

# Operation manual

## Infrared-thermometer IR 8895



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Thanks for choosing this high quality product!

With your new infrared thermometer IR 8895, you are now the owner of an innovative high quality product of the state-of-the-art technology which will enable you to carry out exact temperature measurements, even for highly demanding industrial applications. Of course, the instrument also complies with the current safety and environmental protection regulations and is conforming to RoHS.

This instruction manual made available to you shall help in adjustment and operation of the instrument. The information is important to achieve optimum results and also to rule out any safety risks. Hence, please always keep this instruction manual with the instrument!

We wish you all the best for your new measuring instrument!

## Infrared-thermometer IR 8895

### 1 General description

The infrared thermometer 8895 is a measuring instrument for contact less temperature measurement. This thermal measurement principle is ideally suitable for moving parts, electrically live parts, poisonous and sterile objects, where a conventional contact temperature measurement method is not possible. The special features of the device are its fast response time and high temperature measuring range.

The aiming laser gun provided in the device shows the centre of the measuring object and simplifies measurements in case of distant objects. The accurate optics has an aperture ratio of 12:1.

The Data-Hold function enables short-term storage of measured values. In addition, the device is also provided with °C/°F-conversion.

With the adjustable emission level, the optical characteristics of the measured object are taken into account and exact results of measurement are also achieved for critical materials.

The robust, handy pistol casing and big LC display with illuminated background offer optimal ergonomics with simplest usage.

### 2 Dangers and precautions



The guarantee claim becomes void in case of damages caused due to non-compliance to the instructions! We take no liability for the consequential damages which result from such negligence.



This appliance is with CE-conformance and fulfils the necessary guidelines. As per safety and acceptance standards (CE), re-engineering or alteration of the device is not allowed.



In order to ensure a reliable operation of the device, the safety instructions, warnings and instructions provided in chapter on „Application purpose“ shall be necessarily followed!

#### 2.1 General safety instructions



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#### 2.2 Product-specific safety instructions



Das Messgerät eignet sich aufgrund der berührungslosen Messverfahrens ideal zur Messung an kritischen Stellen, zum Beispiel an:

- Rotating shafts or moving work pieces
- Very hot or very cold objects
- Electrical parts under energised condition
- Unhealthy, poisonous or sterile materials

It should be noted that in the vicinity of such measuring points, often high hazard potential exists for the user or any third person. Hence, it is necessary to exhibit a sensible behaviour and be more cautious. The relevant safety regulations shall be fully followed.

#### 2.3 Precautions for Laser beam



Never focus the laser beam directly or indirectly (e.g. through reflective surfaces) on the eyes of human beings or animals. Laser radiation can cause permanent damage to the eyes. The laser beam must be de-activated during measurements near creatures. The instrument should not be used by children.

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### 2.4 Intended applications



The intended applications cover contact less measurement of temperature from  $-40\text{ }^{\circ}\text{C}$  to  $+816\text{ }^{\circ}\text{C}$ . For power supply, only two 1.5 V batteries of type Mignon AA, IEC LR6 or equivalent are to be used. The operation is allowed only under dry environment conditions, contact with moisture should be essentially avoided. A measurement under unfavourable environment conditions is not allowed. Unfavourable environment conditions are: Dust and combustible gases, steam or solvents, thunderstorms as well as thunderstorm conditions like strong electrostatic fields etc.



Any other application, as described before, can lead to damage of this product. In addition, dangers like short-circuit, fire, etc. are also involved. The product should not be opened, modified or re-engineered!

### 3 Steps to eliminate measuring errors



Please take care of the following instructions while using the instrument:

- Avoid using the device in the vicinity of electrical welding sets, induction heaters, transmission equipment, frequency converters, and other strong electromagnetic fields.
- After any abrupt change in temperature, the device should be left out for 15 minutes before using so that it can stabilise itself to the new environment temperature.
- Do not expose the equipment to high temperatures for a long time.
- Avoid dusty and humid environment conditions. After usage, store the device in the storage bag to avoid contamination of the lens. Consider technical facts of the measuring procedure to obtain exact results of measurement, particularly the relationship of measuring spot size with respect to distance and the information for adjustment of emission value.

