KANE-TCAM
Warmtebeeldcamera
handleiding

INHOUD

Bedankt voor het aanschaffen van ons instrument. Gebruik het volgens deze instructies en onderhoud het op de juiste manier voor optimale prestaties.
BELANGRIJK: LEES DEZE INSTRUCTIES AANDACHTIG DOOR. LET OP DE VEILIGE BEDIENINGSVEREISTEN, WAARSCHUWINGEN EN VOORZORGSMAATREGELEN. GEBRUIK HET PRODUCT CORRECT EN MET ZORG VOOR HET DOEL WAARVOOR HET BEDOELD IS. ALS U DIT NIET DOET, KAN HET SCHADE EN / OF PERSOONLIJK LETSEL VEROORZAKEN EN ZAL DE GARANTIE ONGELDIG MAKEN. BEWAAR DEZE INSTRUCTIES VEILIG VOOR TOEKOMSTIG GEBRUIK.
ALGEMENE VEILIGHEID
Zorg ervoor dat u de veiligheidsmaatregelen die in de volgende tekst worden beschreven, hebt gelezen en begrepen voordat u het product gebruikt.

VEILIGHEIDSMAATREGELEN

Bij het gebruik van dit product moet u zich houden aan de relevante praktijkvoorschriften - zoals gezondheid en veiligheid, algemene werkplaats en plaatselijke autoriteiten.

• Maak uzelf vertrouwd met de toepassingen, beperkingen en mogelijke gevaren van de warmtebeeldcamera.
• Gebruik de juiste oplaadadapter die bij de warmtebeeldcamera is geleverd.
• Houd de warmtebeeldcamera schoon en in goede staat.

- • Bescherm de warmtebeeldcamera tegen thermische schokken - veroorzaakt door grote en / of schommelingen in temperatuur en hoge temperaturen.
  • Monteer of demonteer de warmtebeeldcamera NIET.
  • Gebruik de warmtebeeldcamera NIET als deze beschadigd is.
  • Laat de warmtebeeldcamera NIET nat worden en gebruik hem NIET in vochtige of natte omstandigheden of gebieden met condensatie.
  • Gebruik de warmtebeeldcamera NIET voor een ander doel dan waarvoor deze is ontworpen.
  • Sta NIET toe dat ongetrainde personen (vooral kinderen) de thermische camera bedienen.
  • Gebruik de warmtebeeldcamera NIET als u moe bent of onder invloed bent van alcohol, drugs of bedwelmende medicijnen.

WAARSCHUWING

De waarschuwingen, voorzorgsmaatregelen en instructies in deze handleiding dekken niet alle mogelijke omstandigheden en situaties die zich kunnen voordoen. Logica en aandacht moeten worden toegepast door de operator.

OVERZICHT KANE-TCAM

De KANE-TCAM warmtebeeldcamera combineert oppervlaktetemperatuurmeting en realtime warmtebeeldvorming.

Het grote kleurenscherm biedt de gebruiker visuele informatie op basis van de huidige activiteit, inclusief een cursor op het scherm om de temperatuurhotspots nauwkeurig te lokaliseren.

De KANE-TCAM maakt gebruik van een gegevensopslagsysteem waarmee de gebruiker afbeeldingen op het apparaat kan opslaan. Deze kunnen via USB worden geëxtraheerd om rapporten te genereren.

Geschikt voor vele industrieën, waaronder sanitair en verwarming (radiatoren, vloerverwarming, energieaudits of waterschade), automotive (verwarmde stoelen en ramen, hoge weerstand in bedrading, oververhitte bedrading of componenten).

ONDERHOUD

REINIGING

Gebruik een vochtige doek en lichte zeep om de behuizing van het apparaat te reinigen. Gebruik geen schuurmiddel, isopropanol of oplosmiddel om schoon te maken. De lens en het scherm moeten worden gereinigd met reinigingsmiddelen voor professionele optische brillen.

