Infrared thermometers with visible laser for measuring surface temperature without contact

Infrared thermometers are used to measure, without contact, surface temperature up to 1600 ºC. The relation of distance to measurement point is an indication of the optic that you use; when the value is higher, the diameter of the measurement point is smaller for the same distance. For example, with the PCE-888, the diameter of the measurement point is 25 cm at a distance of 4 m, while, with the PCE-889, the diameter is 8 cm at the same distance. Every surface radiates heat in the form of infrared radiation. To adjust the infrared radiation of different surfaces, some models allow the for you to regulate the level of emissions.

- Built-in laser pointer to improve aim
- Adjustable emission level
- Auto-power off after 7 seconds
- Distance to spot size: 16:1, laser point Ø 19 mm at 30 cm, 75 mm at 1,2 m and 150 mm at 2,4 m
- Battery and carrying case included

Technical specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Measurement range</th>
<th>Resolution</th>
<th>Reproducibility</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCE-888</td>
<td>-50 to +550 ºC</td>
<td>0.1 °C</td>
<td>0.5 ºC</td>
<td>±5 °C</td>
</tr>
<tr>
<td>PCE-889</td>
<td>-50 to +1000 ºC</td>
<td>0.1 °C</td>
<td>0.5 ºC</td>
<td>±5 °C</td>
</tr>
<tr>
<td>PCE-890</td>
<td>-50 to +1600 ºC</td>
<td>0.1 °C</td>
<td>0.5 ºC</td>
<td>±5 °C</td>
</tr>
</tbody>
</table>

- Spectral range: 8 to 14 µm
- Response time: < 500 ms
- Distance to size ratio: 16 : 1
- Emissivity: 0.10 to 1.00 (adjustable)
- Laser: Built-in laser pointer
- Min/max/average function: yes
- Adjustable alarm value: yes
- Backlight display: yes
- Operating temperature: 0 to +50 ºC
- Dimensions: 230 x 56 x 100 mm
- Weight: 290 g
- delivery included: battery, carrying case and user’s manual

Optional Accessories

CAL-IR: ISO Calibration for IR thermometer PCE-888 or PCE-889
CAL-IR-2: ISO Calibration for IR thermometer PCE-890

The PCE-IR 425 infrared thermometer comes with a dual laser pointer and an input for type-K thermoelement sensors. The device has an optical resolution of 50:1 that allows for an accurate temperature measurement of small surface areas without contact. It also allows for upper and lower alarm limits to be set for the highest level of control during a measurement.

- IR thermometer with a type-K input for thermopar NiCr-Ni sensor
- Large display: simultaneously shows average value as well as minimum and maximum limits
- Double laser for accurate targeting of measurement area
- 50:1 optical resolution
- Wide temperature range
- - Infrared: -60ºC to 1000ºC
- - Type-K: -64ºC to 1370ºC
- HOLD, maximum, minimum, differential and average functions
- Adjustable emissivity
- Backlit display
- High and low alarm limits

Technical specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCE-IR 425</td>
<td>Infrared thermometer</td>
</tr>
</tbody>
</table>

Optional Accessories

CAL-IR: ISO Calibration only for infrared sensor, without retractable probe

See page 3 for temperature sensors.
Temperature Meters

PCE-JR 911

Infrared thermometer with printer, memory and RS-232 port

The PCE-JR 911 can measure the temperature of objects without contact and store the readings in its internal memory allowing the data to be transferred to a computer via the RS-232 port. It can also print readings once have been taken, thanks to its built-in printer. The thermometer comes calibrated from the factory.

- Functions:
  - Measurements saved directly to memory
  - Measurements / history / data tables
  - Over a set period of time
  - Printer and able to take readings and save them to memory
  - Possible to assign 99 positions per series
  - Single beam laser sight for accurate targeting
  - Adjustable emissivity
  - Date & time function

Technical specifications

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>-40 to +500 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1 °C &lt; +100 °C; 1 °C &gt; +100 °C</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±2 % of reading or ±2 °C (highest value valid)</td>
</tr>
<tr>
<td>Response time</td>
<td>&lt;200 ms</td>
</tr>
<tr>
<td>Repeatability</td>
<td>0.5 °C</td>
</tr>
<tr>
<td>Distance to size ratio</td>
<td>8 : 1</td>
</tr>
<tr>
<td>Emissivity</td>
<td>0.3 to 1.0 (adjustable)</td>
</tr>
<tr>
<td>Laser</td>
<td>Built-in laser pointer</td>
</tr>
<tr>
<td>Spectral range</td>
<td>8 to 14 µm</td>
</tr>
<tr>
<td>Memory</td>
<td>1200 readings (4 x 99 series)</td>
</tr>
<tr>
<td>Printer</td>
<td>38 mm thermal printer</td>
</tr>
<tr>
<td>Power</td>
<td>4 x AA batteries (1.5 V)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>208 x 70 x 53 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>260 g</td>
</tr>
</tbody>
</table>

