

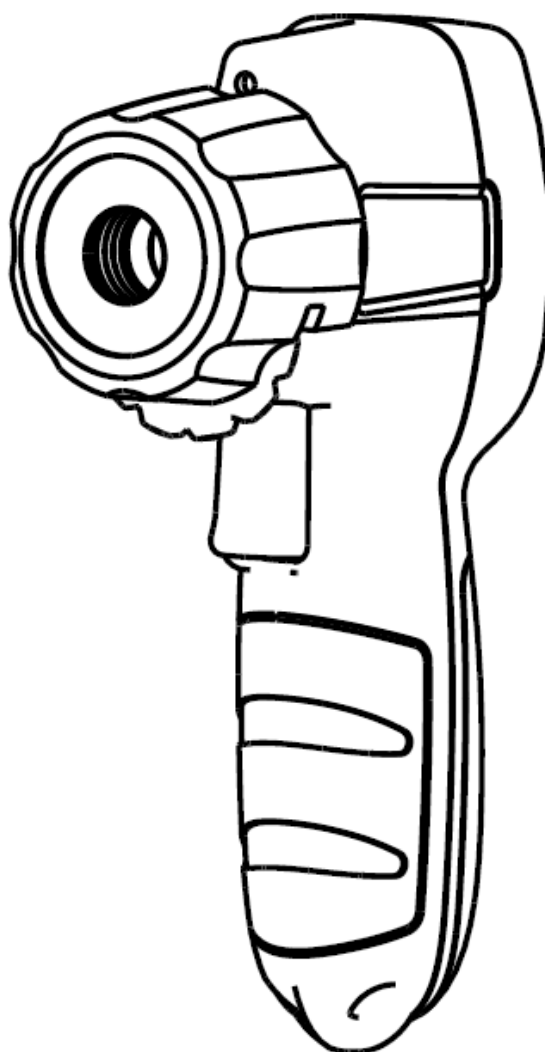
Sefram

Instruction Manual

SEFRAM 9830

Thermal Camera

EN



Introduction

The SEFRAM 9830 Thermal Camera (the Product) can display thermal gradient, temperature readings, map and measure the infrared energy radiated by the target's surface.

Warning

Read all safety information before you use the Product.

Safety Information

A **Warning** identifies conditions and procedures that are dangerous to the user. A **Caution** identifies conditions and procedures that can cause damage to the Product or the equipment under test.

Table 1 tells you about symbols used on the Product and in this manual.







Warning

To prevent eye damage and personal injury:

- Read all Safety Information before you use the Product.
- Do not use the Product if it operates incorrectly.
- Use the Product only as specified, or the protection supplied by the Product can be compromised.

- Before you use the Product, inspect the case. Do not use the Product if it appears damaged. Look for cracks or missing plastic.
- See emissivity information for actual temperature.
Reflective objects result in lower than actual temperature measurement. These objects pose a burn hazard.
- Do not stare into laser beam or view directly with optical instruments (for example, eye loupes, magnifiers and microscopes). Optical instruments can focus the laser, this is dangerous to the eye.
- Do not look into the laser. Do not point laser directly at persons or animals or indirectly off relative surfaces.
- Replace the batteries when the low battery indicator shows to prevent incorrect measurement.
- Do not use the Product around explosive gas, vapor, or in damp or wet environments.
- Use the Product only as specified or hazardous laser radiation exposure can occur.

Table 1. Symbols

Symbol	Meaning
	<p>Caution! Risk of danger. Important information. See Manual.</p>
	<p>Do not dispose of this product as unsorted municipal waste. Contact a qualified recycler.</p>
	<p>Laser Radiation! Do not stare into beam or view with optical instrument</p>
	<p>Complies with European Union Directives.</p>
	<p>Low Battery</p>
	<p>Warning LEDs! Do not look directly into LED light or shine the light toward anyone's eyes.</p>

Class 2

A person receiving an eye exposure from a Class 2 laser beam will be protected from injury by their own natural aversion response. This is a natural involuntary response which causes the individual to blink and avert their head there by terminating the eye exposure. Repeated, deliberate exposure to the laser beam may not be safe.



Maintenance



To avoid damage to the Product, do not leave the Thermal Camera on or near objects of high temperature.

How to Change the Battery

To install or change the AA IEC LR06 battery, open the battery compartment and replace the battery as shown in Figure 10.

How to Clean the Product

Use soap and water on a damp sponge or soft cloth to clean the Product case. Carefully wipe the surface with a moist cotton swab. The swab may be moistened with water. See Figure 11 ~12.

