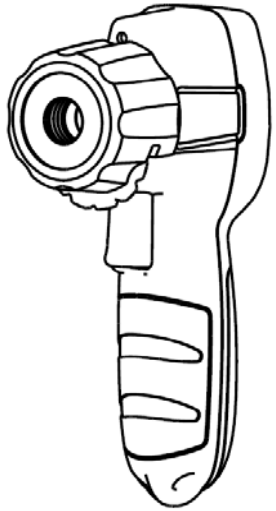
FLEX®
Extend Your Power & Abilities

TG-201
Thermal Camera

TG-301
Thermal Camera
+ UV Leak Detector



Users Manual

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Users Manual

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Limited Warranty and Limitation of Liability

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

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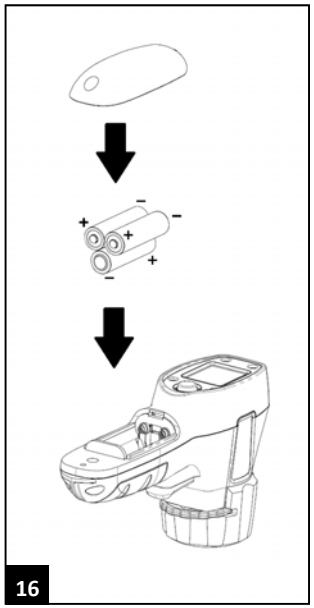
CHANGE BATTERY



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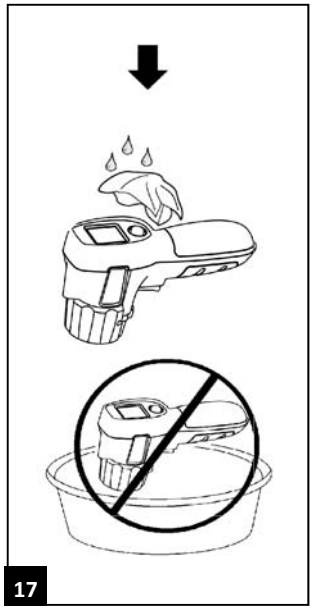
CLEAN



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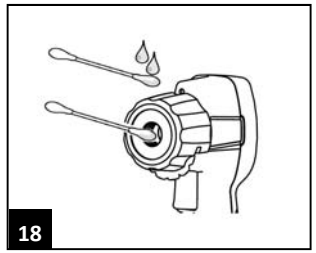
LENS CLEAN



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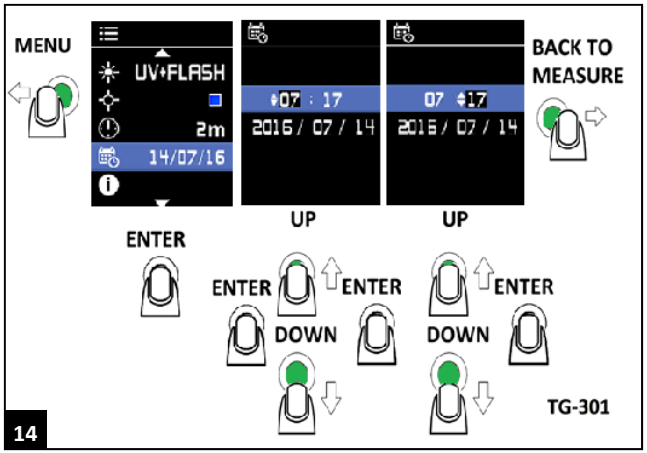
DATE & TIME SETTING



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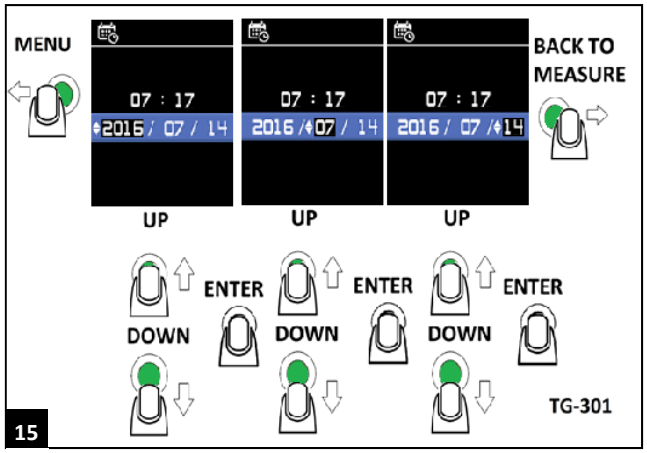

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Table of Contents

Introduction

The **FLEX TG-201/TG-301** Thermal Camera (The Product) can display thermal gradient map and measuring the infrared energy radiated by the target's surface inside the laser circle with scale indication area associated with precise and accurate temperature reading.

