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User Manual

T-SCAN 540
by Eiffage Énergie Systèmes

USER'S GUIDE

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INDEX

1. INTRODUCTION

This Manual describes the basic operation, care and maintenance of the T-SCAN 540 body temperature contactless thermometer.

The user must read and understand this manual and apply its directions in the usage, care and maintenance of the product.

The role of this manual is to explain the correct installation and use of the equipment in provide the technical specification, the instruction for handling, assembly and maintenance operations.

Even if this manual informs about the correct use of the equipment and the correct procedures to operate it in safety condition, it cannot substitute the care of the user and its dues to properly inform any others on the correct use of the product.

The application of this manual's directions is the basis to grant the performance declared by the manufacturer.

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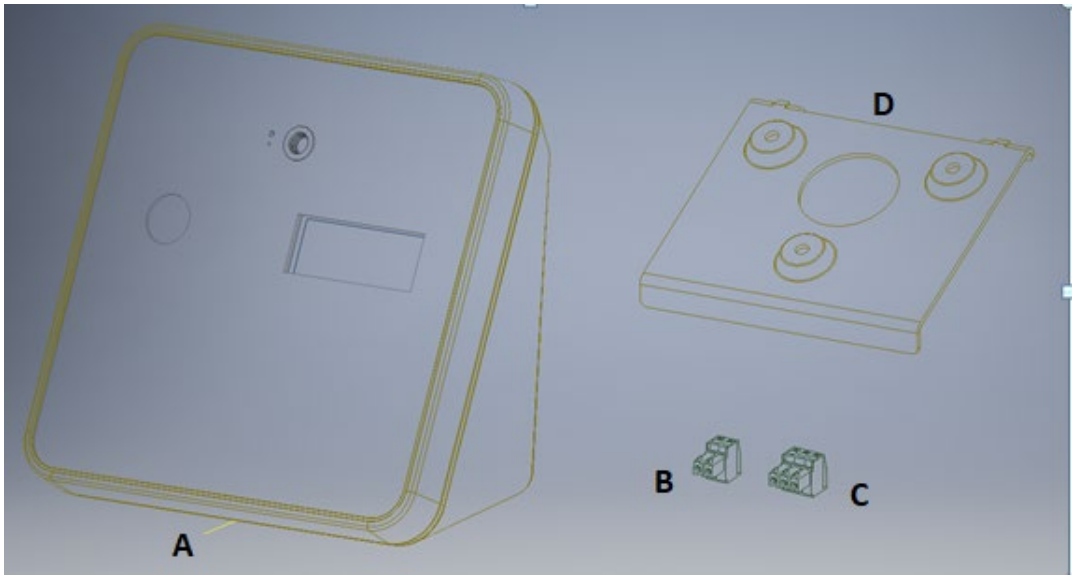
2. GENERAL DESCRIPTION

The T-SCAN 540 is a non contact, automatic and wall mountable infrared forehead thermometer. It is specifically designed to accurately measure the body temperature in all those industrial and commercial environments where access should be granted to all those that are not in an evident feverish state and stop all those who have a body temperature above 37.5°C.

Thanks to its medical grade IR sensor and performing algorithms, the T-SCAN 540 is an efficient tool to perform an accurate temperature screening.

Thanks to its output relay contact its wireless capabilities – Bluetooth and Wi-FI – and its wide power supply input range, the T-SCAN 540 can be easily interfaced and integrated into access control systems.



A – THERMOMETER
B – POWER SUPPLY CABLE ENTRY PLUG
C – OUTPUT RELAY CABLE PLUG
D – MOUNTING BRACKET

Figure 1 – Package content

3. SAFETY INFORMATION

	This device must be installed and used only for the purposes indicated in this manual and according to the directions contained herein. Keep the device away from direct heat sources and to direct sunlight. Do not spread liquids inside the unit. The accuracy of the measurement may degrade when forehead is covered by hair, clothes and heavy make-up. Take care not to scratch the top cover.
	This device is intended for indoor use only and in an ambient temperature range between 15 and 40°C. Do not use the device in relative humidity higher than 85%. The unit must be kept at a stable room temperature to achieve the declared accuracy. When moved from rooms that have different temperatures, the device needs to thermally stabilize for 15 to 20 minutes.
	Do not drop or knock the device.

