BE CAREFUL! Material damages can happen, so please apply the precautionary measures indicated.

🗙 Once returned, required waste collection will be assured in the respect of the environment in accordance to guidelines relating to WEEE.

www.sauermanngroup.com