⚠ 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.

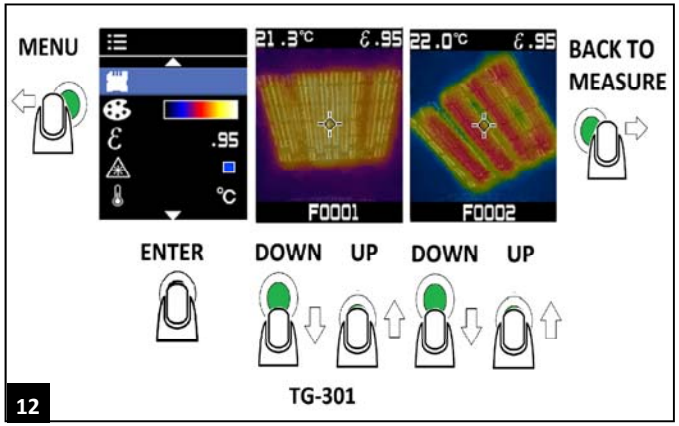
Table 1 tells you about symbols used on the Product and in this manual.

⚠ Warning

To prevent eye damage and personal injury:

- Read all Safety Information before you us 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.

IMAGE REVIEW



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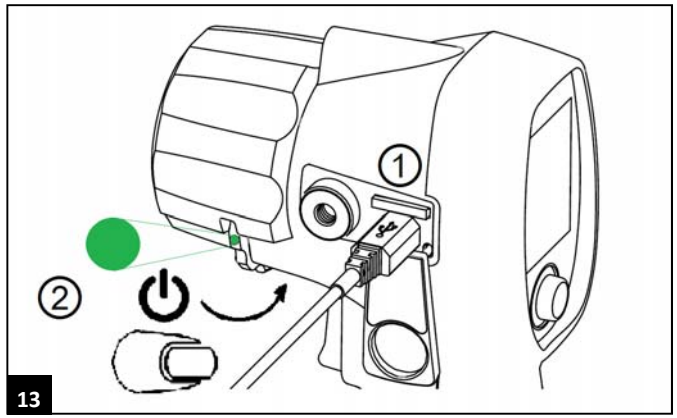
MICRO SD CARD ERASE/BROWSE BY PC



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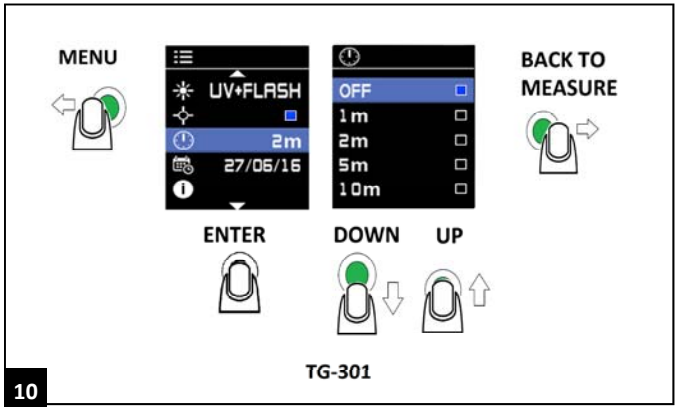
AUTO POWER OFF



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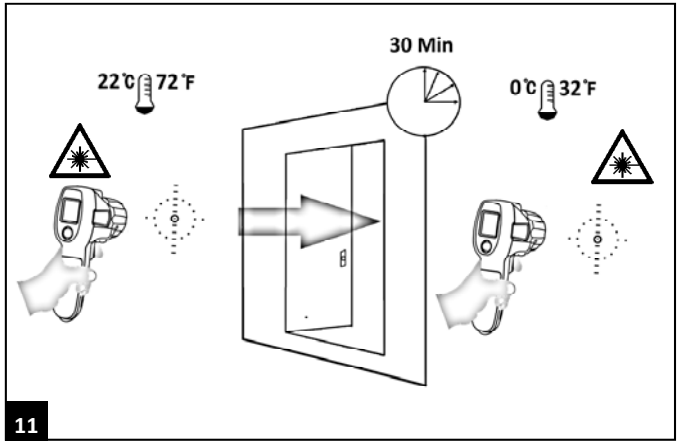
ENVIRONMENT CHANGE REST TIME



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- 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 and the 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
	Caution! Risk of danger. Important information. See Manual.
	Do not dispose of this product as unsorted municipal waste. Contact a qualified recycler.
	Laser Radiation! Do not stare into beam or view with optical instrument (TG-201 has no laser)
	Complies with European Union Directives.
	Low Battery
	Warning LEDs! Do not look directly into LED light or shine the light toward anyone's eye. (TG-201 has no LEDs)