Specifications

SEFRAM 9830	
Display	1.77" Color TFT with 128 (H) x 160 (V) pixels
Temperature Range	-30°C to 650°C (-22°F to 1202°F)
Accuracy (Calibration geometry with ambient temperature 23°C ±2°C)	<p>≥0°C :±1.5°C or ±1.5 % of reading, whichever is greater (≥32°F:±3°F or ±1.5% of reading, whichever is greater)</p> <p>≥-10°C to <0°C :±2°C (≥14°F to <32°F:±4°F)</p> <p><-10°C :±3°C <14°F:±6°F) ≥0°C :±1.5°C or ±1.5 % of reading, whichever is greater (≥32°F:±3°F or ±1.5% of reading, whichever is greater)</p> <p>≥-10°C to <0°C :±2°C (≥14°F to <32°F:±4°F)</p> <p><-10°C :±3°C <14°F:±6°F)</p>
Response Time (95%)	<125ms (95% of reading)
Spectral Response	8 to 14 microns
Emissivity	0.10 to 1.00

Thermal Camera / English

Temperature Coefficient	$\pm 0.1^{\circ}\text{C}/^{\circ}\text{C}$ or $\pm 0.1\%/^{\circ}\text{C}$ of reading (whichever is greater)
Display Resolution	0.1°C (0.2°F)
Repeatability (% of reading)	$\pm 8\%$ of reading or $\pm 1.0^{\circ}\text{C}$ (2°F), whichever is greater
Thermal Imaging detector	IR-EX™ Technology (Integrated IR Array Sensor with CMOS Sensor)
Imaging Resolution	16,384 pixels (128 x 128 pixels)*
Field of View (H x W)	30°
Upper Sense Range	650°C
Thermal Imaging Sensitivity	150mK
Color Palettes	3(Grey Scale, Hot Iron, Rainbow)
Saved Image Format	Bitmap (BMP) Image with Temperature and Emissivity
Power	3 AA IEC LR06 Batteries
Battery Life	12hours with laser and backlight on
Weight	300g

Remark*: Interpolation Pixels

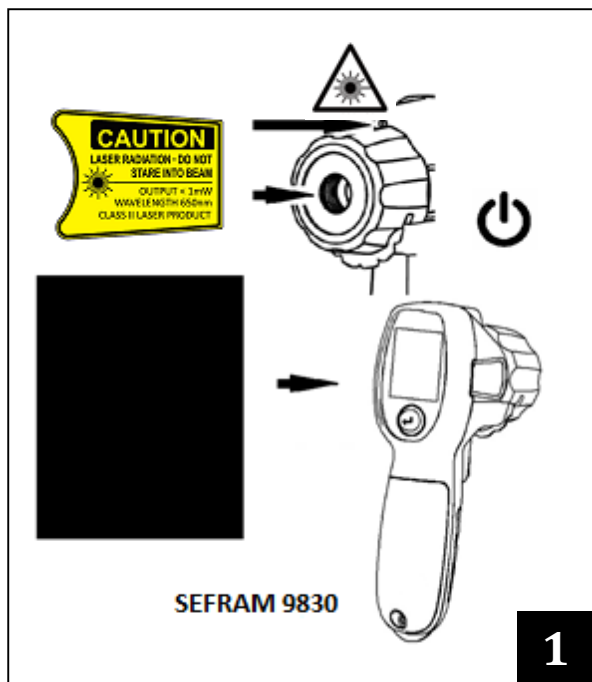
Size	(185 x 54 x 104) mm (7.3 x 2.1 x 4.1) inches
Operating Temperature & Humidity	0 °C to 50°C (32 °F to 122°F) 10% to 90% RH non-condensing@30°C (86°F)
Storage Temperature	-20 °C to 60°C (-4 °F to 140°F), without battery)
Operating Altitude	2000 meters above mean sea level
Storage Altitude	12,000 meters above mean sea level
Drop Proof	1.2 meters (4 feet)
Vibration and Shock	IEC 60068-2-6 2.5g, 10 to 200Hz, IEC 60068-2-27, 50g, 11ms
EMC	EN61326-1:2006 EN61326-2:2006

Standards and Agency Approval

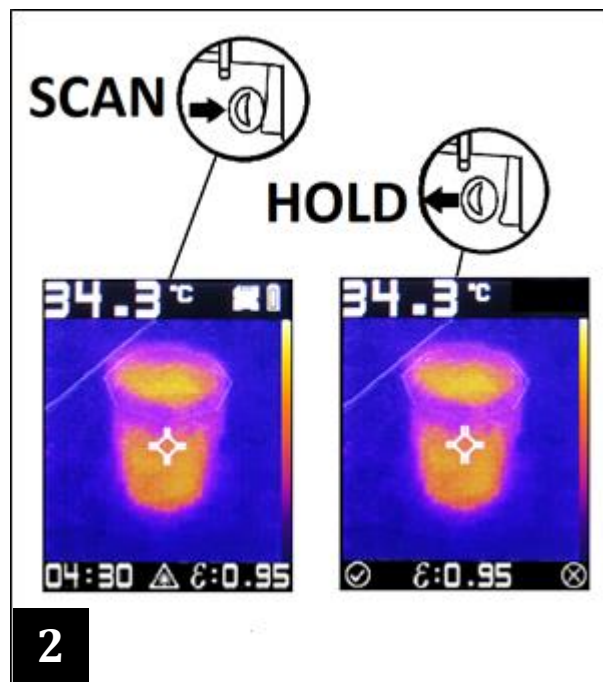
Compliance.....	IEC 61010-1
Laser Safety.....	IEC 60825-1 Ed. 3 (2014) Class 2 Laser Product
Rated Wavelength.....	650nm
Beam Divergence.....	1mradmax
Maximum Output Power.....	1mWmax