ONDERHOUD VAN HET LENS

Om schade aan de verfijnde antireflectiecoating te voorkomen:

- Maak niet met geweld schoon.
- Gebruik een reinigingsoplossing voor lensonderhoud, zoals een in de handel verkrijgbare lensreiniger op alcoholbasis en een pluisvrije doek of papieren handdoek.
- Veeg het lensoppervlak schoon door een cirkelvormige beweging te maken. Gooi dan de doek weg.
- Als het nodig is om bovenstaande stap te herhalen, gebruik dan een nieuwe doek om in de reinigingsoplossing te dompelen om af te vegen.
- Persluchttanks kunnen worden gebruikt om losse deeltjes te verwijderen.

BATTERIJEN

OPLADEN VAN BATTERIJEN

- • Gebruik een micro-USB-kabel om op te laden.
  • Het product heeft ingebouwde oplaadbare 18650 lithium-ionbatterijen.
  • Als het batterijniveau laag is, wordt de rechterbovenhoek van het scherm weergegeven“ ”.
- • Zorg ervoor dat het product is uitgeschakeld voordat u het oplaadt.
  • Verwijder de micro-USB-kabel nadat deze volledig is opgeladen.

OPTIMALE BATTERIJPRESTATIES:

• Laad de batterij niet langer dan 24 uur op.
• Om de levensduur van de batterij te verlengen, dient u het product ten minste elke drie maanden twee uur op te laden.
• Probeer de batterij niet op te laden in extreem koude omstandigheden.

BATTERIJ VERWIJDEREN

Dit product bevat lithium-ionbatterijen. Gooi lege batterijen altijd weg volgens goedgekeurde verwijderingsmethoden die het milieu beschermen.

SPECIFICATIES

Model	KANE-TCAM
Display screen	2.8-inch full-view TFT display
Temperature measurement range	-20°C to 300°C (-4°F to 572°F)
Measurement accuracy	±2°C/±2% (whichever is greater)
Infrared image resolution	220×160
Visible image resolution	35200 pixel
LCD resolution	320×240
Field angle	35°×26°
Focal distance (shortest)	0.15m
Thermal sensitivity	0.07°C
Frame rate of thermal images	9Hz
Focus mode	Fixed
Wavelength coverage	8-14um
Emissivity	Adjustable from 0.01 to 1.00

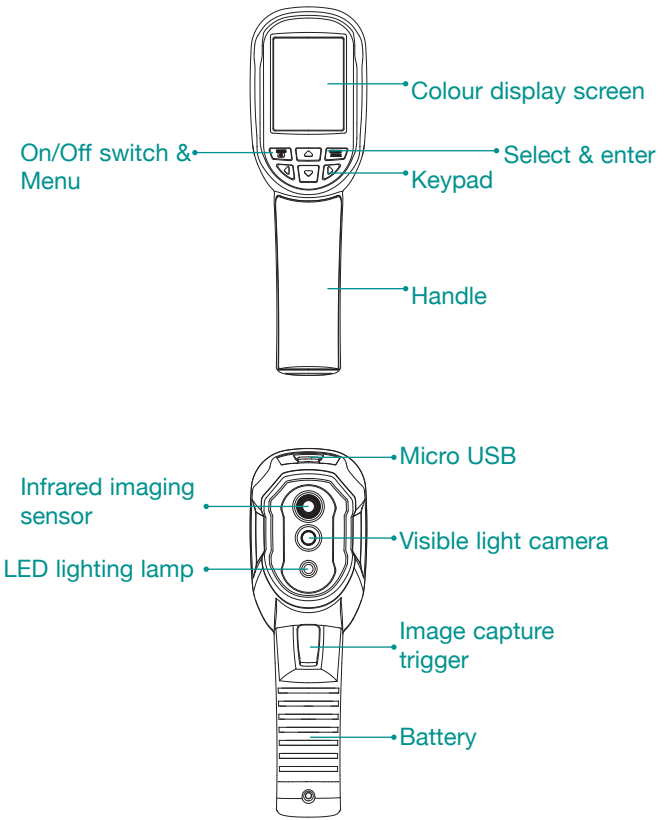
Model	KANE-TCAM
Colour palette	Rainbow, iron oxide red, cold colour, black & white, white & black
Storage capacity	Built-in memory 3GB
File format	JPG
USB	Micro USB 2.0
Power supply	Built-in chargeable 18650 battery Detachable
Working time	2-3 hours
Setting command	Unit, language, date, time, information
Language	English & French
Automatic power-off time	Selectable: 5 minutes/20 minutes/ not power off automatically
Product size	96mm×72mm×226mm
Product weight	389g
Work temperature	0°Cto 45°C
Storage temperature	-20°C to 60°C
Relative humidity	< 85%RH

