User's Manual

Inspection Camera
PCE-TC 29

*Please read this user's manual thoroughly before using this unit
and keep it properly for your future reference.*

Contents

1.Safety

1) Read all safety information before you use the Product. Carefully read all instructions. Use the Product only as specified, or the protection supplied by the Product can be compromised.

2) Do not use the Product around explosive gas, vapor, or in damp or wet environments.

Environment conditions:

1)RH≤90％（Non-Condensation）

2) Operating temperature:-5～40℃/23～104℉

Maintenance

Repairs or servicing not covered in this manual should only be performed by qualified personnel.

Wipe the unit with a dry soft cloth. Do not use abrasives or solvents on this instrument.

◆Safety Symbol

$C\!\!\!\in$ Complies with EMC

2.Introduction

The Product is Visual IR Thermometers that combine a

center-point temperature measurement with a blended digital image and heat

map overlay.

The thermal image removes the time necessary for component by-

component measurement associated with a traditional spot thermometer

(radiometer). Scan a broad area with the blended digital image and heat map overlay to quickly

identify temperature anomalies that need more inspection.

In order to increase identification, it is equipped with a visual camera. According to the

requirements, it can make image blend from heat map to visual images. Heat map and visual

images can be stored in memory card, which can be made reports or printed. The Product is

easy to use. Turn on and within seconds it provides an image with no training needed. The

Product is ideal for electrical, HVAC, and facility maintenance applications, which can find the

problem quickly.

3.Features

- ➢ TFT color LCD display
- ➢ Adjustable emissivity and reflected background compensation improves measurement accuracy on semi-reflective surface
- ➢ Hot and cold spot temperature markers that guide the user to the hottest and coldest regions in the infrared heat map
- ➢ Select color palette
- ➢ Visual and heat map image alignment
- ➢ Image capture and save it in SD card

4.Specification

display	2.5″color LCD display
IR solution	60×60（3600 pixels）
Visible light image resolution	300,000 pixels
Field of view	20×20°
Thermal sensitivity	0.15℃/0.27℉
Temperature range	-20～300℃/-4～572℉
accuracy	±2% or reading±2℃/3.6℉
emissivity	Adjustable 0.1～1.0
Image frequency	6HZ
Spectral band	8-14um
Focus mode	fixed
Color palette	Ironbow, Rainbow, Rainbow High Contrast, Grayscale (white hot) and Grayscale (black hot)
View options	Blending of the visual and the infrared from full infrared to full visual in 25 % steps
File format	bmp
Image storage	Micro SD card

Memory view	Scroll through all saved images and view on-screen
Power save	Power off after 12 minutes of inactivity
Working temperature	-5 ~ 40℃/23 ~ 104℉
Storage temperature	-20 ~ 55℃/-4 ~ 131℉
Relative humidity	10 ~ 80%RH
Electromagnetic Compatibility	CE EN61326-1:2006
Overrange indiction	over
Power supply	4 AA batteries
Battery life	6H
weight	310g
size	223×88×65

5.Structure description

①   Infrared lens

②   Visual camera

③   LED brightness

④   Image capture

⑤   battery cover

⑥   Tripod mount

⑦   Basic navigation

⑧   Select /enter key

⑨   On/off/menu key

⑩   TFT high definition color screen

⑪   SD card

6. Menu description

|	
12:12	Time setting
5000	Image store
50%	Background light setting
°C	Temperature unit setting
BG 5°C	Background temperature trimming
0 MB	Capacity of memory card
	Color palette setting
ε 0.95	Emissivity setting
ON	Hot and cold markers
25°C	Background temperature setting

7.Operation instruction

7.1 Basic function

7.1.1 press"[MENU]"for 5 seconds , it can turn on or turn off the meter. After power on the meter ,press"[MENU]"for 1 second ,it enter basic function setting ,Only five options show on the display at one time , press"[▲▼]"scroll through the display menu．．press"[MENU]"again , it goes back to the normal measurement mode.

7.1.2 In basic function mode; after choosing menu key, press"[SELECT]" , it can enter this function setting, use[▲▼],change the value of the menu selection. After adjustments are made ， press"[SELECT]"to exit setting mode.

7.2 Measurement

The temperature measurement of the center area is shown at the top of the

display. The emissivity setting also shows at the top of the display. When the

hot and cold markers are turned on, move the Product until the hot or cold spot

coincides with the middle measurement area. Point the Product at an object

that is likely to be hotter or colder than its surroundings for best results.
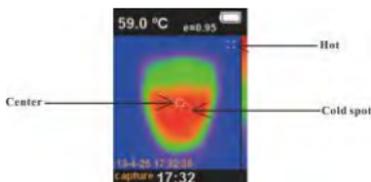
7.3 Backlight setting

After entering menu options , press" △ ▽ "to choose backlight option, press" SELECT "to enter

backlight adjustment mode, press" △ ∨ "to adjust the brightness, after the adjustments are

made, press" SELECT "to exit the edit mode. Brightness is default 50%.

7.4 LED brightness

Press image capture key for 5 seconds, LED brightness turn on , coordinating with visible

camera work.

7.5   Color Palette

The Palette menu changes the false-color presentation of the infrared images

that are on the display or captured. A variety of palettes are available. Some

palettes are more suitable for specific applications and are set as required.

1:Grayscale Palettes offer an equal, linear presentation of colors that allow for

best presentation of detail.

2:The High Contrast palette offers a weighted presentation of colors. This palette

is best in situations with high thermal contrast for increased color contrast

between the high temperatures and low temperatures.

3:The Ironbow and Rainbow palettes offer a mixture of the High Contrast and

Grayscale palettes.