The Product

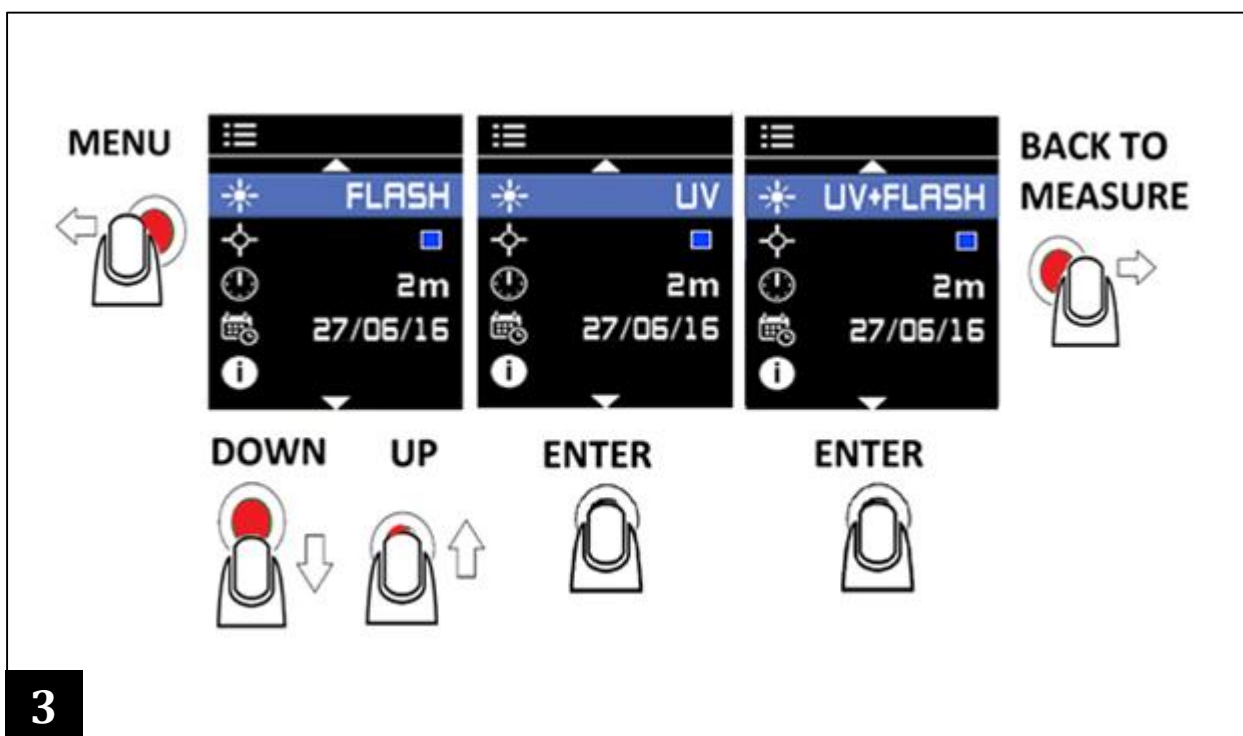
POWER ON/OFF



HOLD



FLASHLIGHT/UV LIGHT/UV+FLASHLIGHT/OFF



COLOR PALETTE

MENU **BACK TO MEASURE**

DOWN **UP** **ENTER** **ENTER**

4

°C/°F

MENU **BACK TO MEASURE**

DOWN **UP** **ENTER**

5

LASER ON/OFF

MENU

DOWN UP ENTER

BACK TO MEASURE

6

AUTO POWER OFF

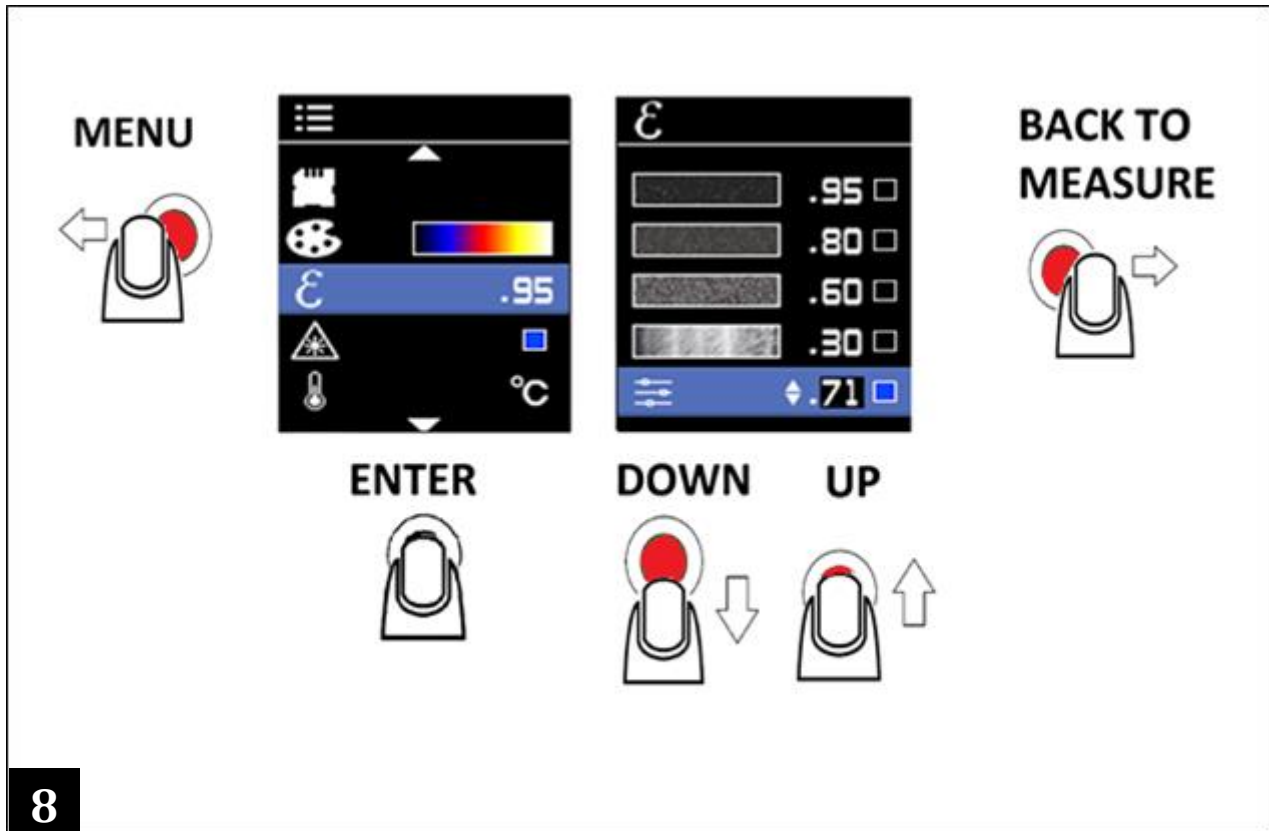
MENU

ENTER DOWN UP

BACK TO MEASURE

7

EMISSIVITY



Emissivity (EMS)

The emissivity of the surface of a material is its effectiveness in emitting energy as thermal radiation. Quantitatively, emissivity is the ratio of the thermal radiation from a surface to the radiation from an ideal black surface at the same temperature as given by the Stefan–Boltzmann law.

Refer to the Table 2 for the Emissivity adjustment. Nominal Surface Emissivity for an accurate non-contact infrared temperature measurement.

Table 2. Nominal Surface Emissivity

Material	Value	Material	Value
Default****	0.95	Glass(plate)	0.85
Aluminum*	0.30	Iron*	0.70
Asbestos	0.95	Lead*	0.50
Asphalt	0.95	Oil	0.94
Brass*	0.50	Paint	0.93
Ceramic	0.95	Plastic**	0.95
Concrete	0.95	Rubber	0.95
Copper*	0.60	Sand	0.90
Food-Frozen	0.90	Steel*	0.80
Food-hot	0.93	Water	0.93
		Wood***	0.94