This product has been tested for compliance with the following EMC Directive 2014/30/EU.

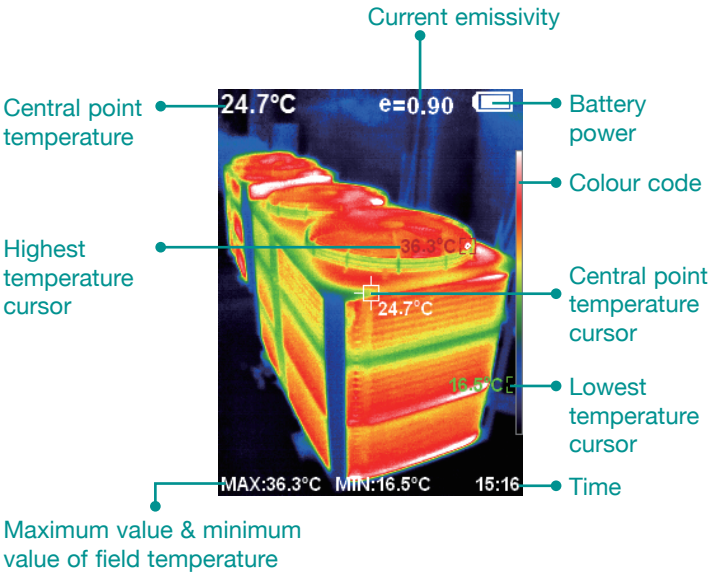
CE

INSTRUMENT FEATURES AND KEYPAD

INSTRUMENT LAYOUT



DISPLAY



COLOUR CODE

Marks the colour corresponding to the relative temperature from low to high. (See colour palette menu for more details).

CENTRAL POINT TEMPERATURE CURSOR

Indicates the central position of the screen. The temperature value is also displayed in the top left corner of the screen.

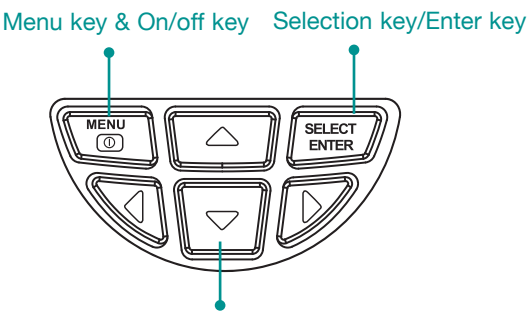
HIGHEST TEMPERATURE CURSOR

Indicates the highest temperature position in the screen area. The temperature value is also displayed in the bottom left corner of the screen.

LOWEST TEMPERATURE CURSOR

Indicates the lowest temperature position in the screen area. The temperature value is also displayed in the bottom central position of the screen.

KEYPAD BUTTONS



OPERATION

POWER ON/OFF

Press & hold the ⏻ key for 3 seconds to turn the Thermal Imaging Camera on or off.

LCD SCREEN DISPLAY

After turning on, the screen shows the thermal imaging status.

Note: Time adjustment may be required when you move the camera between environments with varying ambient temperatures.

LED LIGHT

Hold down the “image capture trigger” for 5 seconds to power on/ off the LED light.

