

KUSAM-MECO®

An ISO 9001:2008 Company

Handheld Thermal Camera Model - TG-301

FEATURES :

- * One Navigator Key Operation
- * 16,384 pixels thermal image after interpolation
- * True D/S 30:1 with precise laser indication.
- * Bright flashlight with 5 white LEDs
- * Compact UV refrigerant leak detector with 5UV/Blue LEDs
- * Ergonomically designed pistol grip housing with excellent industrial Design
- * Simple, Smart, Precise and Versatility.
- * 160x128 pixel 1.77 inches TFT-LCD Display
- * Alkaline AA size x 3 Batteries
- * Key chain with wrist strap for carrying convenience

ELECTRICAL SPECIFICATIONS :

- **Temperature Range :** -30 °C to 650 °C (-22 °F to 1202 °F)
- **Accuracy :** ±1.5 °C or ±1.5% of reading ±2.0°C at -10 °C to 0 °C
±3.0°C at -30 °C to -10 °C
- **Response Time(95%) :** <300 ms (95% of reading)
- **Optical Resolution :** 30:1 (calculated at 95% energy)
- **Display Resolution :** 0.1 °C (0.2 °F)
- **Repeatability of Readings :** ±0.5% of reading or < ±0.5°C (1°F), whichever is greater

GENERAL SPECIFICATIONS :

- **Operating Temp. & Humidity :** -10 °C to 50 °C (14 °F to 122 °F), 10 % to 90 % RH
- **Storage Temperature :** -20 °C to 60 °C (-4 °F to 140 °F)
- **Operating Altitude :** Upto 2000 meters above mean sea level.
- **Power :** AA x 3 batteries
- **Battery Life :** 16 hours with laser and backlight on
- **Weight :** Approx. 300 g
- **Dimension :** (185 x 51 x 100) mm (7.29 x 2.01 x 3.94) inches

SAFETY :

- **Vibration and Shock:** IEC 68-2-6 2.5 g, 10 to 200 Hz, IEC 68-2-27, 50 g, 11 ms
- **EMC :** EN 61326-1:2006, EN 61326-2:2006
- **Compliance and Laser Safety :** EN/IEC 61010-1: 2001, EN 60825-1 Class II

THERMAL IMAGING :

- **Imaging Detector :** IR Array
- **Image Resolution :** 16,384 pixels (128 x 128 pixels)*
- **Field of View (H X W) :** 30 °
- **Upper Sense Range :** 650 °C
- **Thermo Imaging Sensitivity :** 150 mK
- **Color Palettes :** 3 (Grey Scale, Hot Iron, Rainbow)
- **Saved Image Format :** Bitmap (BMP) Image with Temperature and Emissivity



Preliminary Data

All Specifications are subject to change without prior notice.

KUSAM-MECO®
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Email : sales@kusam-meco.co.in **Website :** www.kusamelectrical.com

LIST OF PRODUCTS

- * Digital Multimeter
- * AC Clamp Adaptor
- * Thermo Anemometer
- * Distance Meter
- * Network Cable Tester
- * Earth Resistance Tester
- * DC Power Supplies
- * Calibrators
- * Frequency Counter
- * Phasing Sticks
- * Waterproof Pen Testers
- * EMF Detector
- * Wood, Paper & Grain Moisture Meter
- * Transistorised Electronic Analog & Digital Insulation Resistance Testers(upto 10 KV)
- * Digital Sound Level Meter & Sound Level Calibrator
- * Digital contact & Non-contact Type Tachometer
- * Digital Non-contact (infrared) Thermometer
- * Maximum Demand Controller/Digital Power Meter
- * Digital Hand Held Temperature Indicators
- * Digital AC & AC/DC Clampmeter
- * AC/DC Current Adaptor
- * Thermo Hygrometer
- * Digital Lux Meter
- * Power Factor Regulator
- * Digital Panel Meters
- * High Voltage Detector
- * Gas Analysers
- * Function Generator
- * Battery Tester
- * Solar Power Meter

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KUSAM-MECO[®]

AN ISO 9001:2015 COMPANY

HANDHELD THERMAL CAMERA MODEL - TG-301



OPERATION MANUAL

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WARRANTY

Each "KUSAM-MECO" product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty extends only to the original buyer or end-user customer of a "KUSAM-MECO" authorized dealer.

This warranty does not apply for damaged Ic's, fuses, burnt PCB's, disposable batteries, carrying case, test leads, or to any product which in "KUSAM-MECO's" opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

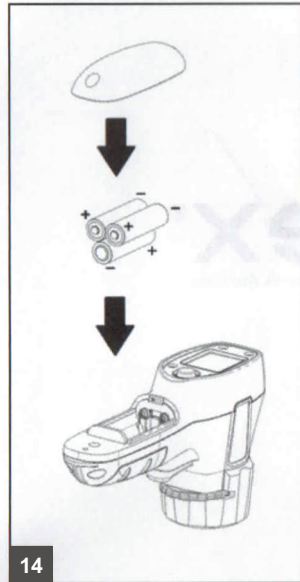
"KUSAM-MECO" authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of "KUSAM-MECO".