Ideal to control receiving material

Contents

- Infrared thermometer, 4 batteries, paper roll, software with RS-232 data cable, carrying case and user’s manual

Model No. Description

| PCE-JR 911 | Infrared Thermometer |

Optional Accessories

<table>
<thead>
<tr>
<th>CAL-IR</th>
<th>ISO Calibration for thermometer</th>
</tr>
</thead>
</table>

PCE-IR 1800

High temperature infrared thermometer up to 1800 °C

This infrared thermometer has been specially developed to carry out measurements on metal and steel, although it offers solutions for many high temperature applications up to 1800 °C. Adjustable emissivity provides versatility when measuring a variety of surfaces. The distance to spot size ratio is 120:1 making it possible to target small distant objects.

- Measurement range of 400 °C to 1800 °C
- With sighting scope
- Takes Celsius and Fahrenheit temperature readings
- Distance and spot size ratio 120:1
- Adjustable emissivity (0.10 to 1.00)
- Spectral range 2.1 to 2.4 µm
- Adjustable alarm (high / low)
- Data Hold function

Technical specifications

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>+400 to +1800 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>1 °C</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±1 %</td>
</tr>
<tr>
<td>Response time</td>
<td>200 ms</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.5 %</td>
</tr>
<tr>
<td>Ratio</td>
<td>120:1</td>
</tr>
<tr>
<td>Emissivity</td>
<td>adjustable between 0.10 to 1.00</td>
</tr>
<tr>
<td>Laser</td>
<td>Single dot laser system</td>
</tr>
<tr>
<td>Spectral range</td>
<td>2.1 to 2.4 µm</td>
</tr>
<tr>
<td>Alarm adjustable</td>
<td>(Hi / Lo) yes</td>
</tr>
<tr>
<td>Functions</td>
<td>MIN / MAX / AVG / HOLD</td>
</tr>
</tbody>
</table>

Operating conditions

- -10 to +50 °C / 10 to 90 °C (without condensation)
- -5 °C to +65 °C / ±0.5 °C
- ±1 °C or ±1.5 % of reading
- Adjustable alarm (high / low)
- Data Hold function

Dimensions 167 x 62 x 36 mm

Power 2 x 9V battery packs

Weight 600 g

Contents

- FCE-IR 1800 Infrared thermometer, carrying case and user’s manual

Model No. Description

| FCE-IR 1800 | High Temperature IR Thermometer |

Optional Accessories

| CAL-IR-2 | ISO Calibration for thermometer |

PCE-IR 100 (HACCP)

Food safety infrared and contact thermometer

The PCE-IR 100 thermometer allows control of the surface temperature in a quick and precise way without risk of contamination. It also offers the possibility to determine the internal temperature of food with its retractable probe or with the infrared system.

The different coloured LED’s, which are found below the display, allow for clear indication of temperature ranges that are “safe” or “unsafe”.

- Infrared and probe temperature measurement
- Food safety measurement according to the HACCP
- Response time
- Temporary hold function for minimum and maximum values
- Timer
- Possibility of ISO Calibration
- Water resistant enclosure

Technical specifications

<table>
<thead>
<tr>
<th>Infrared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
</tr>
<tr>
<td>Resolution</td>
</tr>
<tr>
<td>Accuracy</td>
</tr>
<tr>
<td>Response time</td>
</tr>
<tr>
<td>Repeatability</td>
</tr>
<tr>
<td>Ratio</td>
</tr>
<tr>
<td>Emissivity</td>
</tr>
<tr>
<td>Laser</td>
</tr>
<tr>
<td>Spectral range</td>
</tr>
<tr>
<td>Alarm adjustable</td>
</tr>
<tr>
<td>Functions</td>
</tr>
</tbody>
</table>

Operating conditions

- -10 to +200 °C |

Dimensions 167 x 62 x 36 mm

Power 1 battery 9 V pack

Ingress protection IP65 (water resistant)

Contents

- PCE-IR 100 (HACCP) Infrared thermometer, battery and user’s manual

Model No. Description

| PCE-IR 100 | High Temperature IR Thermometer |

Optional Accessories

| CAL-IR | ISO Calibration (only for infrared sensor, Without retractable probe) |

PCE-IR 100 (HACCP) Food safety infrared and contact thermometer

The PCE-IR 100 thermometer allows control of the surface temperature in a quick and precise way without risk of contamination. It also offers the possibility to determine the internal temperature of food with its retractable probe or with the infrared system.