Table 2. Nominal Surface Emissivity

Material	Value		Material	Value
Default****	0.95		Leather***	0.78
Aluminum*	0.30		Lead*	0.50
Asbestos	0.95		Oil	0.94
Asphalt	0.95		Paint	0.93
Brass*	0.50		Plastic**	0.95
Ceramic	0.95		Rubber	0.95
Concrete	0.95		Sand	0.90
Copper*	0.60		Steel*	0.80
Food-Frozen	0.90		Snow	0.83
Food-hot	0.93		Skin (human)	0.98
Glass (plate)	0.85		Timber*	0.90
Iron*	0.70		Water	0.93
Ice	0.97		Wood***	0.94

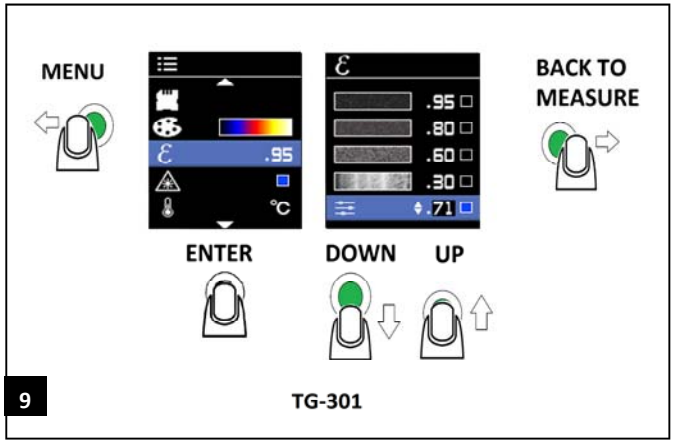
*Oxidized

**Opaque, over 20 mils

***Natural

****Factory Setting

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.

The Emissivity adjustment need to refer to Table 2. Nominal Surface Emissivity for an accurate non-contact infrared temperature measurement.

Class 2

A Class 2 laser is safe because of the blink reflex if not viewed through optical instruments. As with class 1M, this applies to laser beams with a large diameter or large divergence, for which the amount of light passing through the pupil cannot exceed the limits for class 2.

Maintenance

⚠ Caution

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 16.

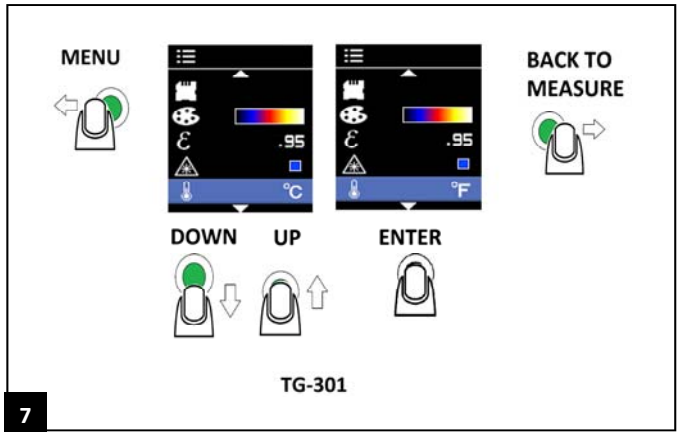
How to Clean the Product

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 17 ~18.

Specifications

	TG-201	TG-301
Display	1.77" Color TFT with 128 (H) x 160 (V) pixels	
Temperature Range	-20℃~380℃ (-4℉ to 716℉)	-30℃~650℃ (-22℉ to 1202℉)
Accuracy (Calibration geometry with ambient temperature 23℃ ±2℃)	≥0℃:±1.5℃ or ±1.5 % of reading, whichever is greater (≥32℉:±3℉ or ±1.5% of reading, whichever is greater) ≥-10℃ to <0℃:±2℃(≥14℉ to <32℉:±4℉) <-10℃:±3℃<14℉:±6℉)≥0℃:±1.5℃ or ±1.5 % of reading, whichever is greater (≥32℉:±3℉ or ±1.5% of reading, whichever is greater) ≥-10℃ to <0℃:±2℃(≥14℉ to <32℉:±4℉) <-10℃:±3℃<14℉:±6℉)	
Response Time (95%)	<125ms (95% of reading)	
Spectral Response	8 to 14 microns	
Emissivity	0.10 to 1.00	