"KUSAM-MECO's" warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a "KUSAM-MECO" authorized service center within the warranty period.

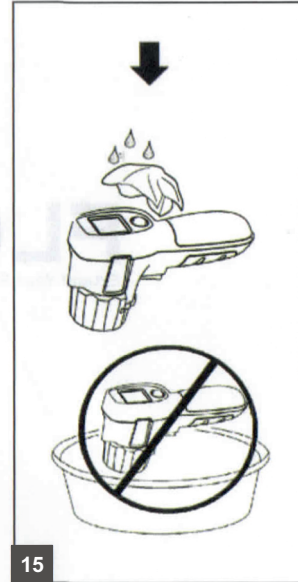
THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. "KUSAM-MECO" SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER.

All transactions are subject to Mumbai Jurisdiction.

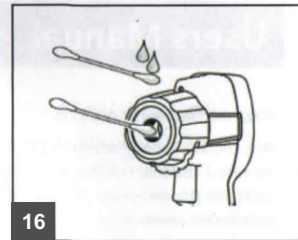
CHANGE BATTERY



CLEAN



LENS CLEAN



Introduction

The **KUSAM-MECO**[®] 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.

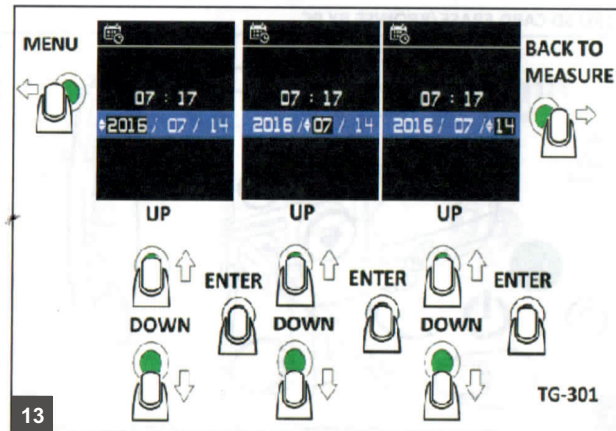
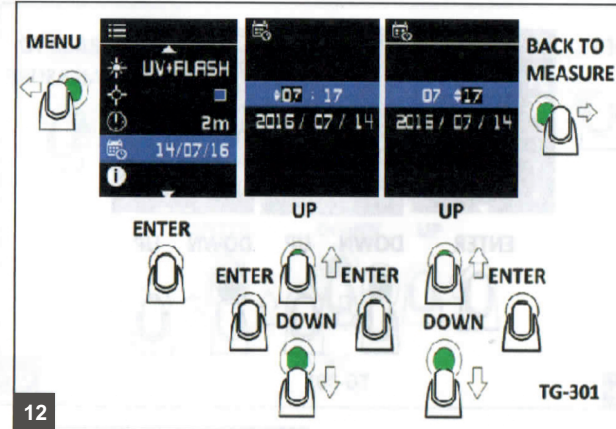
Table 1 tells you about symbols used on the Product and in this manual.

⚠ Warning

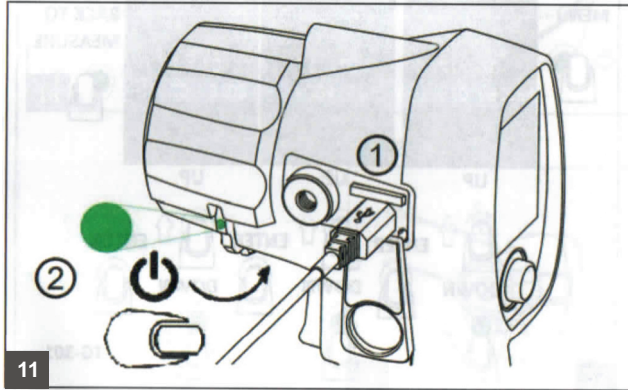
- To prevent eye damage and personal injury:
- Read all Safety Information before you use the Product.
 - Do not use the Product if it operates incorrectly.
 - Use the Product only as specified, or the protection supplied by the Product can be compromised.

- 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 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.

