

PeakTech®

Prüf- und Messtechnik

 Spitzentechnologie, die überzeugt



PeakTech® 4975 / 4980

**Bedienungsanleitung /
operation manual /
Mode d'emploi /
Istruzioni per l'uso /
Manual de instrucciones**

**Infrarot - Thermometer /
Infrared - Thermometers /
Thermomètre infrarouge /
Termometro all'infrarosso /
Termómetro de infrarrojos**

1. Safety precautions

This product complies with the requirements of the following European Community. Directives: 2004/108/EC (Electromagnetic Compatibility)

Damages resulting from failure to observe the following safety precautions are exempt from any legal claims whatever.

- * do not subject the equipment to direct sunlight, extreme temperatures, extreme humidity or dampness
- * **use extreme caution when the laser beam is turned ON**
- * **do not let the beam enter your eye, another person's eye or the eye of an animal**
- * **be careful not to let the beam on a reflective surface strike your eye**
- * **do not allow the laser light beam impinge on any gas which can explode**
- * **do not let the beam of any body**
- * do not operate the equipment near strong magnetic fields (motors, transformers etc.)
- * do not subject the equipment to shocks or strong vibrations
- * keep hot soldering iron or guns away from the equipment
- * allow the equipment to stabilise at room temperature before taking up measurement (important for exact measurement)

- * do not modify the equipment in any way
- * opening the equipment and service- and repair work must only be performed by qualified service personnel
- * **Measuring instruments don't belong to children hands!**

Cleaning the cabinet

Clean only with a damp soft cloth and a commercially available mild household cleanser. Ensure that no water gets inside the equipment to prevent possible shorts and damage to the equipment.

2. Features

This infrared-thermometer meets ANSI S1.4 and IEC 651 Type 2 standards.

- * Precise non-contact measurements
- * Switchable C/F temperature units
- * Auto power off
- * Automatic data-hold
- * Backlight LCD Display (blue, red at alarm)
- * Laser target pointer (2-point laser)
- * Auto-ranging
- * Adjustable emissivity factor
- * Trigger lock

3. Front Panel description

PeakTech® 4975:



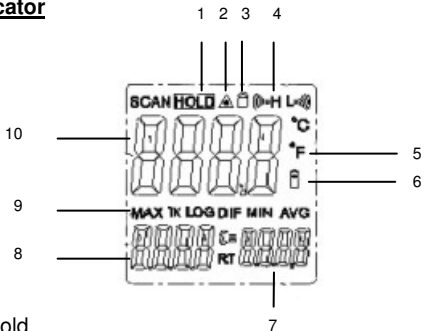
1. IR Sensor
2. 2-point laser pointer beam
3. LCD - Display
4. up button
5. down button
6. MODE button
7. ON/HOLD key
8. Battery cover
9. Handle grip

PeakTech® 4980:



1. IR Sensor
2. 2-point laser pointer beam
3. LCD - Display
4. up button
5. down button
6. MODE button
7. ON/HOLD key
8. Battery cover
9. Handle grip

3.1. Indicator



1. Data hold
2. Laser "on" symbols
3. Lock symbol
4. High alarm and low alarm symbol
5. °C/°F symbol
6. Low power symbols
7. Emissivity symbol and value
8. Temperature values for the MAX
9. Symbols for MAX
10. Current temperature value

4. Measurement Considerations

Holding the meter by its handle, point the IR sensor toward the object whose temperature is to be measured.

The meter automatically compensates for temperature deviations from ambient temperature. Keep in mind that it will take up to 30 minutes to adjust to wide ambient temperature changes. When low temperatures are to be measured followed by high temperature measurements some time (several minutes) is required after the low (and before the high) temperature measurements are made.

This is a result of the cooling process which must take place for the IR sensor.

5. Non-Contact IR Measurement Operation

5.1. Power ON/OFF

1. Press the **ON/HOLD** key to take a reading. Read the measured temperature on the LCD.
2. The meter powers OFF automatically approximately 7 seconds after the ON/HOLD key is released.

5.2. Selecting Temperature units

Select the required temperature unit by opening the battery compartment (see point 7) and switchover the slide-switch, which is installed.