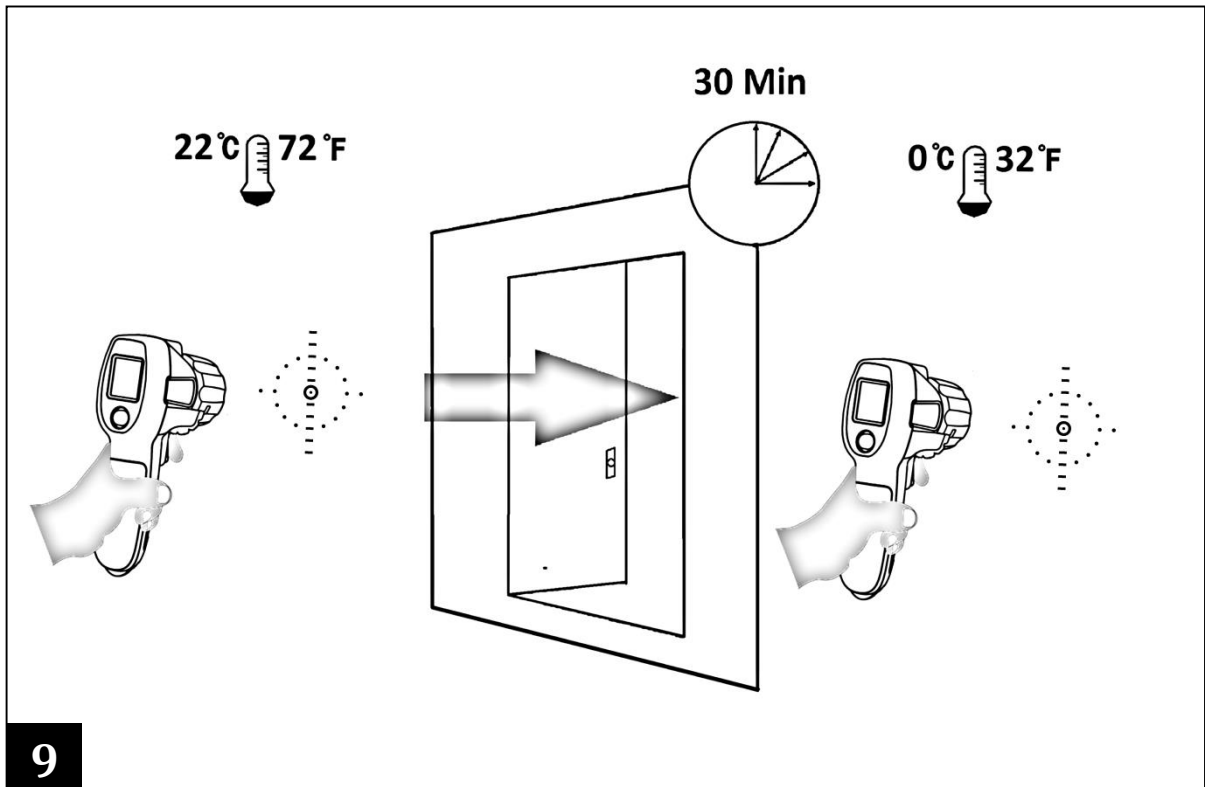
*Oxidized

**Opaque, over 20 mils

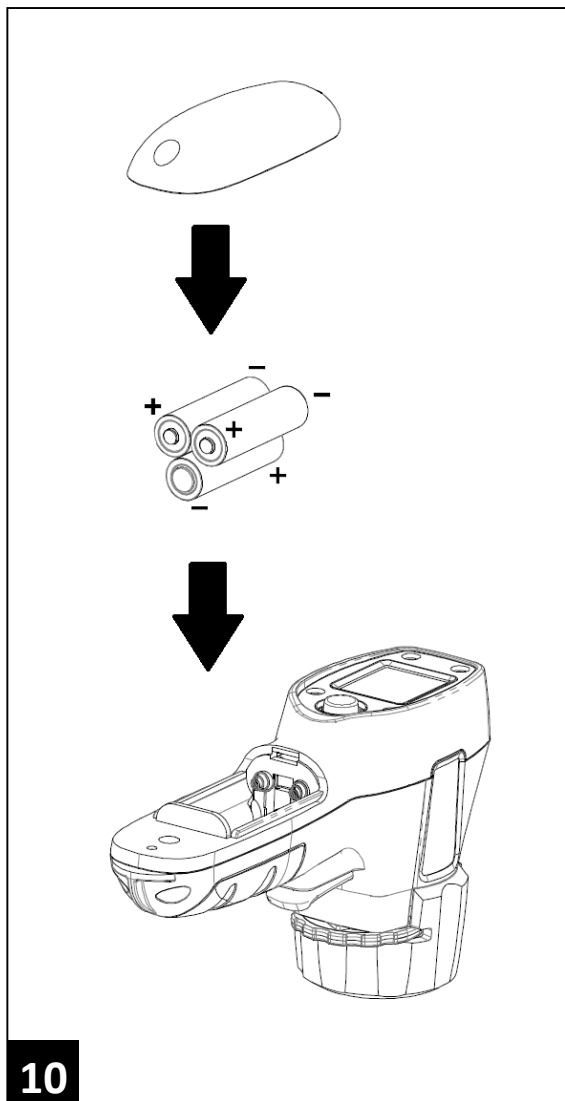