	This device contains a laser metering sensor. Avoid prolonged exposure to beam.
	Inspect the device regularly: clean if needed and do not use if damaged.
	Clean the front panel surface with a soft cloth lightly moistured with 70% alcohol. A microfiber cloth is suggested. Check on a regular basis that the temperature sensor is not obstructed by dirt or any other debris. In case, clean the sensor with a soft and dry paint-brush.
	The unit contains Lithium Ion batteries. When substituted, dispose the exhausted batteries according to domestic laws and regulations.
	The manufacturing technology of LiOn batteries does not guarantee and intrinsic 100% safety. Explosions, or fire risks cannot be fully eliminated. For this reason, when the unit is plugged to an external power supply, it is advisable non to leave the unit unattended.
	This equipment is sensitive to electrostatic discharge. Observe precautions when handling and using the device.

4. INSTALLATION

The unit shall be installed in a place that is easily accessible and where the users will mostly transit.

Firmly fix the unit to the wall with the supplied mounting bracket.

Remove the protective film from the front panel.

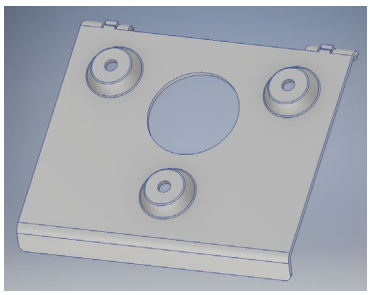


Figure 2 – Mounting bracket

The T-SCAN 540 should be placed at a height so that the temperature sensor is at 140 cm from the floor, or at any suitable height to allow and easy forehead temperature measurement of both tall and small persons.

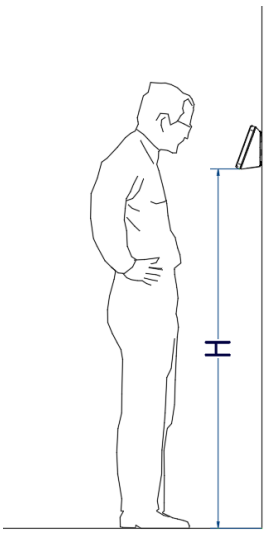


Figure 3 – Wall Mounting

On the central side of the rear panel, access is given to the system connectors and power switch.
The mounting bracket can be adapted by the user to install the device on a mobile stand or tripod (provided as an accessory).

NOTE: The T-SCAN 540 is shipped with the batteries at 70% the charge. However, to overcome any self-discharge of the batteries that occurred during shipping, handling

and stocking, it is advisable, once out of the box, to plug the unit to a power supply or USB and let the batteries fully recharge.

5. OVERVIEW

In the following figure the front view of the thermometer.