°C is selected by manufacturer.

5.3. Data Hold

This meter automatically holds the last temperature reading on the LCD for 7 seconds after the **ON/HOLD** key is released.

No extra key presses are necessary to freeze the displayed reading.

5.4. Backlite LCD

Select backlite by first pressing the **ON/HOLD** key and then pressing the **BACKLITE** (5) key. Press the backlight key again to turn the backlight **OFF**.

5.5. Laser Pointer

1. To turn the laser pointer ON, press the **LASER** (4) key after pressing the **ON/HOLD** key
2. Press the Laser key again to turn OFF the laser.

Function

1. While measuring (triggered ON-key) use the UP and DOWN keys to adjust the Emissivity.
2. In the hold time (On-key not triggered), use the UP key to turn on or off and the DOWN key to turn on or off the backlight
3. To set values for the High Alarm (HAL), Low Alarm (LAL) and Emissivity (EMS), press the MODE button until the appropriate code appears in the display, press the UP and DOWN buttons to adjust the desired values.

MODE Button Function

Pressing the mode button with released ON-key also allows you to access the set

state, Emissivity(EMS), Lock on/off, HAL on/off, HAL adjustment, LOW on/off, LOW adjustment.

Each time you press set you advance through the mode cycle.

The diagram shows the sequence of functions in the mode cycle.

EMS adjustment.

The Emissivity(EMS) is digitally adjustable from 0.10 to 1.0. Press the UP and DOWN-keys to raise or lower the EMS.

LOCK function

The lock mode is particularly useful for continuous monitoring of temperatures

without pressing the ON-key during the measurement.

Press the UP or DOWN key to turn on/off . Press the Measurement Trigger to

Confirm the locked measurement mode. The IR Thermometer will continuously

display the measured temperature until you press again the ON-key.

In lock mode, press the UP or DOWN-keys to adjust the Emissivity.

HIGH (HAL) / LOW (LAL)- Alarm

Press the up button or down button to turn HAL/LAL on or off. Press the

Measurement Trigger to confirm the High/Low alarm mode.

After switching on or off the HAL/LAL, press the SET-key to switch to the

alarm- value setting.

Use the UP or DOWN-key to set the desired value for HAL or LAL.

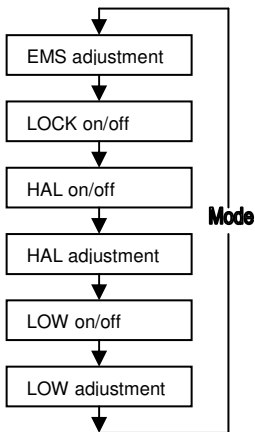
When HAL or LAL is activated the backlight will flash in red color and A warning noise will sound.

This unit is equipped with a visual alarm.

If during a measurement, the measured temperature exceeds the preset "high alert" temperature, the backlight will flash with red LED.

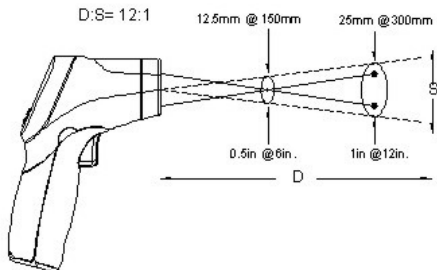
The same behavior shows the device when the measured temperature is lower than the preset "low alarm" temperature.

"High Alert" resp. "Low Alarm" to preset and must be enabled.

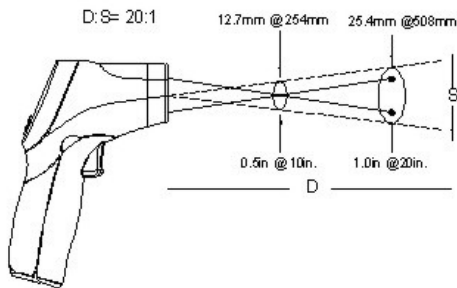


5.6 Description of the IR-Sensor

PeakTech® 4975:



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$D =$ Distance (avoid exposure-laser radiation is emitted from this aperture) approx. 12:1 / 20:1