### 4 Working principle

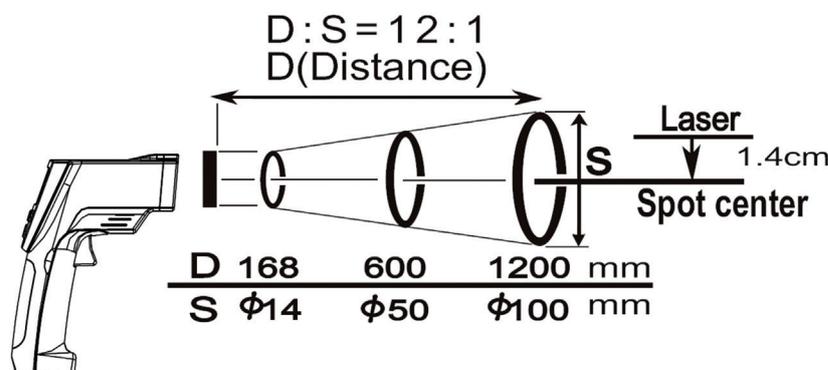
Every body and liquid above the temperature of absolute zero degree Kelvin ( $-273.15\text{ }^{\circ}\text{C}$ ) emits infrared radiations from its surface. The emitted energy has a fixed mathematical relationship with the surface temperature. This energy is measured by our infrared thermometer, electronically processed and shown as temperature value on the display.

#### 4.1 Measuring spot size



In order to achieve exact results from measurements, the measuring object must be bigger than the measuring spot of the infrared thermometer. The measured temperature is the average temperature of the object surface. Smaller the object, shorter should be its distance from the thermometer.

The exact measuring spot size can be decided from the diagram shown below. This diagram is also shown on the side of the device.

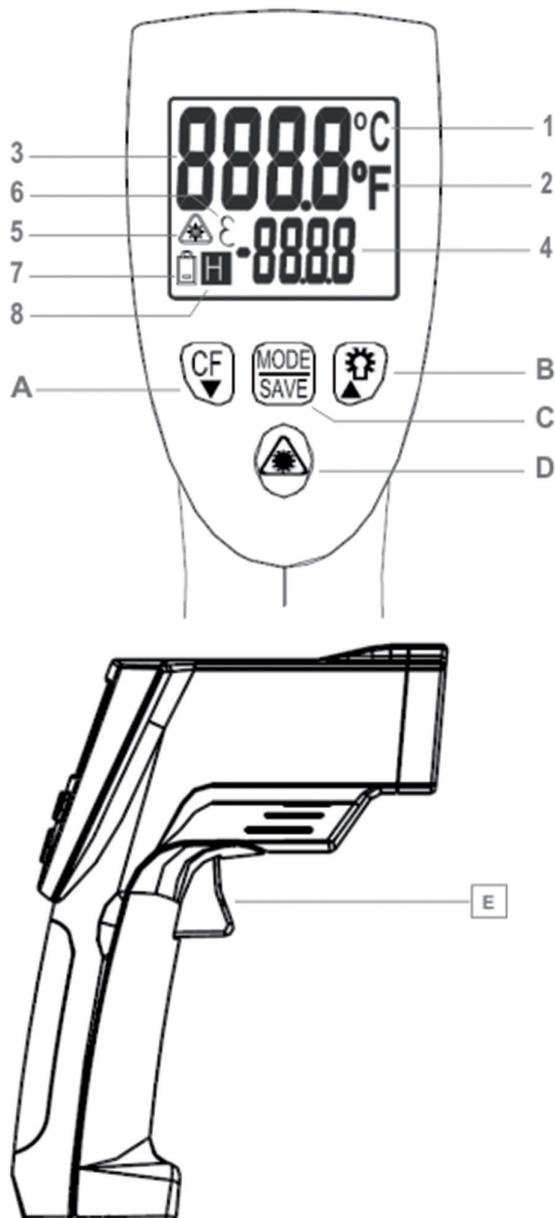


### 5 Setting-up and operation

#### 5.1 Control elements

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- 1 °C-Display
- 2 °F-Display
- 3 Temperature measurement display
- 4 Emission degree display
- 5 Laser beam active status display
- 6 Emission Symbol
- 7 Low-Battery display
- 8 Data-Hold display

