

BP17

EN

OPERATING MANUAL
PYROMETER



 **TROTEC**
AT WORK.

table of contents

Notes regarding the operating manual..... 1

Safety 2

Information about the device..... 3

Technical data 4

Transport and storage..... 4

Operation 5

Measuring principle 7





Maintenance and repair 7

Disposal 8

Declaration of conformity 8

Notes regarding the operating manual

Symbols

-  **Hazardous electric current!**
Warns about hazards from electric current which can lead to injuries or even death.
-  **Danger!**
Warns of injury risk from laser radiation.
-  **Danger!**
Warns of a hazard which can lead to personal injury.
-  **Caution!**
Warns of a hazard which can lead to property damage.

The current version of the operating manual can be found at:



BP17



<http://download.trotec.com/?sku=3510003029&id=1>

Legal notice

This release replaces all previous versions. No part of this publication may be reproduced without written permission from Trotec. The same applies for electronically processing, duplicating or spreading the publication. Subject to technical changes. All rights reserved. Trademarks are used without guarantee that they may be used freely and primarily following the spelling of the manufacturer. Product names are registered.

Changes to construction in the interests of constant improvements to the product, as well as changes to the shape and colour are reserved.

The scope of delivery may vary from product images. This document was created with all due care. Trotec accepts no liability whatsoever for possible mistakes or omissions.

The only party responsible for determining valid measured results, drawing conclusions and deriving actions is the user! Trotec accepts no claims of warranty for the correctness of the determined measured values or measured results. Further, Trotec accepts no liability whatsoever for possible mistakes or damage which have been caused by utilising the determined measured results.

© Trotec

Warranty and liability

The device complies with the fundamental health and safety requirements of the applicable EU regulations and was tested at the factory for perfect functionality multiple times. However, if faults in the functionality occur and cannot be remedied with the measures in the chapter Errors and faults, please get in touch with your dealer or distributor.

When manufacturer's instructions or legal regulations have not been followed, or after unauthorised changes to the device are made, the manufacturer is not responsible for the resulting damages. Changes to the device or unauthorised replacement of individual parts can drastically impact the electrical safety of this product and leads to the forfeit of the warranty. Liability does not extend to damages to people or property caused by the device being used other than as described in the instructions in this operating manual. Subject to changes to technical design and model changes as part of constant development and product improvement without prior notice.

No liability is accepted for damages resulting from improper use. In such cases, entitlements to a warranty are then also forfeited.

Safety

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use!

- Do not use the device in potentially explosive rooms.
- Do not use the device in aggressive atmosphere.
- Protect the device from permanent direct sunlight.
- Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
- Do not open the device with a tool.
- Observe the storage and operating conditions (see chapter Technical data).

Intended use

This device is exclusively intended for measuring temperature by means of an infrared sensor in the measuring range specified in the technical data. People who use this device must have read and understood the operating manual, especially the Safety chapter.

Improper use

The device must not be used in potentially explosive atmospheres. It must not be directed at people. Trotec accepts no liability for damages resulting from improper use. In such a case, any warranty claims be voided.

Personnel qualifications

People who use this device must:

- be aware of the dangers that occur when working with laser measuring devices.
- have read and understood the operating manual, especially the Safety chapter.

Residual risks



Danger!

Class 2 laser radiation.

Lasers of class 2 only radiate in the visible range and during continuous wave operation (lasting beam) no more than 1 milliwatt (mW) of output will be emitted. Looking directly into the laser beam for a longer period of time (more than 0.25 seconds) can cause damage to the retina.

Avoid looking directly into the laser beam. Never look into the laser beam using optical aides. Do not suppress the winking reflex when looking into the laser beam unintentionally. Never point the laser beam at people or animals.



Danger!

Keep a sufficient distance from heat sources.



Danger!

Do not leave the packaging lying around. Children may use it as a dangerous toy.



Danger!

The device is not a toy and does not belong in the hands of children.



Danger!

Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way! Observe the personnel qualifications!



Caution!

To prevent damages to the device, do not expose it to extreme temperatures, extreme humidity or moisture.



Caution!

Do not use abrasive cleaners or solvents to clean the device.