$S =$ diameter of the IR-sensor beam

6. Technical Specifications

Display	3½-digit, LCD-Display with backlight
Range P 4975 P 4980	-50°C...650°C (-58°F...1202°F) -50°C...800°C (-58°F...1472°F)
Sample rate	approx. 6 x/Sec. (150ms)
Power off	automatic shutoff after 7 seconds
Resolution	0,1 °C/F, 1 °C/F
Emissivity setting	0,1 ~ 1,0 adjustable
Spectral response	8 ... 14 µm
Laser product	class 2, Output < 1mW, Wave length: 630 - 670 nm
Distance Factor D/S (distance/spot) P 4975 P 4980	12:1 20:1
Operating temperature	0 ... 50 °C / 32 ... 122 °F
Operating humidity	10% - 90%
Power Supply	9 V battery
Dimensions (WxHxD)	42 x 155 x 95 mm
Weight	180 g

PeakTech® 4975:

Range (autom. Selection 0,1 °C/1 °C)		Resolution	Accuracy
-50.0 °C to 300 °C	-50 °C - +20 °C +20 °C-300 °C	0,1 °C	± 2,5 °C ±1,0% rdg.. ± 2 °C
201 °C to 650 °C		1 °C	± -1,5% rdg.
Range (autom. Selection 0,1 °F/1 °F)		Resolution	Accuracy
-58.0 °F to 572 °F	-58 °F - +68 °F +68 °F-572 °F	0,1 °F	± 4,5 °F ±1,0% rdg.. ± 2,8 °F
572 °F to 1202 °F		1 °F	±1,5% rdg.

PeakTech® 4980:

Range (autom. Selection 0,1 °C/1 °C)		Resolution	Accuracy
-50.0 °C to 300 °C	-50 °C - +20 °C +20 °C-300 °C	0,1 °C	± 2,5 °C ±1,0% rdg.. ± 2 °C
300 °C to 800 °C		1 °C	±1,5% rdg.
Range (autom. Selection 0,1 °C/1 °C)		Resolution	Accuracy
-58.0 °F to 572 °F	-58 °F- +68 °F +68 °F-572 °F	0,1 °F	± 4,5 °F ±1,0% rdg.. ± 2,8 °F
572 °F to 1472 °F		1 °F	±1,5% rdg.

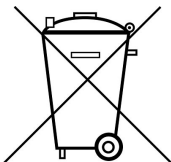
Note: Accuracy is given at 18 °C to 28 °C (64 °F to 82 °F), less than 80% R. H.

Emissivity: 0 - 1 variable

Field of view: Make sure, that the target is larger than the unit's spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure, that the target is at least twice as large as the spot size.

7. Battery Replacement

A Bat Symbol in the display is the indication that the battery voltage has fallen into the critical region (6,5 to 7,5 V). Reliable readings can be obtained for several hours after the first appearance of the low battery indication.



Batteries, which contain harmful substances, are marked with the symbol of a crossed-out waste bin, similar to the illustration shown left. Under the waste bin symbol is the chemical symbol for the harmful substance, e.g. „Cd“ for cadmium, „Pb“ stands for lead and „Hg“ for mercury.

You can obtain further information about the Battery Regulations from the Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (*Federal Ministry of Environment, Nature Conservation and Reactor Safety*).

8. How it Works

Infrared thermometers measure the surface temperature of an object. The unit's optics sense emitted, reflected and transmitted energy, which is collected and focused onto a detector. The unit's electronics translate the information into a temperature reading which is displayed on the unit. In units with a laser, the laser is used for aiming purposes only.

8.1. Field of View

Make sure that the target is larger than the unit's spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

8.2. Distance & Spot Size

As the distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger. See Fig. 2

8.3. Locating a hot Spot

To find a hot spot aim the thermometer outside the area of interest, then scan across with an up and down motion until you locate hot spot.

Reminders

1. The unit cannot measure through transparent surfaces such as glass. It will measure the surface temperature of the glass instead.
2. Steam, dust, smoke, etc. can prevent accurate measurement by obstructing the unit's optics.

8.4 Emissivity

Most (90 % of typical applications) organic materials and painted or oxidised surfaces have an emissivity of 0,95. Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate, cover the surface to be measured with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material underneath it. Measure the temperature of the tape or painted surface.