### A °C / °F Changeover key

- changeover between °C and °F
- reduce no of digits

### B Background illumination key

- On/Off for the light
- increase no of digits

### C Mode/Save-key

- activate emission input
- confirm emission input

### D Laser ON/Off key

- Activate and de-activate the laser

### E Activation key (Trigger)

- activate the measuring function

## 5.2 Inserting batteries

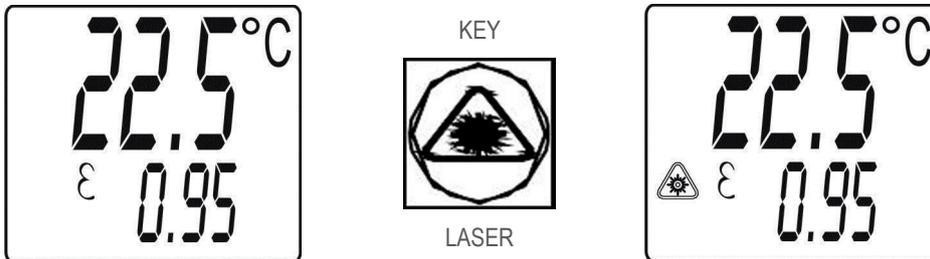


Before operating the instrument for the first time, insert two new 1.5 V-Batteries type Mignon AA. Instructions on inserting batteries have been described in detail in the section „Maintenance and cleaning“.

## 5.3 Laser beam activation/de-activation

For a confidence of having done an exact measurement, the infrared thermometer 8895 is provided with a red point laser. This laser beam approximately shows the centre of the measuring spot. To activate the laser beam press and hold the Trigger and press the laser On/Off key [D]. The symbol „Laser beam active“ appears on the screen as a confirmation of activation [5]. For deactivation, repeat the above procedure. The symbol „Laser beam active“ disappears from the display.

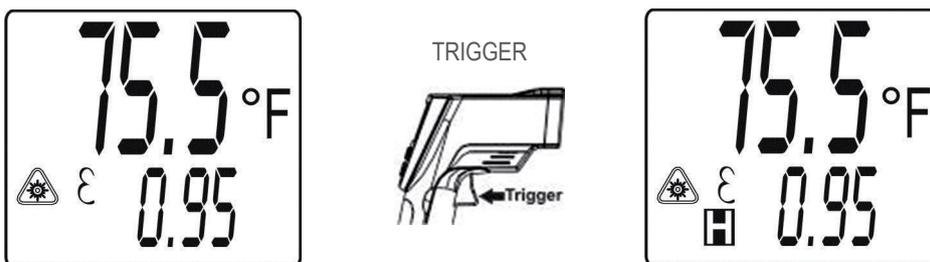
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### 5.4 Temperature measurement

For measuring temperatures, hold the infrared thermometers with the opening of the infrared sensor pointing towards the object to be measured and then press the trigger. The currently determined value of temperature appears on the LC-Display [3].

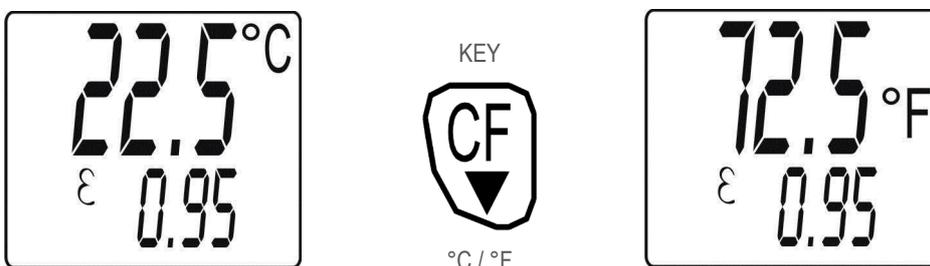
If the trigger is released now, the determined temperature value [3] shall be displayed for approximately 10 seconds. During this period, the sign „Hold“ [8] appears on the display. After this, the device turns off by itself to save on the battery power.