SWITCHING BETWEEN IMAGE TYPES

Press the “ ◀ ” or “ ▶ ” key to switch the degree of fusion between infrared thermal images & visible images (the degree of fusion is 0%, 25%, 50%, 75% & 100%).

IMAGE CAPTURE

Press the image capture trigger. When the capture is successful, the screen will display “store photo?”. If “yes” is selected, press the “MENU/ ⏻ ” key to save the image. If “no” is selected, press the “ SELECT/ENTER ” key to delete the image.

HIDE HIGHEST & LOWEST TEMPERATURE

Press the “ ▲ ” key to switch between displaying or hiding the highest & lowest temperature.

IMAGE OUTPUT

Saved images can be downloaded by connecting a computer through a Micro USB lead.
*Supported operating systems: all USB 2.0 compliant OS.

MENU

Press the “MENU/ ⓘ ” key to access the menu bar.

IMAGE OVERLAPPING SUB-MENU

IMAGE OVERLAPPING

Image overlapping makes it easier for users to understand the infrared images by using aligned visible images & infrared images. The use of image overlapping can capture the visible image of every infrared image so as to display the temperature distribution in the target region correctly & share with other people more effectively.

IMAGE OVERLAPPING APPLICATION

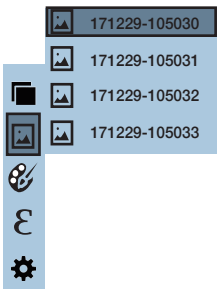
Press the “MENU/ ⓘ ” key to enter the main menu, & select “▀” image registration.
Press the “SELECT/ENTER” key to enter into image overlap adjustment mode. Press the navigation keys (up, down, left & right to perform the visible image shift operation.

Press the “SELECT/ENTER” key to exit the image overlapping mode (Note: If there is no operation for more than 6 seconds, the image overlapping mode will be automatically exited).

IMAGE SUB-MENU

VIEW IMAGE

Press the “MENU/ ⏻ ” key to enter the main menu, & select “ 🖼 ” image.



Press the “ ▶ ” key to enter image list. Then press the “ ▲ ” or “ ▼ ” key to navigate to the image you want to select. To view the image press the “SELECT/ENTER” key.

When viewing the images, press the “ ◀ ” key to view the previous image, Press the “ ▶ ” key to view the next image.

Press the “SELECT/ENTER” key to return to the previous menu and to exit the menu altogether press the “MENU/ ⏻ ” key.

DELETING IMAGES

Select the image you would like to delete, the screen will show a “delete photo prompt”. You can scroll through yes or no options by pressing the “ ▲ ” key. To delete the image press the “MENU/ ⏻ ” key when yes is selected.

COLOUR PALETTE SUB-MENU

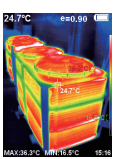
COLOUR PALETTE DESCRIPTION

The palette can be used to change the pseudo-colour display of the infrared image on the display. Some tune swatches are better suited for specific applications & can be set up as needed.
The palette is divided into five colour sections: rainbow, iron red, cool, white hot & black hot. These palettes work best with high thermal contrast & provide additional colour contrast between high & low temperatures.

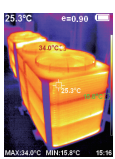
For high heat applications the rainbow, iron oxide red & cold colour palettes are better suited as they are easy to see the contrast between high & low temperature.

Black & white, and white & black colour palettes provide even linear colour.

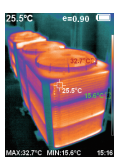
The following is an image of the same object with different colour palettes.



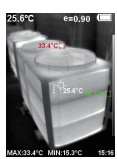
Rainbow



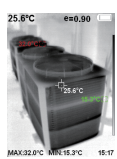
Iron oxide red



Cold colour

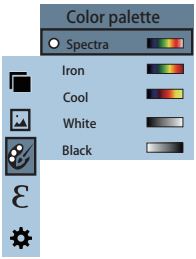


White heat



Black heat

APPLICATION OF COLOUR PALETTE



Select "🎨" (colour palette) option & press the " ▶ " key to enter the colour palette list. Press the " ▲ " & " ▼ " keys to navigate once in the colour pallete menu. Then press the "SELECT/ENTER" key to select the colour palette you desire. Press the " ◀ " key to return.