Information about the device

Device description

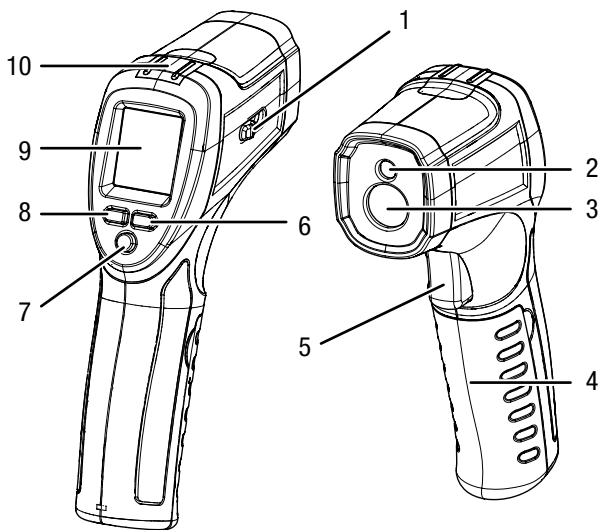
The pyrometer BP17 uses an infrared sensor to measure surface temperatures without contact. An integrated laser pointer serves for the determination of the measuring spot.

For temperature measurements sensitivity levels of 1 °C, 3 °C and 5 °C can be preselected – depending on a reference temperature. Exceeding or falling below this preselected threshold is indicated by an acoustic and visual alarm function.

The display can be illuminated as needed.

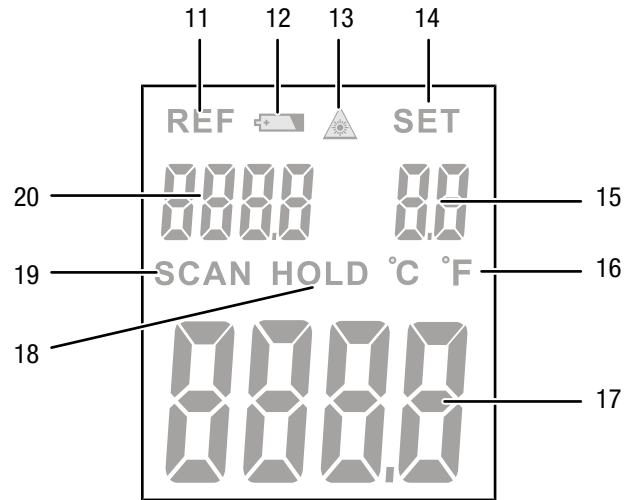
An automatic switch-off saves the battery.

Device depiction



No.	Designation
1	Threshold value selector switch
2	Laser pointer
3	Infrared sensor
4	Battery compartment with cover
5	Measurement button
6	Lamp button
7	°C/°F button
8	Laser button
9	Display
10	LED for alarm function

Display



No.	Designation
11	Reference indication
12	Battery status
13	Laser indication
14	SET indication
15	Indication of the set threshold value (1 / 3 / 5 °C)
16	°C / °F indication
17	Measurement value display
18	HOLD indication
19	SCAN indication
20	Reference value display

Technical data

Parameter	Value
Model	BP17
Weight	220 g
Dimensions (height x width x depth in mm)	185 x 40 x 135
Measuring range	-50 °C to 380 °C (-58 °F to 716 °F)
Measuring range resolution	0.1 °C / °F
Accuracy	±2 °C or ±2.0 % of the measured value (the higher value applies) if T > 0 °C ±3 °C of the measured value if T ≤ 0 °C
Repeatability	0.5 °C
Degree of emission	0.95
Response time	< 0.5 s
Spectral sensitivity	8 to 14 µm
Optical resolution (D:S)	10:1
Smallest measuring spot Ø	12.7 mm (distance 127 mm)
Automatic switch-off	after approx. 6 min (<i>SCAM</i>) or approx. 15 s (<i>HOLD</i>)
Operating conditions	0 - 50 °C, 10 - 90 % RH
Storage conditions	-20 - 60 °C, <80 % RH
Power supply	9 V battery
Laser output	< 1 mW (630-660 nm)
Laser	class II, 630-660 nm, < 1 mW

Scope of delivery

- 1 x Pyrometer BP17
- 1 x 9 V battery
- 1 x Device bag
- 1 x Getting started guide

Transport and storage

Transport

For transporting the device use a suitable bag to protect it from external influences.

Storage

When the device is not being used, observe the following storage conditions:

- Dry.
- Protected from dust and direct sunlight.
- With a cover to protect it from invasive dust, if necessary.
- Remove the batteries from the device.