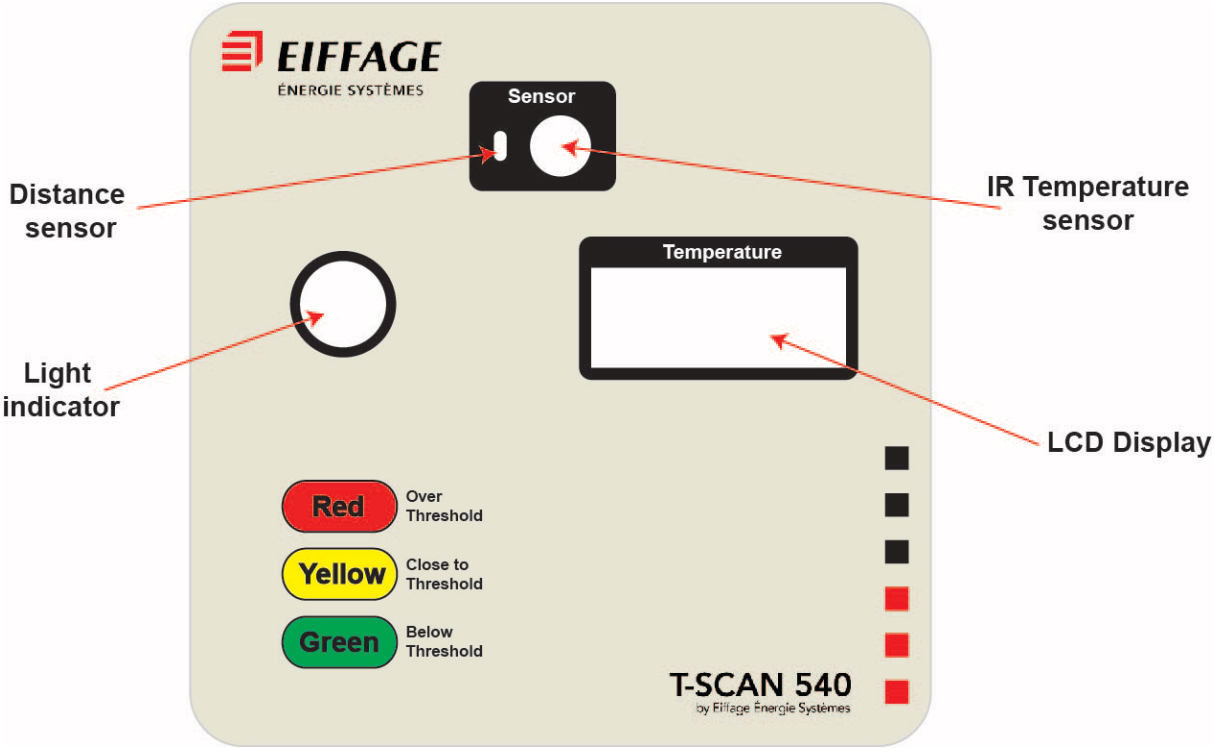


Figure 4 – ON/OFF push-button

5.1 Power Supply

The T-SCAN 540 has a very wide input voltage range. In can be powered from a standard micro-USB wall adapter or from an external power supply with a voltage from 9 to 24V that will make available 6W minimum.
In addition, the unit comes with an integrated rechargeable battery that will allow up to 100h operation in a stand-by condition. Overall battery life before charging is needed, will depend on the number of acquisitions.
When discharged, the internal battery is recharged thanks to the embedded charger: simply plug the unit on a micro-USB wall adapter or to an external power supply.
In case of a fixed installation where power is always available, the internal battery remains idle and in a fully charged status.

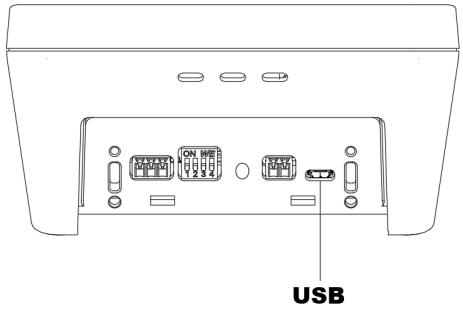


Figure 5 – USB connector

The push-button on the recessed real panel turns the unit ON and Off.

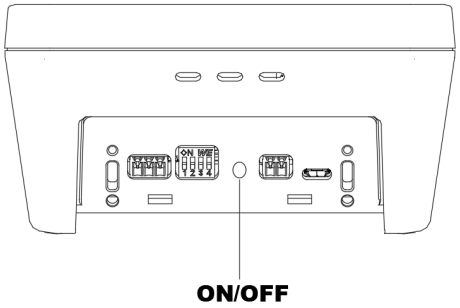


Figure 6 – ON/OFF push-button

The power supply cable plug (Wurth type 691361100002) is supplied with the unit.