DATE & TIME SETTING



MICRO SD CARD ERASE/BROWSE BY PC



Instructions for SD Card & PC Connection

1. SD Card of 2GB is available.
2. 2GB SD Card is inserted left side of the Thermal Image Camera.
3. USB slot is also given to directly connect to the PC and view the image.
4. Connect any USB Cable to the PC and the Imager TG-301 should be in OFF mode then connect to the PC. If in ON mode the USB cannot be connected to show files.
5. In Thermal Image Camera the menu option the saved images can be seen directly on the screen of image camera.
6. When connected to the PC with USB cable do not ON the imager. It will not start.

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
	Complies with European Union Directives.
	Low Battery
	Warning LEDs! Do not look directly into LED light or shine the light toward anyone's eye.

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.

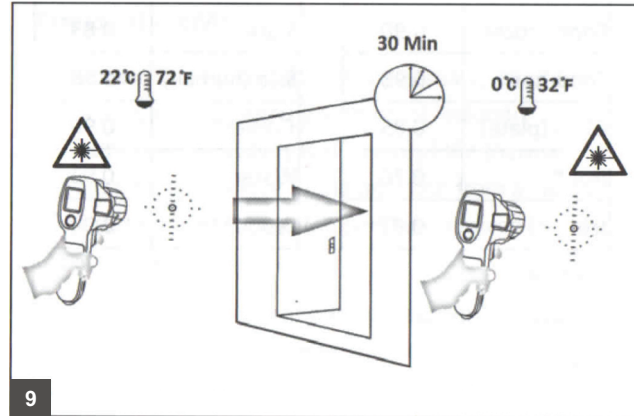
How to Change the Battery

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

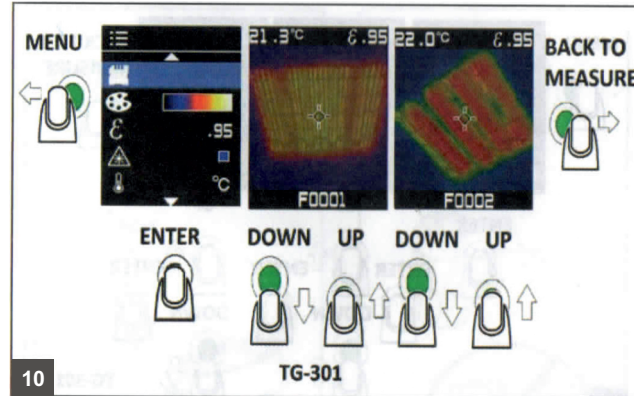
Use soap and water on a damp sponge or soft cloth to clean the Product case. Carefully wipe the surface with a moist cotton swab. The swab may be moistened with water. See Figure 17 ~18.

ENVIRONMENT CHANGE REST TIME



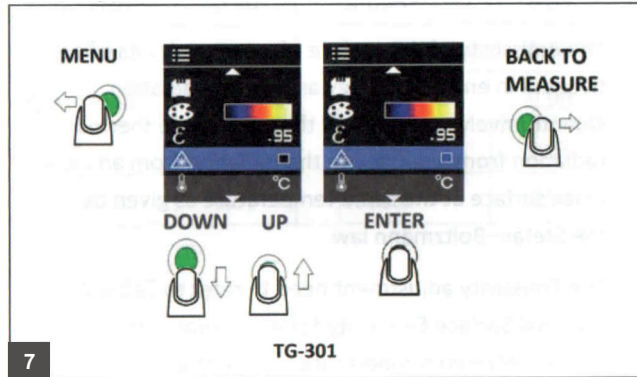
9

IMAGE REVIEW

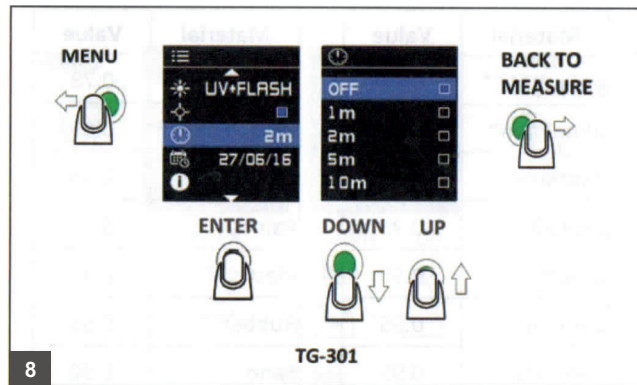


10

LASER ON/OFF



AUTO POWER OFF



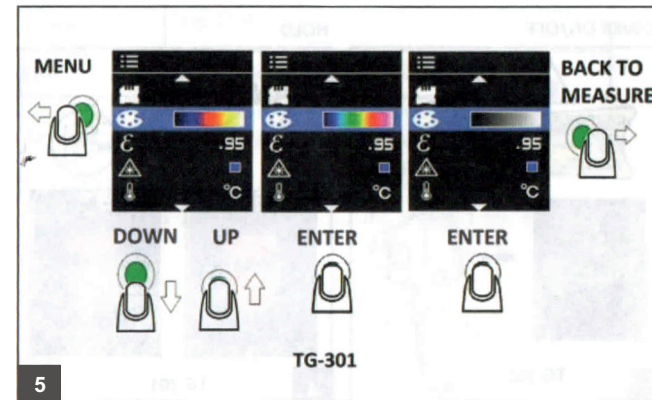
Specifications

	TG-301
Display	1.77" Color TFT with 128 (H) x 160 (V) pixels
Temperature Range	-30°C~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