Operation

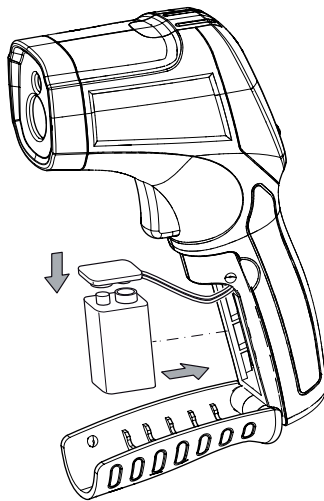
Inserting the batteries

- Insert the supplied battery before first use.



Caution!

Make sure that the surface of the device is dry and the device is switched off.



1. Open the cover of the battery compartment.
2. Use the battery clip to connect the new battery with correct polarity.
3. Insert the battery in the battery compartment.
4. Close the cover of the battery compartment.

Carrying out a measurement

Note:

Note that moving from a cold area to a warm area can lead to condensation forming on the device's circuit board. This physical and unavoidable effect can falsify the measurement. In this case, the display shows either no measured values or they are incorrect. Wait a few minutes until the device has become adjusted to the changed conditions before carrying out a measurement.

- Ensure that the surface to be measured is free of dust, dirt or similar substances.
- To be able to gain exact measurement results on surfaces which reflect heavily, stick matt masking tape to the surface or apply matt black paint with a very high and known degree of emission.
- Note the 10:1 ratio of the distance to the measuring spot size. For accurate measurements the measuring object should be at least twice as large as the measuring spot.

Note:

The first object at which you point the device and the temperature of which you measure is then also the reference value for all further measurements. The reference value is indicated on the reference value display.

1. Point the device at the object to be measured.
2. Press the measurement button (5).
 - ⇒ The reference value is indicated on the reference value display (20).
 - ⇒ The *SCAN* indication (19) appears on the display.
 - ⇒ The current measured value is displayed in the measurement value display (17).
3. Press the measurement button (5) again if you want to "freeze" a measured value.
 - ⇒ The current measured value will be halted.
 - ⇒ The *HOLD* indication (18) appears on the display.

Carrying out a measurement with threshold values

The device permits you to set a threshold value relating to the set reference temperature. Exceeding or falling below the reference temperature by more than this selected threshold is indicated visually and acoustically.

To determine the threshold value relating to the reference temperature use the selector switch (1) at the side of the device. The following settings are available:

- OFF: The threshold is disabled.
- 1 °C: The threshold value is respectively 1 °C (1.8 °F) higher or lower than the reference value.
- 3 °C: The threshold value is respectively 3 °C (5.4 °F) higher or lower than the reference value.
- 5 °C: The threshold value is respectively 5 °C (9 °F) higher or lower than the reference value.

The selected threshold is indicated on the respective display (15).

If the current measured value exceeds the set reference value by the selected threshold, the LED will be illuminated in red and an acoustic signal can be heard at frequent intervals.

If the current measured value is within the set range given by the threshold values, the LED is illuminated in green.

If the current measured value falls below the set reference value by the selected threshold, the LED will be illuminated in blue and an acoustic signal can be heard at long intervals.

Example:

The reference value amounts to 25 °C and the selector switch for the threshold (1) is set to 3 °C.

- The measured temperature is between 22 °C and 28 °C: The LED is illuminated in green.
- The measured temperature amounts to more than 28 °C: The LED is illuminated in red and an acoustic signal can be heard at frequent intervals.
- The measured temperature amounts to less than 22 °C: The LED is illuminated in blue and an acoustic signal can be heard at long intervals.

Switching the laser pointer on or off

Ex works the laser pointer is switched off.

- Please observe that with a switched-on laser pointer the laser will go on as soon as you press the measurement button (5).



Danger!

Class 2 laser radiation.

Lasers of class 2 only radiate in the visible range and during continuous wave operation (lasting beam) no more than 1 milliwatt (mW) of output will be emitted. Looking directly into the laser beam for a longer period of time (more than 0.25 seconds) can cause damage to the retina.

Avoid looking directly into the laser beam. Never look into the laser beam using optical aides. Do not suppress the winking reflex when looking into the laser beam unintentionally. Never point the laser beam at people or animals.