EMISSIVITY SUB-MENU

EMISSIVITY DESCRIPTION

The emissivity of the product can be adjusted from 0.01 to 1.00 with the default value of 0.95. Many common objects & materials (such as timber, water, skin & textile fabric) can reflect the heat energy effectively. So it is easy to obtain relatively correct measurement values.

The emissivity of a course surface is usually set as 0.95. For semi-matte surfaces that give out less energy, the emissivity is usually about 0.85 & the emissivity of semi-gloss surfaces is 0.6. Shiny surfaces are divided into materials with low radiation coefficient. The emissivity is usually set as 0.3 at the time of measurement.

Setting the correct value of emissivity is very important for accurate temperature measurement.

The surface emissivity will impact the surface temperature measured by the product. Understanding the surface emissivity will enable you to obtain correct the temperature measurement.

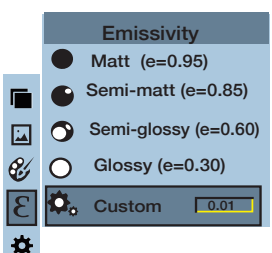
EMISSIVITY SETTING

The product has four types of surface measurement modes:

- Coarse surface (0.95)
- Semi-matte surface (0.85)
- Semi-shiny surface (0.60)
- Shiny surface (0.30)

Depending on the characteristics of the measured surfaces, users may set the emissivity value through the “self-define” option (please refer to the table of “emissivity of common materials”).

APPLICATION OF EMISSIVITY MEASUREMENT



As shown in the figure, press “MENU/ ⓞ ” key to enter the main menu & select “ ε ”(emissivity) option & press “ ▶ ” key to enter the emissivity list.

Press the “MENU/ ⓞ ” key to enter the main menu & select “ ε ”(emissivity) option then press the “ ▶ ” key to enter the emissivity list.

Press the “ ▲ ” & “ ▼ ” keys to navigate the emissivity. Then press the “SELECT/ENTER” key to determine selection of the emissivity. Press the “ ◀ ” key to return.

If you select “self-defined” emissivity, press the “SELECT/ENTER” key to enter the editing state.

Press the “ ◀ ”/“ ▶ ” keys to change the number & press the “ ▲ ”/ “ ▼ ” keys to change the value.

After the modification is complete, press the “SELECT/ENTER” key to confirm, then press the “ ◀ ” to return. The “MENU/ ⓞ ” button exits the menu.

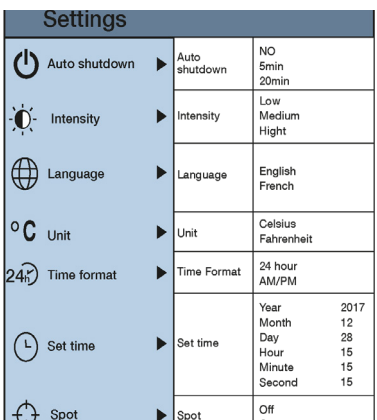
EMISSIVITY VALUE OF COMMON MATERIALS

Substance	Thermal radiation	Substance	Thermal radiation
Bitumen	0.90~0.98	Black cloth	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Foam	0.75~0.80
Sand	0.90	Charcoal dust	0.96
Earth	0.92~0.96	Paint	0.80~0.95
Water	0.92~0.96	Matte paint	0.97
Ice	0.96~0.98	Black rubber	0.94

Snow	0.83	Plastic	0.85~0.95
Glass	0.90~0.95	Timber	0.90
Ceramics	0.90~0.94	Paper	0.70~0.94
Marble	0.94	Chromium hemitrioxide	0.81
Gypsum	0.80~0.90	Copper oxide	0.78
Mortar	0.89~0.91	Ferric oxide	0.78~0.82
Brick	0.93~0.96	Textile	0.90

SETTINGS SUB-MENU

Press the “MENU/ ⏻ ” key to select the “⚙”(setting) option in the main menu. Press the “ ▶ ” key again to enter the settings sub-menu.