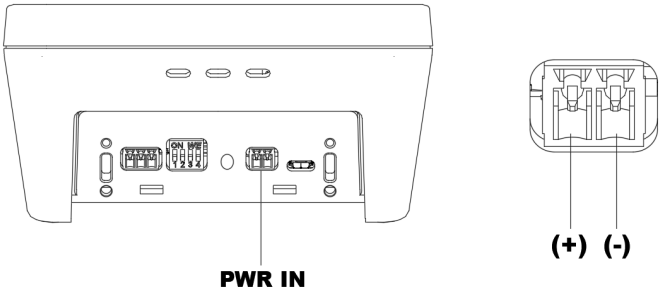


Figure 7 – ON/OFF push-button

5.2 Relay contacts

The unit makes a relay contact available to the user. This will be helpful when the T-SCAN 540 is integrated in an access control system. The relay will toggle and hold for 1 second in case an acquisition reports a temperature below the threshold.
The relay contact is designed to work at 24Vac/dc max and can handle 1.0A max
DO NOT USE THE INTERNAL RELAY TO SWITCH MAINS OPERATED EQUIPMENT!

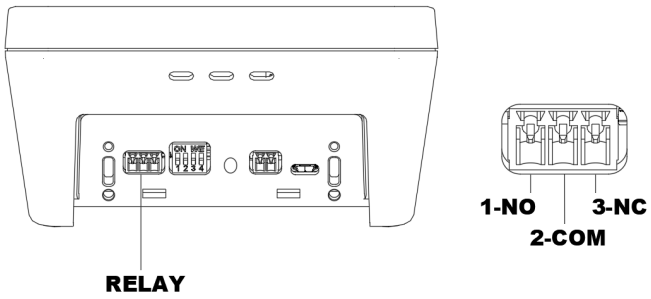


Figure 8 – RELAY

The 3-poles cable plug (Wurth type 691361100003) is supplied with the unit

5.3 DIP switch configuration

The T-SCAN540 has a configuration dip-switch on the rear panel.
Refer to the table here below to properly configure the unit before its use.

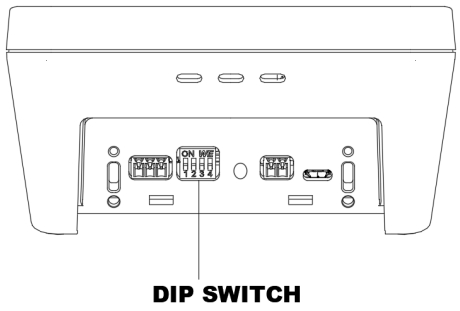


Figure 9 – DIP switch

DIP-SWITCH	ON	OFF
1	Bluetooth Pairing	Normal Bluetooth operation
2	Display measured temperature	Do not display measured temperature
3	Warning condition enabled	Warning condition disabled
4	Approach tone enabled	Approach tone disabled

1. **Bluetooth pairing**
   During normal use, keep this switch on the OFF position. During the pairing procedure to a host device, set the switch to ON; when done, bring the switch back to the OFF position.

2. **Measured temperature display**
   Set the switch to ON to display the measured body temperature.
   Set the switch to OFF to not display the measured temperature. In this case, only the light indicator will tell the person if he can proceed or not

3. **Light warning condition**
   Set the switch to ON to display the results of the measurements with GREEN (Pass), YELLOW (Warning) or RED (Stop) colours.
   Set the switch to OFF to display the results of the measurements with GREEN (Pass) and RED (Stop) colours only.

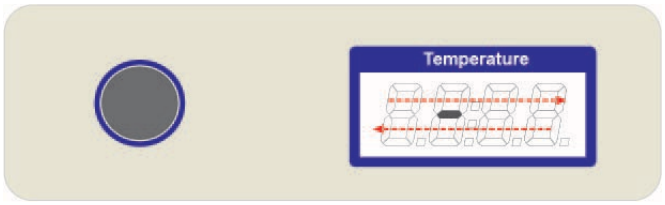
4. **Approach tone**
   Set the switch to ON to enable the approach tone
   Set the switch to OFF to mute the approach tone

5. USING THE T-SCAN 540

The T-SCAN 540 has been designed for simplicity of use and to give the most straightforward information to the user.