To localise the hottest point on the object to be measured, the infrared thermometer 8895 can be pointed towards any point lying outside the measuring range and then, with the trigger in pressed condition, the desired range is to be scanned with zigzag movements till the hottest point is located. Make sure that the measured object is not smaller than the measuring spot size for a given distance!

### 5.5 Changeover from °C to °F

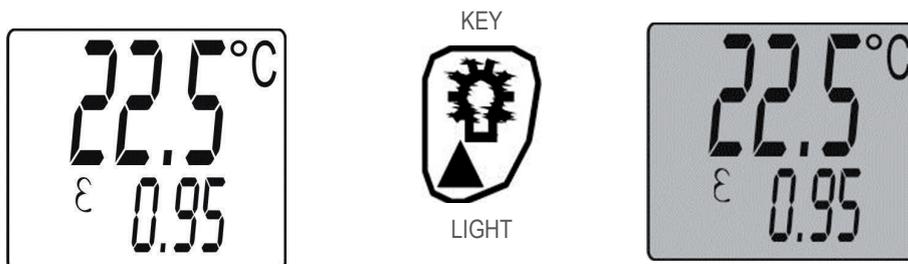
You can choose the temperature values to be shown in either degree Celsius (°C) or degree Fahrenheit (°F). Press the changeover key [A] with trigger in pressed condition. The device shows the measured value in the desired measurement units and the unit is indicated by the symbols °C [1] or °F [2]



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### 5.6 Background illumination

For measurements in low light conditions or night darkness, the background light can be activated with the key [B].



### 5.7 Emission setting

The emission factor describes the characteristics of energy radiation of a certain material. To be more exact, it is defined as the ratio of energy level from the measured object at a given temperature to the energy that would be emitted by a black body (ideal emitter) at that temperature. Higher is this factor, higher is the ability of the material to emit out radiation. An ideal black body has an emission factor of 1. Most organic surfaces and materials have the emission factor of approximately 0.95. Metallic materials or glossy surfaces have a clearly lower emission value, for which you must be very careful while using the infrared thermometer 8895.

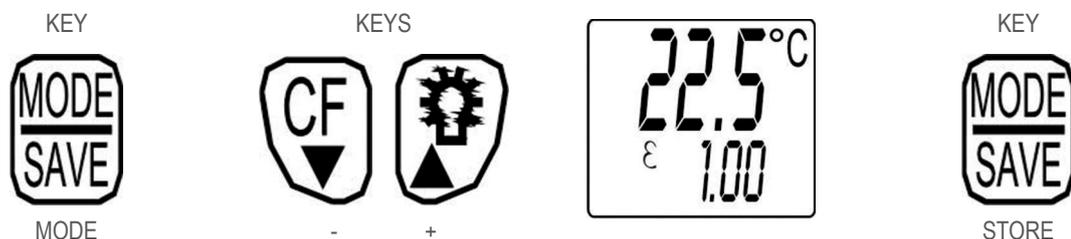


Metallic, glossy surfaces can be measured only with a compromised measuring accuracy. In order to achieve the maximum measuring accuracy for reflective surfaces, we compulsorily recommend application of black matt finish paint or black adhesive film.



The device can not measure through transparent surfaces like, for example, glass or transparent film. Instead, the surface temperature of the glass or the transparent film gets measured.