AUTO SHUTDOWN SETTING

After selecting " ⏻ " automatic shutdown, press the " ▶ " key to enter the auto power shutdown setting. Can be set how long you want it to be before the Thermal Imaging Camera automatically shuts down.

INTENSITY SETTINGS

After selecting " ☼ " brightness, press the " ▶ " key to edit the brightness setting. Can be set to low or medium or bright.

LANGUAGE SETTINGS

After selecting " ⊕ " (Language, press the " ▶ " key to edit the language setting. Available in 2 languages: English & French.

UNIT SETTING

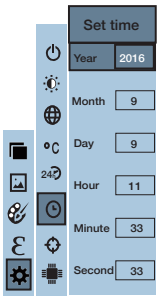
After selecting " °C " unit, press the " ▶ " key to enter the temperature unit setting. Can be set to Celsius or Fahrenheit.

TIME FORMAT SETTING

After you select " 24 " Time format, press the " ▶ " key to enter the time format setting. Can be set to 24 hours or 12 hours.

TIME AND DATE SETTING

In the Set Time menu “ ” you can set the time and date.



Press the “ ▲ ” / “ ▼ ” key to navigate between the year/month/day/ hour/minute.

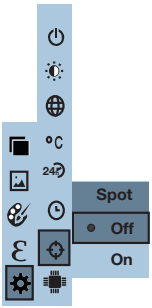
Press the “SELECT/ENTER” key to enter editing mode.

Press the “ ◀ ” & “ ▶ ” keys to select the parameter to be changed. Press “ ▲ ” & “ ▼ ” key to change the value. After completing the change, press the “ SELECT/ENTER” key to enter.

After setting, press the “ ◀ ” key to exit.

ENABLE/DISABLE HOTSPOT CURSOR

In the cold hotspot menu “ ⌖ ” you can toggle the hotspot on or off.



Press the “ ▲ ” / “ ▼ ” keys to either enable or disable the option. Then press the “ SELECT/ENTER ” key to determine selection.

After setting, press the “ ◀ ” key to exit.

TROUBLESHOOTING

If you encounter any problems when using the thermal imaging camera please use the following table for repair. If the problems are not solved, please cut off the power supply & contact with the manufacturer.

Failure type	Failure cause	Solution
The thermal imaging camera will not power on	The battery is not installed	Install the battery correctly
	The battery is flat	Replace with new battery or charge
The thermal imaging device powers off automatically	The battery is flat	Replace with new battery or charge
	The product is set to power off automatically	Check the Auto Shutdown setting (refer to section 5.1)

EU DECLARATION OF CONFORMITY

This declaration of conformity is issued under the sole responsibility of the manufacturer:-

Kane International Ltd.
Kane House, 11 Bessemer Road, Welwyn Garden City, Hertfordshire. AL7 1GF, UK.

Tel: +44 1707 375550 Web: www.kane.co.uk

The KANE T-CAM is in conformity with the relevant Union harmonization legislation below:

DIRECTIVE	TITLE
201430EU	Electromagnetic Compatibility (EMC)
201165EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The following harmonised standards and technical specifications have been applied:

Certification
The KANE T-CAM is tested to the following standards

EMC
EN61326-1:2013

Safety
EN61010-1:2010 + A1:2019

ROHS
IEC62321-2:2013, IEC62321-1:2013, IEC62321-3-1:2013, IEC62321-5:2013, IEC62321-4:2013, IEC62321-7-2:2017, IEC62321-7-1:2015, IEC62321-6:2015

Signed for on behalf of:- Kane International Ltd.
11 August 2020

Paul Morrison
Engineering Manager

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