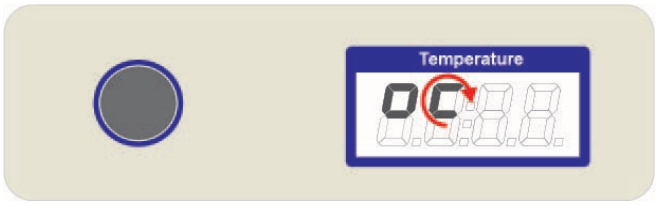
To power on the unit, press the power button on the rear panel. The led indicator on the front panel will glow white once.

After the initialization, the T-SCAN540 will scroll a display segment left to right then back to indicate a stand-by condition and that the unit is ready to make an acquisition.



To make a temperature acquisition, slowly but firmly bring the forehead in front of the SENSOR area on the T-SCAN540.

The display will start filling from left to right four rotating circles and the speaker will emit a ramping tone to indicate the user is approaching the sensor.

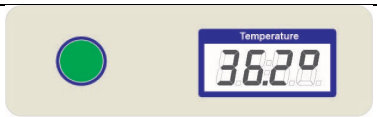


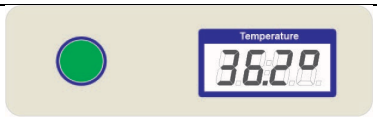
Once the correct distance has been reached, the unit will emit a continuous tone and on the display all four circles fill be filled and fixed.

Hold the position for the duration of the tone.

When the tone stops, step back and read the result: the display will show the body temperature and the led indicator will glow GREEN, YELLOW or RED according to the measurement and to the dip-switch configuration.

The results of the measurement will be reported according to the position of dip-switch 3, according to the tables here below.

Reporting with warning condition enabled (dip-switch 3 set to ON position)	
TEMPERATURE WITHIN THE LIMITS If the temperature is below 37.0°C the light indicator will glow GREEN.	
TEMPERATURE CLOSE TO LIMITS If the temperature is within 37.0° and 37.5°C, the light indicator will glow YELLOW. This is a warning condition meaning that the user should ask for further assistance	
TEMPERATURE ABOVE THE LIMITS If the temperature is above 37.5°C, the light indicator glows RED indicating that the user is in a evident feverish state.	
NOTE: *the above mentioned temperature thresholds are factory configured as a standard. User may change the thresholds with the TSCAN MANAGER software.*	

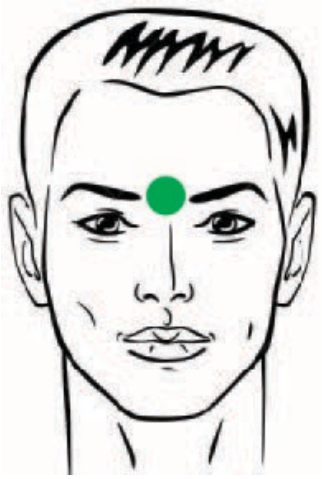
Reporting with warning condition disabled (dip-switch 3 set to OFF position)	
TEMPERATURE WITHIN THE LIMITS If the temperature is below 37.5°C the light indicator will glow GREEN.	
TEMPERATURE ABOVE THE LIMITS If the temperature is above 37.5°C, the light indicator glows RED indicating that the user is in a evident feverish state.	
NOTE: *the above mentioned temperature thresholds are factory configured as a standard. User may change the thresholds with the TSCAN MANAGER software.*	

To make a new measurement, step back so that the unit enters in the stand-by condition, then approach again.

For an accurate measurement, move away your hair from your forehead and if you wear some glasses or sunglasses, these will need to be removed.

For the most accurate measurement, approach your head to the T-TSCAN 540 so that the sensor points between your eyebrows, on the upmost part of the nose.

The green dot in the figure here below indicates the “sweet spot” where the measurement is the most accurate.



NOTE: in case the measured temperature is lower than expected, it is advisable to take another measurement. Step back and approach the T-SCAN 540 again.

5.1 Error Messages

The T-SCAN 540 will report the following error messages according to some events that may occur when the unit is on.