For entering the respective emission factor, the device is to be first activated by pressing the trigger. Now press the Mode/Save-key [C]. The emission symbol [ε] begins to blink. Then, enter the desired emission value with the help of the key [A] for reducing the value and key [B] for increasing the value. After adjusting the desired value, it is to be stored by further confirming with the Mode/Save-key [C]. The instrument is now ready for temperature measurements with the entered emission-factor.



A list with the emission values of most frequently measured materials is available in the appendix „Emission value table“.

## 6 Maintenance and cleaning

### 6.1 Cleaning

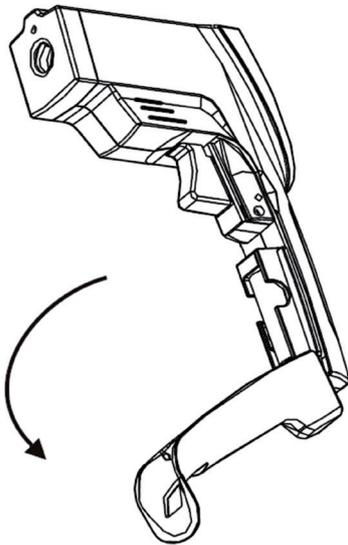
For cleaning the infrared lens, simply blow out with your mouth to remove the dust particles. The remaining dust should be preferably cleaned with a lens brush. The surface of the device can be cleaned with a slightly wet cloth. Please use only water and no chemicals or detergents for this purpose.

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### 6.2 Replacing batteries

The infrared thermometer 8895 requires two Alkaline 1.5 V batteries of type Mignon AA, IEC LR6 or equivalent for its operation. If the voltage of the batteries under use falls below a certain minimum value, the symbol „Low battery“ [7] as an indication of empty battery appears in the LC-Display. In such a case, please replace the batteries. For replacing the batteries, proceed as follows:

- Open the battery box, as shown in the picture below, by swinging out the battery box cover on the handle.
- Replace the batteries with two new ones of the same type and fold back the battery box cover on the handle.



Do not leave exhausted batteries in the device and remove the batteries, which have not been used for long, because even leak proof batteries can cause corrosion. Chemicals, which can damage the device or cause health hazards, can leak through the batteries.

### 6.3 Disposal of used batteries



The disposal of batteries together with house garbage is not allowed.

Batteries containing harmful materials are marked with the symbol as shown on left, which refer to the prohibition of disposal with house garbage. Used up batteries can be handed over at the collection points of your municipality or can be given to the company for disposal during new purchase.

### 6.4 Scrapping and disposal

Electronic devices should not be disposed with the house garbage.

Old devices are disposed free of charge by our company as a gesture of ElektroG. Please send the device to our free service.

**B+B Thermo-Technik GmbH**  
**Heinrich-Hertz-Str. 4**  
**8166 Donaueschingen**  
**Germany**

## Infrared-thermometer IR 8895

### 7 Technische Daten

Parameter	Specification
Measuring range	-40...1500 °F -40...816 °C,
Emission factor	Adjustable (0,3...1,0)
Measuring optics	12:1
Resolution	1,0 °C / 1,0 °F at > 300 °C 0,1 °C / 0,1 °F at < 300 °C
Temperature probe	Infrared
Response time	500 ms
Temperature units	°Celsius, °Fahrenheit
Display	LC-Display, illuminated
Accuracy	±2 °C at < 0 °C ±2 % / 2 °C at 0...+300 °C ±2,5 % at +300...+500 °C ±3 % at > 500 °C
Automatic switch off	at approx. 10 seconds
Storage conditions	-20...50 °C 0...90 % RH
Power supply	2 x 1,5 V-Battery Mignon AA
CE-Conformity	2014/30/EU
Electromagnet conductivity	EN 61326-1:2013
Dimensions	195 x 134 x 50 mm

### 8 Garantie

Prerequisite for the fulfilment of guarantee service is that the details of defect should be informed to us immediately and within the stipulated guarantee period. Of course, damages due to unintended use or non-compliance of operating instructions are excluded from this guarantee coverage. Moreover, defective sensors or sensing units and also calibration service are not covered in the guarantee.