Temperature Coefficient	± 0.1°C/°C or ±0.1%/°C of reading (whichever is greater)
Display Resolution	0.1°C (0.2°F)
Repeatability (% of reading)	± 8% of reading or ±1.0°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)	33° x 33°
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

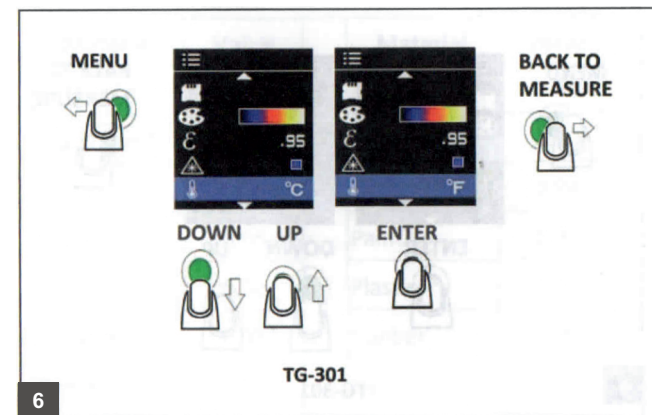
Remark*: Interpolation Pixels

COLOR PALETTE



5

°C/°F



6

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

Size	(185 x 54 x 104) mm (7.3 x 2.1 x 4.1) inches
Operating Temperature & Humidity	-10 °C to 50°C (14 °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(TG-301).....IEC 60825-1 Ed. 3 (2014)

Class 2 Laser Product

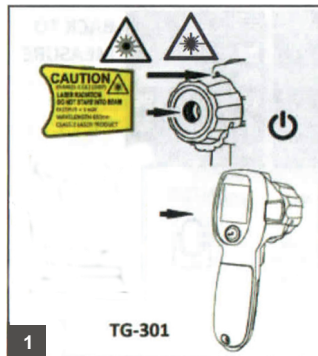
Rated Wavelength.....650nm

Beam Divergence.....1mradmax

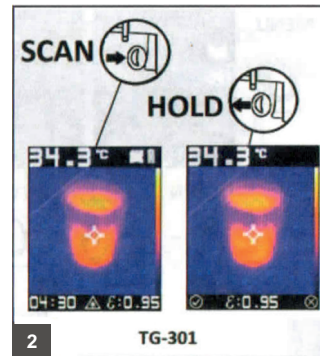
Maximum Output Power.....1mWmax

The Product

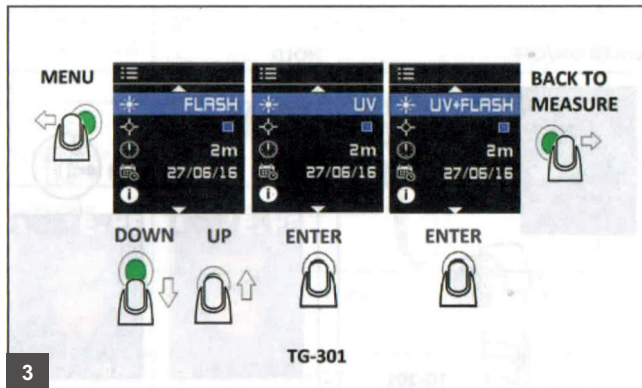
POWER ON/OFF



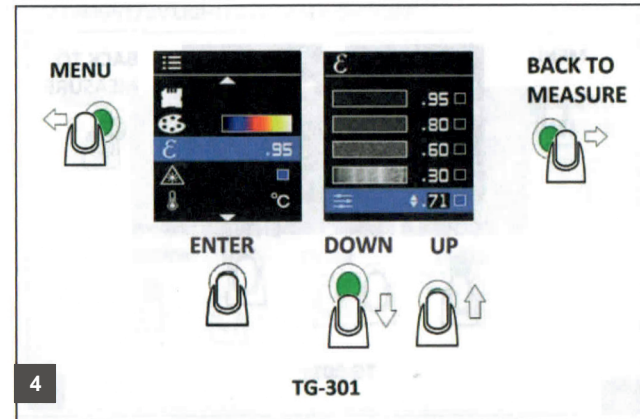
HOLD



FLASHLIGHT/UV LIGHT/UV+FLASHLIGHT/OFF



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.