The different coloured LED’s, which are found below the display, allow for clear indication of temperature ranges that are “safe” or “unsafe”.

- Infrared and probe temperature measurement
- Food safety measurement according to the HACCP
- Response time
- Temporary hold function for minimum and maximum values
- Timer
- Possibility of ISO Calibration
- Water resistant enclosure

Technical specifications

<table>
<thead>
<tr>
<th>Infrared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
</tr>
<tr>
<td>Resolution</td>
</tr>
<tr>
<td>Accuracy</td>
</tr>
<tr>
<td>Response time</td>
</tr>
<tr>
<td>Repeatability</td>
</tr>
<tr>
<td>Ratio</td>
</tr>
<tr>
<td>Emissivity</td>
</tr>
<tr>
<td>Laser</td>
</tr>
<tr>
<td>Spectral range</td>
</tr>
<tr>
<td>Alarm adjustable</td>
</tr>
<tr>
<td>Functions</td>
</tr>
</tbody>
</table>

Operating conditions

- -10 to +200 °C |

Dimensions 167 x 62 x 36 mm

Power 1 battery 9 V pack

Ingress protection IP65 (water resistant)

Contents

- PCE-IR 100 (HACCP) Infrared thermometer, battery and user’s manual

Model No. Description

| PCE-IR 100 | Infrared Thermometer |

Optional Accessories

| CAL-IR | ISO Calibration (only for infrared sensor, Without retractable probe) |
PCE-IR10

Thermometer with LCD to measure the temperature of solids by infrared (for fixed installations)

The PCE-IR10 infrared thermometer is made up of a sensor head and a separate electronic component that can be disconnected to accommodate optional sensors with longer cable lengths. Its sensor is so small that it can be installed anywhere yet offers the same benefits as other bigger systems. The electronic component offers signal processing functions that usually other products can’t offer, for example, with the LCD controller you can adjust emissivity, choose maximum value, minimum value or calculate average value. You can also programme the thermometer using optional PC software. This product can measure the temperature of moving objects without difficulties. Its small dimensions and low cost makes it ideal for multiple installation in a production process.

- Measurement range up to 600 °C
- Sensor head can be installed anywhere
- Analogue output
- USB / RS-232 / RS-485 output relay (optional)
- Adjustable emissivity
- LCD
- Series connection: maximum of 32 sensors
- Power supply: 8 to 36 VDC

Technical specifications

Outputs:
- analogue: 4 to 20 mA, 0 to 20 mA, 0 to 5 V, 0 to 10 V (in scale), type-K or type-J thermocouple
- optional: relay, USB, RS-232, RS-485

Inputs:
- emissivity value, ambient temperature compensation, programmable software

Cable length: 1 m (standard, you can order other cable lengths)

Power: 8 to 36 VDC

Ingress protection: IP65 (NEMA-4)

Operating temperature (head): -20 to 180 °C

Storage temperature: -40 to 65 °C

Relative humidity: 10 to 95 % without condensation

Weight (sensor head): 40 g

Weight (electronic component): 1 kg

Measurement range: -40 to 600 °C

Spectral range: 8.0 to 14 µm

Optical resolution: 15 : 1

Accuracy:
- ±1 % or ±1 °C

Repeatability:
- ±0.5 % or ±0.5 °C

Temperature coefficient:
- ±0.05 °C / °C or ±0.05 % / °C

Temperature resolution: 0.1 °C

Response time: 150 ms (95 %)

Emissivity range: 0.100 - 1.100 digital adjustment, reading 0.001

Transmission range: 0.100 - 1.000 digital adjustment, reading 0.001

Signal processing:
- maximum value, minimum value and average value

Contents

Thermometer (electronic unit), analogue interface, 1 m cable with sensor head (ratio 15:1) and user’s manual

Model No. Description

PCE-IR10 Thermometer PCE-IR10

Optional Accessories

ACCTFB Mounting bracket
ACCTFG Mounting fork adjustable on 2 axis
ACCTAP Cooling camera for infrared
ACCTUSBK USB kit with USB interface, cable, software
ACCTRS232K RS232 kit with interface, cable, software
ACCTRS485K RS485 kit to connect up to 32 sensors in series
ACCTRS485B RS485 interface card
ACCTRI Output relay, two open relays, 60VDC / 42VAC, 0.4A
CAL-PCE-IR10 ISO calibration certificate

PCE-IC1

Blackbody IR calibrator up to +350 °C for Infrared thermometers

The PCE-IC1 is a portable blackbody calibration source covering the range from +50 to 350 °C with 0.1°C resolution. Whether you are using an infrared thermometer, you need a high performance calibration standard to verify accuracy. The portable IR calibrator provides a stable blackbody target for calibration non-contact IR thermometers up to 350 °C. The IR calibrator is as easy to use as point and shoot. Simply set the desired temperature from the convenient front panel control buttons, wait a few minutes for equilibrium, point the IR thermometer at the target. The radiated energy from the blackbody is measured by your IR thermometer. Now simply compare it is reading to the display on the IR calibrator and record the difference.