***Natural

****Factory Setting

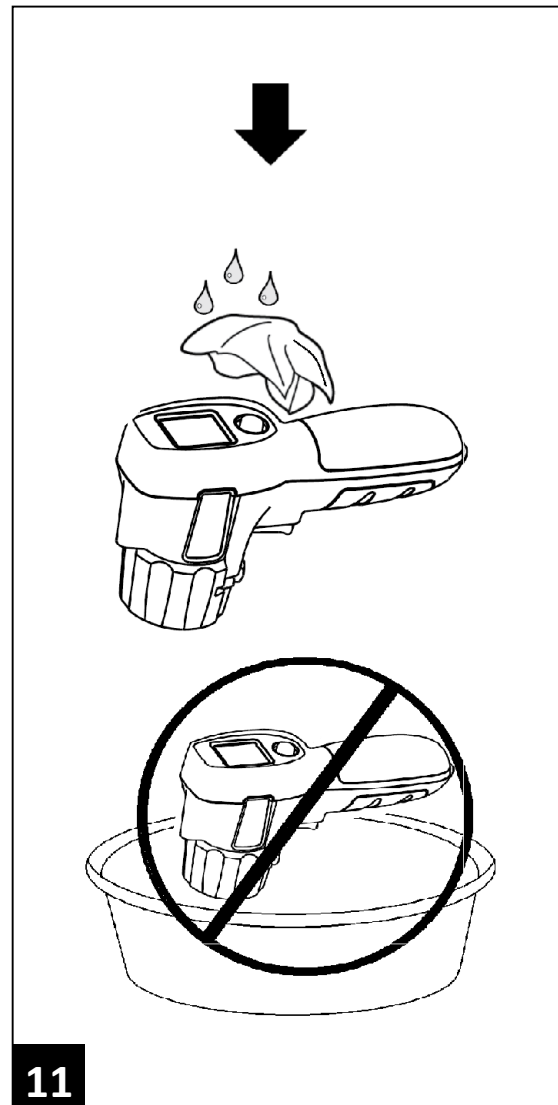
ENVIRONMENT CHANGE REST TIME



CHANGE BATTERY



CLEAN



LENS CLEAN