In addition, the guarantee also turns invalid if the device is opened. The serial number on the product should not be changed, damaged or removed. Apart from the guarantee service, if any essential repairs are required to be carried out, the service is free. However, further services and also postage and packing expenses are chargeable. Compensation demands on the basis of claim for liability or damages during the guarantee period are excluded and these are, in general, not legally covered.

### 9 Repair and calibration services

During the tenure of guarantee period, we are very much at your disposal with our service support. For any malfunctioning, you can simply send back the product to us with a short description of problems observed. Please don't forget to mention your telephone number to enable us contact you for any possible queries. We shall inform you about the likely amount of repair charges before taking up the repair activity. The cost estimate is provided free. The postage and packing charges for return are to be added over and above the repair costs. In our calibration laboratory, we can also calibrate your measuring and testing devices with repeatability of National standards. Please contact us, we would be pleased to send you a non-committal offer!

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### 10 Emission value tables

#### 10.1 Iron and steel

Material	Emission value
Cast iron (polished)	0,2
Cast iron (at 100°C)	0,45
Cast iron (at 1000°C)	0,6... 0,7
Cast iron (severe rust)	0,95
Cast iron (glazed)	0,3
Iron plate (rusted)	0,7...0,85
Iron bars (raw)	0,9
Steel (Base plate)	0,6
Steel (soft)	0,3...0,5
Steel (glazed)	0,3...0,4
Steel plate (oxidised)	0,9
Stainless steel (polished)	0,1
Stainless steel (assorted)	0,2...0,6

#### 10.2 Brass

Material	Emission value
Brass (polished)	0,1*
Brass (raw surface)	0,2
Brass (oxidised)	0,6

#### 10.3 Aluminium

Material	Emission value
Aluminium (polished)	0,1*
Aluminium (severely oxidised)	0,25
Aluminium oxide (at 260 °C)	0,6
Aluminium oxide (at 800 °C)	0,3
Aluminium alloy (assorted)	0,1...0,25

#### 10.4 Copper

Material	Emission value
Copper (polished)	0,05*
Copper (oxidised)	0,8
Copper (glazed)	0,15

#### 10.5 Lead

Material	Emissionswert
Blei (poliert)	0,1*
Blei (oxidiert bei 25°C)	0,3
Blei (oxidiert)	0,6

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### 10.6 Nickel and Nickel alloys

Material	Emission value
Nickel	0,1*
Nickel plate (oxidised)	0,4...0,5
Nickel chromium	0,7
Nickel chromium (oxidised)	0,95

### 10.7 Other metals

Material	Emission value
Zinc (oxidised)	0,1*
Zinc plated iron	0,3
Zinc plated steel	0,1*
Gold (polished)	0,1*
Silver (polished)	0,1*
Chromium (polished)	0,1*

### 10.8 Other materials

Material	Emission value
Brick (rough)	0,75...0,9
Clay	0,75
Asbestos	0,95
Concrete	0,7
Marble	0,9
Carborundum	0,85
Plaster	0,9
Alumina (fine grained)	0,25
Alumina (coarse grained)	0,45
Pebble (fine-grained)	0,4
Pebble (coarse-grained)	0,55
Zirconium silicate up to 500 °C	0,85
Zirconium silicate at 850 °C	0,6
Quartz (raw)	0,9
Coal (Graphite)	0,75

Material	Emission value
Coal (Carbon)	0,95
Timber (assorted)	0,8...0,9
Enamel (all colours)	0,9
Oil paint (all colours)	0,95
Lacquers	0,9
Black colour (matt finish)	0,95...0,98
Aluminium paint	0,5
Water	0,98
Rubber (finished)	0,9
Rubber (raw)	0,98
Plastic (different solids)	0,8...0,95
Plastic sheets (0.05 mm thick)	0,5...0,95
Plastic film (0.03 mm thick)	0,2...0,3
Paper and cardboard	0,9
Silicon (glossy)	0,7

\* Note: Emission factor varies with respect to purity

## 11 Serviceaddress

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