- Easy to use
- Emitter diameter 58 mm
- Range from +50 °C to +350 °C
- High accuracy
- Compact design

Technical specifications

Temperature range: +50 to +350 °C

Accuracy:
- ±0.5 °C up to 100 °C
- ±1.0 °C up to 200 °C
- ±1.5 °C up to 350 °C

Emissivity Blackbody: 0.95

Emitter diameter: Ø 58 mm

Heating time: 30 min up to 350 °C

Cooling time: 30 min from 350 °C below 100 °C

Power: 230 V / 50 Hz

Dimensions: 180 x 114 x 233 mm

Weight: 3000 g

Contents

PCE-IC1 temperature-calibrator, manufacturer certificate and user’s manual

Model No. Description

PCE-IC1 Blackbody-IR-Calibrator

Optional Accessories

CAL-PCE-IC1 ISO calibration certificate
Temperature Meters

PCE-TC 3

Thermal imaging camera with high optical resolution (160 x 120 pixels) / good relation between price and quality

The core element of the thermal imaging camera is an Uncooled Focal Plane Array with a resolution of 160 x 120 pixels. This thermal imaging camera has been ergonomically designed making it easy to use with one hand. Thanks to it weighing only 750 g, it’s ideal for the analysis of machines and installations, for construction among many other applications. The PCE-TC 3 thermal imaging camera offers a maximum accuracy of ±2 °C or ±2 % in a temperature range of -10 °C up to 250 °C. On the colour display, both cursors can be moved, while on the job, to different points and the corresponding temperature read directly and determine the difference in temperature between both points. With these high range functions, the user can immediately identify irregularities and take pertinent measurements instantaneously. The integrated laser point also allows the user to precisely locate the measurement area while capturing an image or taking a measurement. Images can be stored to an SD memory card and transferred to a computer later. Across the USB port, data can be transferred in real time; in this case the user can select up to 10 measurement points. Included with the thermal imaging camera are an SD memory card reader and software to allow further detailed analysis of data and thermal images, as well as accompanying descriptions.

- Resolution 160 x 120 pixels
- Temperature range: -10 to 250 °C
- Accuracy: maximum ±2 °C or ±2 % of compensation of optimum temperature
- Automatic detection of hottest and coldest point in an image
- Ergonomic: use with only one hand, weighs 750 g, ideal for portable use
- Free licence: frequency below 9 Hz
- Laser pointer: Allows for exactly locating measurement point
- SD memory card to store 1000 images
- Software for data transmission and analysis is included

Technical specifications

- Temperature range -10 to +250 °C
- Resolution 0.15 °C
- Accuracy ±2 % of reading or ±2 °C
- Points of measurement 160 x 120 (19,200 points)
- Sensor Uncooled Focal Plane Array (UFPA)
- Lens (FOV) 20° x 15°
- Measurement distance 300 mm to infinity
- Spectral range 8 to 14 µm
- Emissivity 0.20 to 1.00 (adjustable)
- Memory approx. 1000 images with an SD card
- Interface USB
- Display 3.5” colour
- Temperature units °C, °F or K
- Shades 4 variations
- Cursor 2 manually moveable cursors
- Laser pointer class II
- Power Lithium rechargeable
- Operating time (with battery) approx. 4 hours
- Enclosure plastic
- Operating temperature -15 to +45 °C
- Ingress protection IP 54
- Dimensions 230 x 120 x 110 mm
- Weight 750 g

Contents

PCE-TC 3 thermal imaging camera, rechargeable battery, charger, USB cable, software, SD memory card, card reader, strap and holster included

Optional Accessories

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCE-TC LG</td>
<td>Battery charger (bench type)</td>
</tr>
<tr>
<td>PCE-TC ALG</td>
<td>Charger for automobiles</td>
</tr>
<tr>
<td>PCE-TC LS</td>
<td>Light protector for optics</td>
</tr>
<tr>
<td>PCE-TC BP</td>
<td>Replacement battery</td>
</tr>
<tr>
<td>STAT</td>
<td>Tripod</td>
</tr>
<tr>
<td>CAL-PCE-TC</td>
<td>Calibration certificate (with first order)</td>
</tr>
<tr>
<td>CAL-PCE-TC R</td>
<td>Calibration certificate (recalibration)</td>
</tr>
</tbody>
</table>
Temperature Meters