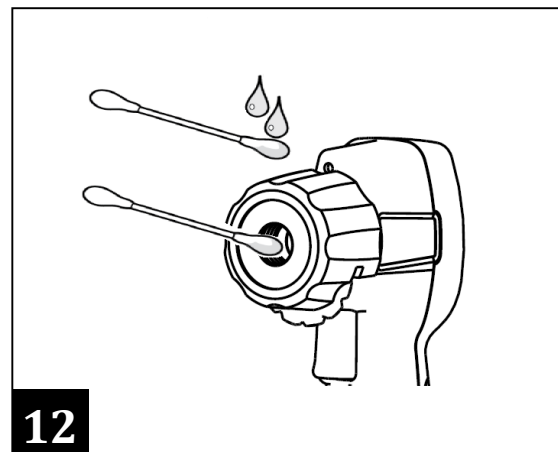
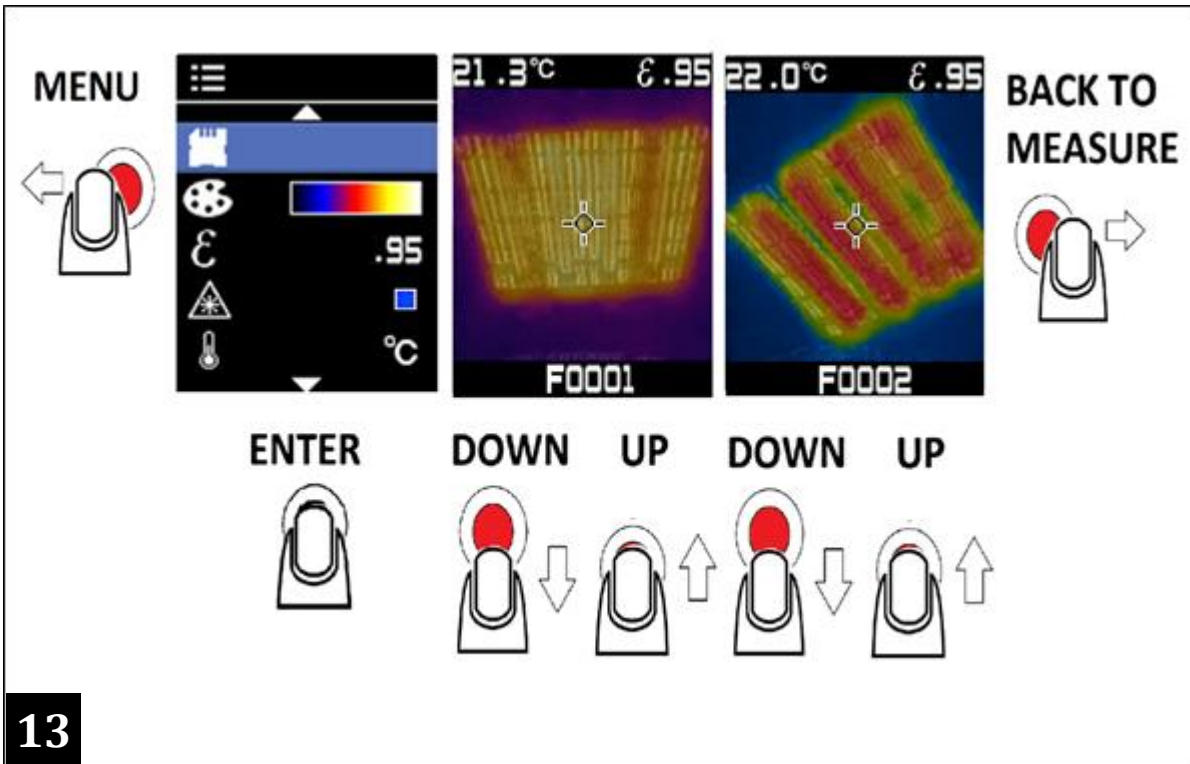
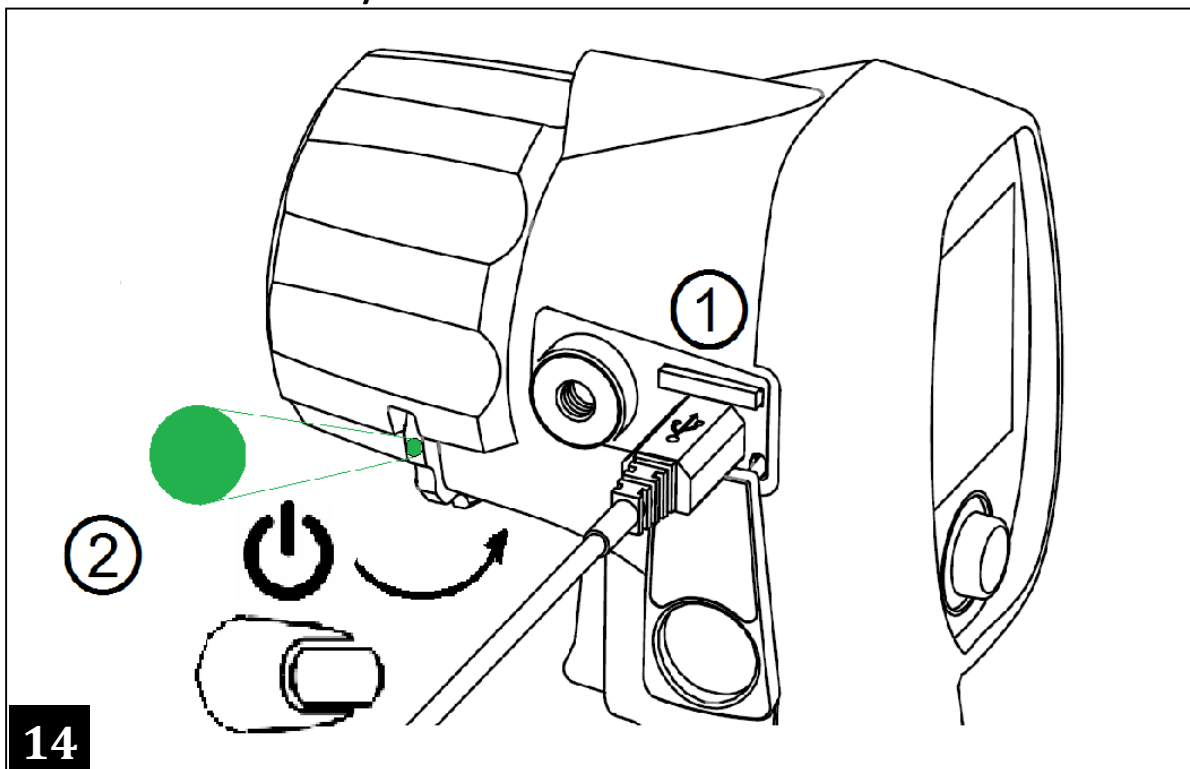