Material	Condition	Temperature-Range	Emissivity-factor (ϵ)
Aluminium	polished	50°C ... 100°C	0.04 ... 0.06
	Raw surface	20°C ... 50°C	0.06 ... 0.07
	oxidized	50°C ... 500°C	0.2 ... 0.3
	Aluminium oxide, Aluminium powder	normal Temperature	0.16
Brass	matt	20°C ... 350°C	0.22
	oxidized at 600°C	200°C ... 600°C	0.59 ... 0.61
	Polished	200°C	0.03
	Wrought with sandpaper	20°C	0.2

Bronze	polished	50 °C	0.1
	porous and raw	50 °C ... 150 °C	0.55
Chrome	polished	50 °C	0.1
		500 °C ... 1000 °C	0.28 ... 0.38
Copper	burnished	20 °C	0.07
	elektrolytic polished	80 °C	0.018
	elektrolytic powdered	normal Temperature	0.76
	molten	1100 °C ... 1300 °C	0.13 ... 0.15
	oxidized	50 °C	0.6 ... 0.7
	oxidized and black	5 °C	0.88
Iron	With red rust	20 °C	0.61 ... 0.85
	elektrolytic polished	175 °C ... 225 °C	0.05 ... 0.06
	Wrought with sandpaper	20 °C	0.24
	oxidized	100 °C	0.74
		125 °C ... 525 °C	0.78 ... 0.82
	Hot-rolled	20 °C	0.77
Hot-rolled	130 °C	0.6	
Laquer	Bakelite	80 °C	0.93
	black, matt	40 °C ... 100 °C	0.96 ... 0.98
	black, high-glossed, sprayed onto iron	20 °C	0.87
	Heat-resistant	100 °C	0.92
	white	40 °C ... 100 °C	0.80 ... 0.95
Lamp black	-	20 °C ... 400 °C	0.95 ... 0.97
	Application to solid surfaces	50 °C ... 1000 °C	0.96
	With water glass	20 °C ... 200 °C	0.96
Paper	black	normal Temperature	0.90

Paper	black, matt	dto.	0.94
	green	dto.	0.85
	Red	dto.	0.76
	White	20°C	0.7 ... 0.9
	yellow	normal Temperature	0.72
Glass	-	20°C ... 100°C 250°C ... 1000°C 1100°C ... 1500°C	0.94 ... 0.91 0.87 ... 0.72 0.7 ... 0.67
	Matted	20°C	0.96
Gypsum	-	20°C	0.8 ... 0.9
Ice	Covered with heavy frost	0°C	0.98
	smooth	0°C	0.97
Lime	-	normal Temperature	0.3 ... 0.4
Marble	greyish polished	20°C	0.93
Glimmer	Thick layer	normal Temperature	0.72
Porcelain	glazed	20°C	0.92
	White, glossy	normal Temperature	0.7 ... 0.75
Rubber	Hard	20°C	0.95
	Soft, grey rough	20°C	0.86
Sand	-	normal Temperature	0.6
Shellac	black, matt	75°C ... 150°C	0.91
	black, glossy, applied to tin alloy	20°C	0.82
Plumbum	grey, oxidized	20°C	0.28
	at 200°C oxidized	200°C	0.63
	red, powder	100°C	0.93