PCE-TC 8

Thermal imaging camera with high optical resolution (320 x 240 pixels)

PCE-TC 8 portable thermal camera can be used to carry out preventive maintenance, diagnose and validate of equipment failure etc. The circuit of this products has been designed as total digital chip, it has characteristics such as fast response, low power loss, clear image and so on. PCE-TC 8 has both outstanding function and easy operation, it widely applies in industrial detection, electric power and electron, petrochemicals, building inspection, scientific research and many other fields. The core element of the thermal imaging camera is an Uncooled Focal Plane Array with a resolution of 320 x 240 pixels. This thermal imaging camera has been ergonomically designed making it easy to use with one hand. Thanks to it weighing only 1200 g, it's ideal for the analysis of machines and installations, for construction among many other applications. The PCE-TC 8 thermal imaging camera offers a maximum accuracy of ±2 % or ±1 °C in a temperature range of -20 °C up to +250 °C. On the colour display, 4 cursors can be moved, while on the job, to different points and the corresponding temperature read directly and determine the difference in temperature between 4 points. With these high range functions, the user can immediately identify irregularities and take pertinent measurements instantaneously. The integrated red laser point (1 mw / 635 nm) also allows the user to precisely locate the measurement area while capturing an image or taking a measurement.

- High resolution 320 x 240 pixels
- Wide temperature range: -20 to +250 °C
- High accuracy: ±2 % of reading or ±1 °C
- Operation: Drop-down menu
- Adjustment: Auto adjust brightness/contrast, Auto/manual mix colours
- Dot temperature: Decussation dot temperature display, and sustain 10 dots contemporary most
- Max/min temp capture: Max/min temperature capture available
- Laser point: 1 mw / 635 nm (red)
- Simulation colour option: User can setup simulation option, sieve the background to emphasize high temperature target
- Magnify of image: Real time magnifying of images
- Built in visual digital camera
- Automatic detection of hottest and coldest point in an image
- Video output
- Laser pointer: Allows for exactly locating measurement point

Technical specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range</td>
<td>-20 to +250 °C</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1 °C</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±2 % of reading or ±1 °C</td>
</tr>
<tr>
<td>Points of measurement</td>
<td>320 x 240 (76,800 points)</td>
</tr>
<tr>
<td>Sensor</td>
<td>Uncooled Focal Plane Array (UFPA)</td>
</tr>
<tr>
<td>Lens (FOV)</td>
<td>20.6 ° x 15.5 °</td>
</tr>
<tr>
<td>Measurement distance</td>
<td>500 mm to infinity</td>
</tr>
<tr>
<td>Spectral range</td>
<td>8 to 14 µm</td>
</tr>
<tr>
<td>Emissivity</td>
<td>0.20 to 1.00 (adjustable)</td>
</tr>
<tr>
<td>Frame rate</td>
<td>50 frames / s (PAL)</td>
</tr>
<tr>
<td>Response time</td>
<td>4 ms</td>
</tr>
<tr>
<td>Memory</td>
<td>1 GB SD card</td>
</tr>
<tr>
<td>Interfaces</td>
<td>USB / Video out</td>
</tr>
<tr>
<td>Display</td>
<td>high resolution 3.5” colour</td>
</tr>
<tr>
<td>Temperature units</td>
<td>°C, °F or K</td>
</tr>
<tr>
<td>Shades</td>
<td>5 variations</td>
</tr>
<tr>
<td>Cursor</td>
<td>4 manually moveable cursors</td>
</tr>
<tr>
<td>Laser pointer</td>
<td>class II</td>
</tr>
<tr>
<td>Power</td>
<td>7.2 V lithium battery, rechargeable</td>
</tr>
<tr>
<td>Operating time (with battery)</td>
<td>approx. 3 hours</td>
</tr>
<tr>
<td>Enclosure</td>
<td>plastic</td>
</tr>
<tr>
<td>Operating conditions</td>
<td>-20 to +50 °C / &lt;95 % r.h.</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP 54</td>
</tr>
<tr>
<td>Dimensions</td>
<td>200 x 135 x 95 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1200 g</td>
</tr>
</tbody>
</table>

Contents

PCE-TC 8 thermal imaging camera, rechargeable battery, charger, lens hood, software, 1 GB SD memory card, Video line, carrying case and user’s manual

Model No. Description

PCE-TC 8 Thermal imaging camera
Examples for partners of calibration services