TEMPERATURE RANGE ERROR The T-SCAN 540 is meant to measure human body temperature. For this reason, during a measurement, it will indicate only a valid temperature. If the masurement is outside the range of 32-42°C, where body temperature is likely to be, it will indicate low temperature error or a high temperature error. This error message is meant to report that the T-SCAN 540 has acquired a temperature of an object and not of a human body. The Low temperature error is likely to occur if the user has not followed the prescriptions of section 5 On the other side, the High temperature error does not occur during normal operation, but only if a hot object is approached to the unit.	 
AMBIENT TEMPERATURE ERROR The unit does perform a check on ambient temperature to always ensure a correct measurement of body temperature.	

In case the ambient temperature is outside the prescribed operational range of 15-40° the unit indicate it is no longer able to perform a reliable body temperature measurement.	
TOO CLOSE ALARM If the user approaches too close to the sensor, the unit will display the acquired temperature in any case, but the light indicator will glow white and the a continuous tone will be emitted as long as the condition persists.	
BATTERY LOW When the battery is low and needs to be discharged, the unit displays the message here on the right. Still the unit is stand-by mode and ready to perform a measurement, but the battery life is limited. The user should recharge the unit as soon as possible. **WARNING:** DO NOT LET THE BATTERY OVER DISCHARGE. THIS CAN PERMANENTLY DAMAGE THE BATTERIES AND SHORTEND THEIR LIFE	

5.2 Battery operation and battery recharge

In case of a fixed installation where the unit is permanently powered, the batteries will be maintained always fully charged and the T-SCAN can be left ON for a 24/7 uninterrupted service.

On the other hand, if the unit is installed on a stand, mast or tripod where power supply cannot be reached, the operation will rely on the internal battery that will allow up to 100 hours of lifetime (average std-by time with Bluetooth and Wi-Fi OFF)

Even if the life of the batteries is long, it is advisable to power off the unit when not in use, or best to connect the unit to an external power supply or USB port to recharge the batteries.

In any case, connect the unit to a power supply or USB as soon as the Battery Low warning is displayed.

Recharge time will vary according to where the unit is powered from.

Generally, a fully discharged battery will be fully recharged in:

- 3 hours if powered with a voltage above 9.0Vdc
- 14 hours of powered with a voltage below 9.0V or USB port.

As mentioned in the previous section, DO NOT LET THE BATTERY GET OVER DISCHARGED since this condition may dramatically shorten the battery life and its ability be recharged again.

5.3 USB, Bluetooth and Wi-Fi Communication

The T-SCAN 540 comes with an USB port available on a micro-USB connector (the same that is eventually used to recharge the battery) and with both Bluetooth and Wi-Fi wireless communication.
The downloadable TSCAN MANAGER is a PC tool that allows advanced configuration and device firmware upgrades through the USB port and Wi-Fi link.

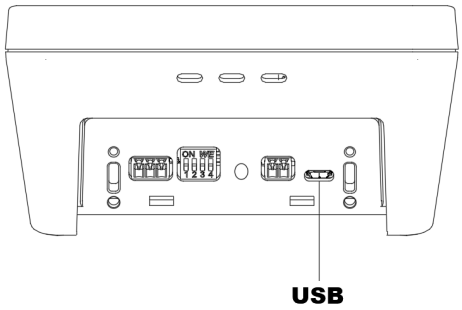


Figure 10 – USB connector

NOTE: in applications where Bluetooth or Wi-Fi, or both, are used, it is advisable to keep the unit permanently powered through the USB port or with an external power supply.

6. CARE AND MAINTENANCE

For a correct and accurate measurements, the T-SCAN 540 needs simple but constant maintenance.

On a daily basis, inspect the front panel close to the sensor area and eventually clean the panel.

- Keep the panel clean from fingerprints. In case, lightly rub the panel with a microfiber cloth moisture with a 70% hydro alcoholic solution.
- Keep the infrared temperature sensor clean from dirt and debris. In case, clean the inside of the sensor with a dry paintbrush

DO NOT clean the panel with paint thinners, acetone, trichloroethylene or similar products. Use hydro alcoholic solution only!

DO NOT use clothes that may scratch the front-panel!

WARNING: scratches on the close to the sensor area may severely degrade the performance of the distance sensor.