Grayscale(white hot)	Grayscale(black hot)
Rainbow	high contrast
Ironbow	

7.6 Reflected Background Temperature

The background temperature can be set between 0°C ~36 °C(32 ~ 96.8℉).

Compensation for reflected background temperature is set in the Background

tab. Very hot objects or very cold objects can affect the apparent temperature

and measurement accuracy of the target or object, especially when

surface emissivity is low. Adjustment of the reflected background temperature

can make the temperature measurement better in many situations.

7.7 Hot and cold markers

press" MENU "to enter menu mode , press to choose hot and cold markers menu, press

SELECT ,then press to turn on or turn off. When turned on, the marker is an indication of

a hot or cold spot in the scene that may require additional evaluation. When turned off, the user

is able to concentrate on the single measurement pixels.

7.8 Image Blending

Image blending makes it easier to understand infrared heat maps through the use of an aligned visible image and infrared heat map. The Product captures a visible image with each infrared heat map to exactly show the target area and more effectively share it with others.

To use the blending function press" ◁ "," ▷ " to adjust the blending from 0 % to 100%,25% steps
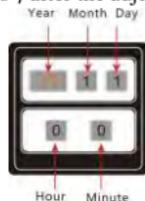

| 0% | 25% | 50% | 75% | 100% |
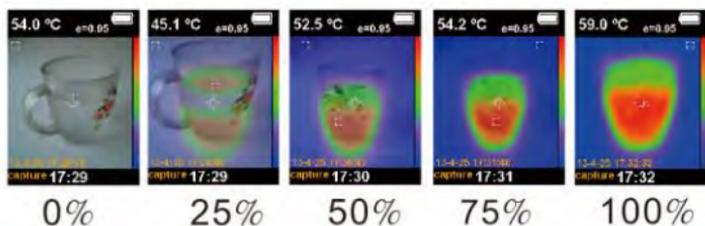
7.9 Date and Time

In the Clock menu the user can set the time and the date。press"MENU"to enter menu mode，press"△▽"to choose clock menu，press"SELECT"to enter clock interface，press" ◁ "," ▷ "to set data and time，press"△▽"to change values，after the adjustable are made, press"MENU"to exit

7.10 Image Capture and Save

In measuring mode，press image capture key, the screen will show "store photos yes no".

Press" MENU "to save image，press" SELECT "to cancel the image you capture. If "NO SD"

appear in left bottom of the screen，it indicates no SD card is in the slot, if FULL appear in left

bottom of the screen, it indicates SD card is full. Standard 2 GB SD card

7.11 View Stored Images

Press" MENU "to enter menu mode，press" △▽ "to choose image storage module，

press" SELECT "to choose the image you want to look，press" ◁ "…" ▷ "to scroll through

and review the other stored images.

press" △ ",it shows "Delet photo yes no"，press" MENU "to delete，press" SELECT "to

cancel。press" MENU "to exit viewing mode.

7.12 Emissivity

Press" [MENU] "to enter menu mode , press" [△▽] "to choose emissivity module ,

press" [SELECT] "to enter emissivity adjust interface , press" [△▽] " to adjust emissivity values.

After the adjustment are made, press" [SELECT] "to exit.

8. Notes

All objects radiate infrared energy. The quantity of energy radiated is based on the actual surface temperature and the surface emissivity of the object. The Product senses the infrared energy from the surface of the object and uses this data to calculate an estimated temperature value. Many common objects and materials such as painted metal, wood, water, skin, and cloth are very good at radiating energy and it is easy to get relatively accurate measurements. For surfaces that are good at radiating energy (high emissivity), the emissivity factor is ≥90 % (0.90). This simplification does not work on shiny surfaces or unpainted metals as they have an emissivity of <60 % (0.60). These materials are not good at radiating energy and are classified as low emissivity. To more accurately measure materials with a low emissivity, an emissivity correction is necessary. Adjustment to the emissivity value will usually allow the Product to calculate a more accurate estimate of the actual temperature.

9.Emissivity

Substance	Thermal emissivity	Substance	Thermal emissivity
Aluminium	0.30	Glass	0.90 ... 0.95
Asphalt	0.90 ~ 0.98	Iron oxides	0.78 ... 0.82
Concrete	0.95	Lacquer	0.80 ... 0.95
Leather	0.95	Plastic	0.85 ... 0.95
Ceramic	0.90 ~ 0.95	paper	0.70 ... 0.94
Copper	0.50	Sand	0.90
Brick	0.90	Rubber	0.95
carbon	0.85	Timber	0.94
Fatlute	0.94	Textiles	0.94
Frozen food	0.90	Lead	0.50
Hot food	0.93	Marble	0.94
ice	0.96 ~ 0.98	Cloth(black)	0.98
snow	0.83	Plaster	0.8 0 ... 0.90
Human skin	0.98	Water	0.92 ~ 0.96

10.Accessories

①   User's manual

②   canvas bag

③   SD card

④   SD card reader

11. Contact

If you have any questions, suggestions or technical problems, please do not hesitate to contact us. You will find the relevant contact information at the end of this user manual.

12. Contact

If you have any questions about our range of products or measuring instruments please contact PCE Instruments.

By post:	**By post:**
PCE Instruments UK Ltd.	**PCE Americas Inc.**
Units 12/13 Southpoint Business Park	711 Commerce Way
Ensign Way, Southampton	Suite 8
Hampshire	Jupiter
United Kingdom, SO31 4RF	33458 FL
	USA
By phone:	**By phone:**
00442380 987030	(561) 320-9162

13. Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations.

If you have any questions, please contact PCE Instruments.

www.pce-instruments.com