1. Press the laser button (8).
 - ⇒ The HOLD indication (13) appears on the display.
 - ⇒ The laser pointer is switched on.
2. Press the laser button (8) again to switch the laser pointer off.
 - ⇒ The laser indication (13) is no longer displayed.
 - ⇒ The laser pointer is switched off.

Switching the display illumination on or off

Ex works the display illumination is switched off.

1. Press the lamp button (6).
 - ⇒ The display illumination will be switched on.
2. Press the lamp button (6) again to switch the display illumination back off.
 - ⇒ The display illumination will be switched off.

The device memorizes the selected setting when switching off.

Changing the unit °C / °F

1. Press the °C/°F button (7) to change the temperature unit from degrees Celsius to degrees Fahrenheit or vice versa.

Switching the device off

- With activated *SCAN* indication (19) the device switches off automatically after approx. 6 minutes.
 - With activated *HOLD* indication (18) the device switches off automatically after approx. 15 seconds.
1. Press the measurement button (5) for approx. 3 s.
 - ⇒ The device is switched off.

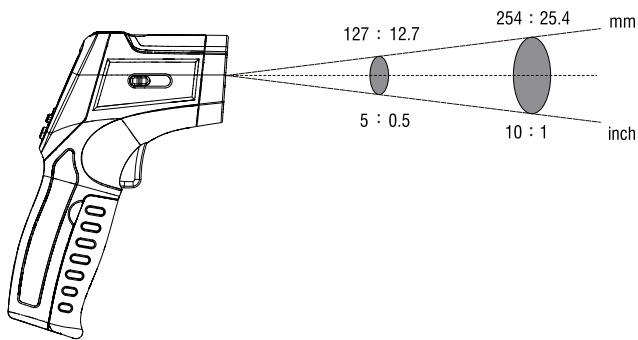
Measuring principle

The device measures the temperature by means of an infrared sensor. Important factors are the measuring spot diameter and the degree of emission.

Measuring spot

Observe the ratio of the distance to the measuring spot diameter. The larger the distance to the object, the larger the measuring spot diameter and hence, the less precise the measured result.

The connectable laser pointer indicates the approximate measuring spot centre. Consequently, it is a mere aiming aid and not intended for the actual temperature measurement.



Degree of emission

The degree of emission is used to describe the energy radiation characteristics of a material.

A material's degree of emission depends on various factors:

- composition,
- surface condition,
- temperature.

The degree of emission can be between 0.1 and 1(, in theory).

The following rule of thumb can be assumed:

- When a material is rather dark and its surface texture matt, it probably has a high degree of emission.
- The brighter and smoother the surface of a material, the lower will be its degree of emission, presumably.
- The higher the degree of emission of the surface to be measured, the better it is suited for non-contact temperature measurement by use of a pyrometer or thermal imaging camera, since falsifying temperature reflections can be neglected.

Entering a degree of emission as accurate as possible (if possible with this device) is indispensable for a precise measurement.

Most organic materials have a degree of emission of 0.95. Metals or shiny materials come with a much lower value.

Maintenance and repair

Cleaning

Clean the device with a soft, damp and lint-free cloth. Ensure that no moisture enters the housing. Do not use any sprays, solvents, alcohol-based cleaning agents or abrasive cleaners, but only clean water to moisten the cloth.

Repair

Do not modify the device or install any spare parts. For repairs or device testing, contact the manufacturer.

Battery change

A battery change is required when the battery status indication flashes or the device can no longer be switched on (see chapter Inserting the batteries).

Disposal



In the European Union, electronic equipment must not be treated as domestic waste, but must be disposed of professionally in accordance with Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE). At the end of its life, please dispose of this device according to the valid legal requirements.

Declaration of conformity

in accordance with the EC Low Voltage Directive 2006/95/EC and the EC Directive 2004/108/EC about electromagnetic compatibility.

Herewith, we declare that the device BP17 was developed, constructed and produced in compliance with the named EC directives.

The **CE** marking is found on the rear of the device.

Manufacturer:

Trotec GmbH & Co. KG

Grebbeener Straße 7


D-52525 Heinsberg

Phone: +49 2452 962-400

Fax: +49 2452 962-200

E-mail: info@trotec.com

Heinsberg, 01.09.2015



Detlef von der Lieck

Managing Director

Trotec GmbH & Co. KG

Grebener Str. 7
D-52525 Heinsberg

☎ +49 2452 962-400

☎ +49 2452 962-200

✉ info@trotec.com

www.trotec.com