7. TROUBLESHOOTING

Reported defect	Possible cause	Suggested solution
The unit does not scroll the dots saying it is ready for a measurement	The unit is OFF	Turn on the with the power button on the rear panel
	The battery is over	Plug the unit to a power

	discharged	source and let the battery fully recharge
The measured temperature is lower than expected	The measurement has not been taken in the “sweet spot” indicated in the manual	Perform the measurement pointing the “sweet spot” indicated in this manual right in front of the sensor
	The user has passed from two room with heavy temperature differences (heating or air conditioning)	When passing from two rooms (or exterior) with heavy temperature differences, allow a couple of minutes for the body temperature to stabilize.
	Measurement has been falsified by eyewear, clothes (hat, etc…) or hair in front of the forehead	Remove any glasses or hair so that the forehead is clear.
	Measurement has been falsified by heavy make-up	Measurement should be taken with light or no make-up
	The user may have sweat on his forehead, especially in the summer season	Wipe off the sweat from the forehead and allow a couple of minutes for the body temperature to stabilize.
The measured temperature is higher than expected	The user has passed from two room with heavy temperature differences (heating or air conditioning)	When passing from two rooms (or exterior) with heavy temperature differences, allow a couple of minutes for the body temperature to stabilize.
	The user has passed from two room with heavy temperature differences (heating or air conditioning)	When passing from two rooms (or exterior) with heavy temperature differences, allow a couple of minutes for the body temperature to stabilize.
The unit senses the approach of a person even if nobody stands in front of it	The front panel is dirty in the sensor area	Clean the front panel with hydro alcoholic solution on a soft cloth. Turn off the unit then power it up again to recalibrate the sensor.
	The front panel is scratched in the sensor area	Clean the front panel with hydro alcoholic solution on a soft cloth. Turn off the unit then power it up again to recalibrate the sensor. If this does not fix the issue,

		the unit will need to be serviced and the panel substituted
	The protective film has not been removed	Remove the protective film from the front panel Turn off the unit then power it up again to recalibrate the sensor.
	The unit has been powered on with an object too close to it	Keep the front panel of the unit away from obstacles or objects (at least 1 meter), then turn off the unit then power it up again to recalibrate the sensor.
The unit is reporting a LOW or a HIGH temperature error	The unit has been installed in a place where some object is approaching close enough to trigger the measurement	Install the unit at a distance of at least 50cm away from anything that is likely to trigger the measurement accidentally.
	A person with clothes on (es. scarf, hat, cap, sleeve, etc…) has approached the unit without exposing the fore head to the unit	Perform the measurement as indicated in this manual
The unit is reporting a LOW or a HIGH ambient temperature error	The unit is installed in a room or in place (es. outdoor) where the ambient temperature does not grant an accurate acquisition of body temperature	Move the unit in a room where ambient temperature is within the 15-40°C range

8. Technical Specifications

Power Supply	5-24Vdc
Maximum power:	5.20W
Dimensions (W x D x H)	140 x 140 x 80 mm
Weight approx.	450 g
Storage temperature	0° to 85° C
Measuring ambient temperature	15° to 40°C

Measurement range	32° to 42°C
Measuring distance	14cm
Temperature sensor	Infrared thermopile, thermally compensated
Range sensor	Laser infrared time of flight
Accuracy	0,2°C*
Display resolution	0,1°C
Indicators	RGB high brightness led – internal loudspeaker
Connectivity	USB 2.0 – Bluetooth V4.2 – WiFi 802.11
Outputs	Relay NO-NC, 1A max, 24Vdc max
Compliancy	EN 61010-1

** Accuracy is specified for standard laboratory conditions: ambient temperature 25°C, black body with normalized emissivity ε=1.00 thermally regulated at 37.5°C, reading distance 120mm.*

9. Disposal

This equipment has been made with recycled materials or easily disposed ones.

In the case of disposal you will have to provide for the separation of its main components by type of material, then sending each homogeneous group to more appropriate facility for disposal.

The product at the end of its useful life must be collected separately from other waste