Plumbum	Lead sulfate, Powder	normal temperature	0.13 ... 0.22
Quecksilber	pure	0 °C ... 100 °C	0.09 ... 0.12
Molybdenum	-	600 °C ... 1000 °C	0.08 ... 0.13
	Heating wire	700 °C ... 2500 °C	0.10 ... 0.30
Chrome	wire, pure	50 °C 500 °C ... 1000 °C	0.65 0.71 ... 0.79
	wire, oxidized	50 °C ... 500 °C	0.95 ... 0.98
Nickel	absolutly pure, polished	100 °C 200 °C ... 400 °C	0.045 0.07 ... 0.09
	at 600 °C oxidized	200 °C ... 600 °C	0.37 ... 0.48
	wire	200 °C ... 1000 °C	0.1 ... 0.2
	Nickel oxidized	500 °C ... 650 °C 1000 °C ... 1250 °C	0.52 ... 0.59 0.75 ... 0.86
Platinum	-	1000 °C ... 1500 °C	0.14 ... 0.18
	Pure, polished	200 °C ... 600 °C	0.05 ... 0.10
	Stripes	900 °C ... 1100 °C	0.12 ... 0.17
	wire	50 °C ... 200 °C	0.06 ... 0.07
		500 °C ... 1000 °C	0.10 ... 0.16
Silver	Pure, polished	200 °C ... 600 °C	0.02 ... 0.03
Steel	Alloy (8% Nickel, 18% Chrome)	500 °C	0.35
	Galvanized	20 °C	0.28
	oxidized	200 °C ... 600 °C	0.80
	strongly oxidized	50 °C 500 °C	0.88 0.98
	Newly-rolled	20 °C	0.24
	Rough, flat surface	50 °C	0.95 ... 0.98
	rusty, redt	20 °C	0.69
	sheet	950 °C ... 1100 °C	0.55 ... 0.61
	sheet, Nickel- coated	20 °C	0.11
	sheet, polished	750 °C ... 1050 °C	0.52 ... 0.56

Steel	sheet, rolled	50 °C	0.56
	rustless, rolled	700 °C	0.45
	rustless, sand-blasted	700 °C	0.70
Cast Iron	poured	50 °C	0.81
		1000 °C	0.95
	liquid	1300 °C	0.28
	at 600 °C oxidized	200 °C ... 600 °C	0.64 ... 0.78
	polished	200 °C	0.21
Tin	burnish	20 °C ... 50 °C	0.04 ... 0.06
Titanium	at 540 °C oxidized	200 °C	0.40
		500 °C	0.50
		1000 °C	0.60
	polished	200 °C	0.15
500 °C		0.20	
1000 °C		0.36	
Wolfram	-	200 °C 600 °C ... 1000 °C	0.05 0.1 ... 0.16
	Heating wire	3300 °C	0.39
Zinc	at 400 °C oxidized	400 °C	0.11
	oxidized surface	1000 °C ... 1200 °C	0.50 ... 0.60
	Polished	200 °C ... 300 °C	0.04 ... 0.05
	sheet	50 °C	0.20
Zirconium	Zirconium oxide, Powder	normal temperature	0.16 ... 0.20
	Zirconium silicate, Powder	normal temperature	0.36 ... 0.42
Asbestos	tablet	20 °C	0.96
	Paper	40 °C ... 400 °C	0.93 ... 0.95
	Powder	normal temperature	0.40 ... 0.60
	slate	20 °C	0.96
Coal	Heating wire	1000 °C ... 1400 °C	0.53
	cleaned (0.9% Asche)	100 °C ... 600 °C	0.81 ... 0.79

Cement	-	normal temperature	0.54
Charcoal	Powder	normal temperature	0.96
Clay	Fired clay	70 °C	0.91
Fabric (Cloth)	black	20 °C	0.98
Vulcanite	-	normal temperature	0.89
Grease	coarse	80 °C	0.85
Silicon	Granulate powder	normal temperature	0.48
	Silicon, Powder	normal temperature	0.30
Slag	furnace	0 °C ... 100 °C	0.97 ... 0.93
		200 °C ... 1200 °C	0.89 ... 0.70
Snow	-	-	0.80
Stucco	rough, burned	10 °C ... 90 °C	0.91
Bitumen	Waterproof paper	20 °C	0.91 ... 0.93
Water	Layer on metal surface	0 °C ... 100 °C	0.95 ... 0.98
Brick	Chamotte	20 °C	0.85
		1000 °C	0.75
		1200 °C	0.59
	Fire-reistant	1000 °C	0.46
	Fire-resistant, high-blasted	500 °C ... 1000 °C	0.80 ... 0.90
Fire-resistant, low-blasted	500 °C ... 1000 °C	0.65 ... 0.75	
	Silicon (95% SiO ₂)	1230 °C	0.66

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This manual considers the latest technical knowing. Technical changing which are in the interest of progress reserved.

We herewith confirm, that the units are calibrated by the factory according to the specifications as per the technical specifications. We recommend to calibrate the unit again, after 1 year.

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