℃/℉



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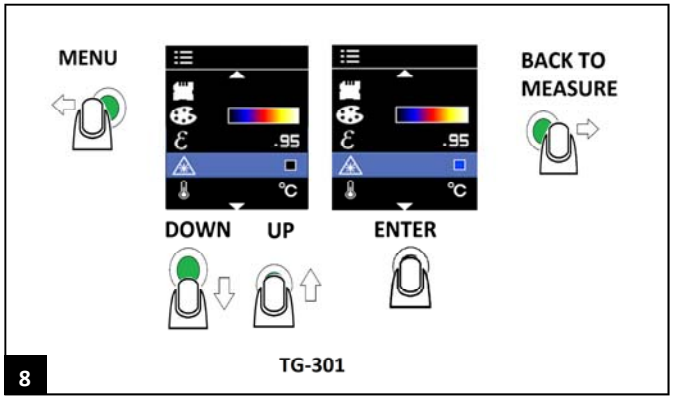
LASER ON/OFF



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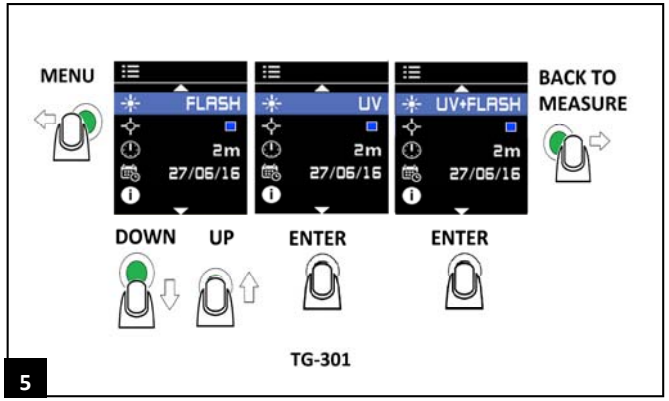
FLASHLIGHT/UV LIGHT/UV+FLASHLIGHT/OFF



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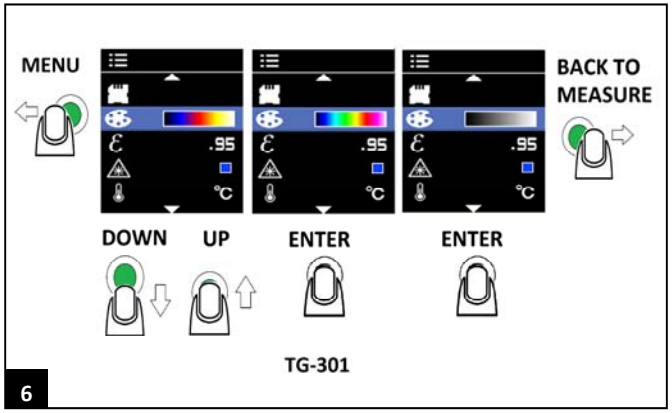
COLOR PALETTE



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Temperature Coefficient	± 0.1℃/℃ or ±0.1%/℃ of reading (whichever is greater)	
Display Resolution	0.1℃ (0.2℉)	
Repeatability (% of reading)	± 8% of reading or ±1.0℃ (2℉), which-ever is greater	± 8% of reading or ±1.0℃ (2℉), which-ever 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)	33° x 33°	
Upper Sense Range	300℃	650℃
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	16hours	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	-10 ℃ to 50℃ (14 ℉ to 122℉) 10% to 90% RH non-condensing@30℃(86℉)
Storage Temperature	-20 ℃ to 60℃ (-4 ℉ to 140℉), 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 feets)
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(TG-301).....IEC 60825-1 Ed. 3 (2014)
Class 2 Laser Product

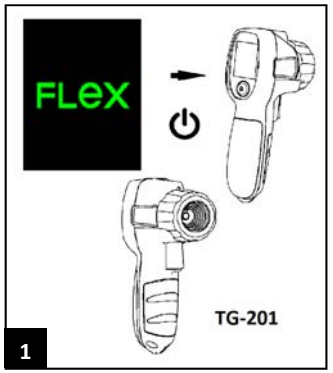
Rated Wavelength.....650nm

Beam Divergence.....1mradmax

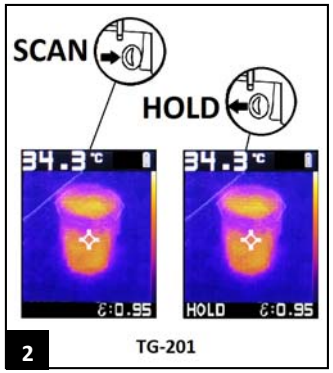
Maximum Output Power.....1mWmax

The Product

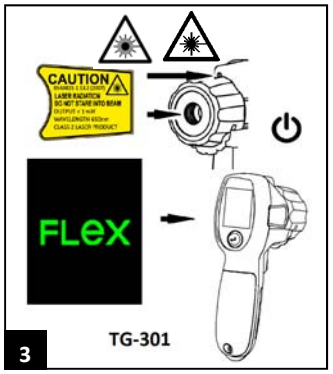
POWER ON/OFF



HOLD



POWER ON/OFF



HOLD