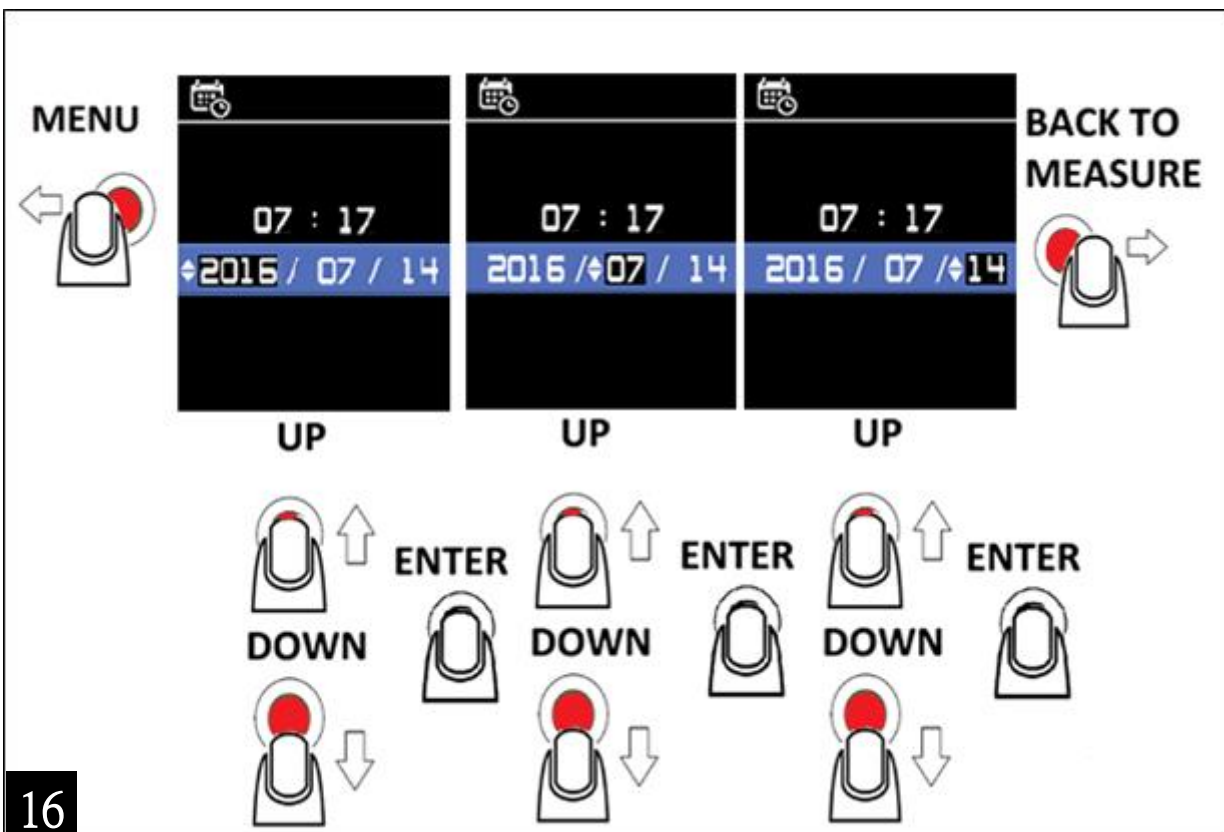
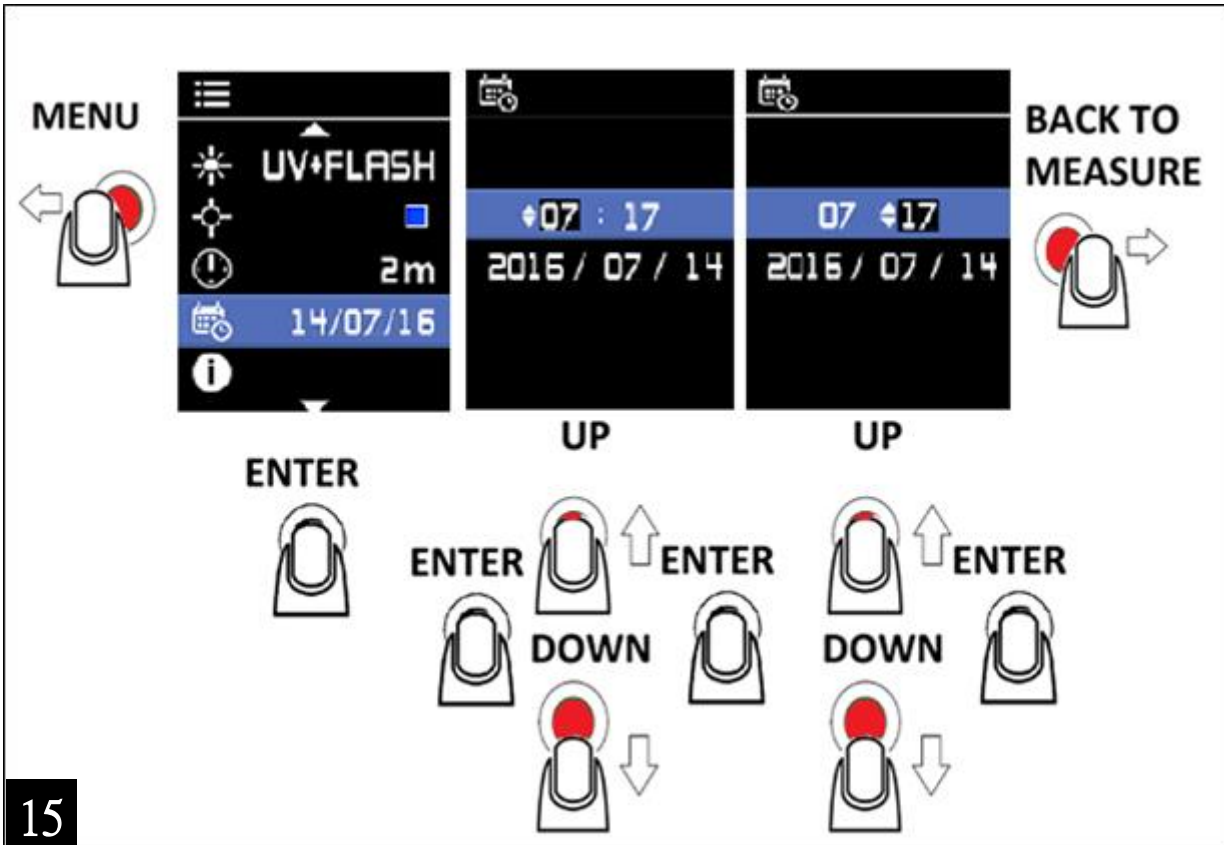
IMAGE REVIEW



MICRO SD CARD ERASE/BROWSE BY PC



DATE & TIME SETTING



Limited Warranty

This meter is warranted to the original purchaser against defects in material and workmanship for 1 year from the date of purchase. During this warranty period, SEFRAM will, at its option, replace or repair the defective unit, subject to verification of the defect or malfunction. This warranty does not cover fuses, disposable batteries, or damage from abuse, neglect, accident, unauthorized repair, alteration, contamination, or abnormal conditions of operation or handling.

Any implied warranties arising out of the sale of this product, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the above. SEFRAM shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expense or economic loss. Some states or countries laws vary, so the above limitations or exclusions may not apply to you. For full terms and conditions, refer to the SEFRAM website.

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