

PeakTech[®]

Prüf- und Messtechnik

 **Spitzentechnologie, die überzeugt**



PeakTech[®] 5090

**Bedienungsanleitung /
Operation Manual**

**Infrarot-Thermometer /
Luftfeuchtigkeitsmesser**

**Infrared-Thermometer /
Hygro Meter**

1. Safety Precautions

This product complies with the requirements of the following European Community Directives: 2004/108/EC (Electromagnetic Compatibility) amended by 2004/22/EC (CE-Marking). Pollution degree 2.

To ensure safe operation of the equipment and eliminate the danger of serious injury due to short-circuits (arcing), the following safety precautions must be observed.

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

- * Do not operate the meter before the cabinet has been closed and screwed safely.
- * Check test leads and probes for faulty insulation or bare wires before connection to the equipment.
- * Comply with the warning labels and other info on the equipment.
- * Keep the equipment dry.
- * Use extreme caution when the laser beam is turned ON.
- * Don't let the beam enter your eye, another person's eye or the eye of an animal.
- * Be careful 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 on any body.
- * Do not subject the equipment to direct sunlight or extreme temperatures, humidity or dampness.
- * Do not subject the equipment to shocks or strong vibrations.
- * Do not operate the equipment near strong magnetic fields (motors, transformers etc.).
- * Keep hot soldering irons or guns away from the equipment.
- * To avoid damage or burns, do not make temperature measurement in microwaves ovens.

- * Allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurements).
- * Replace the battery as soon as the battery indicator “BAT” appears. With a low battery, the meter might produce false reading that can lead to personal injury.
- * Fetch out the battery when the meter will not be used for long period.
- * Periodically wipe the cabinet with a damp cloth and mild detergent. Do not use abrasives or solvents.
- * The meter is suitable for indoor use only
- * Do not store the meter in a place of explosive, inflammable substances.
- * Do not place the equipment face-down on any table or work bench to prevent damaging the controls at the front
- * 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.

- * Two in one precise non-contact measures temperatures (°C/°F) and Relative Humidity simultaneously.
- * Dual LCD display for temperature and humidity.
- * Built-in laser pointer to improve non-contact infrared thermometer aim.
- * Resolution to 0,1%RH, 0,1° or 1° (°C/°F).

- * Switchable °C/°F units with MAX and HOLD functions.
- * Auto power off
- * The meter at 8 inches away measures 1 inch target
- * Backlight LCD Display
- * Ideal for clean rooms, drying rooms, greenhouses, food and textile industries.

3. Specifications

General Specifications

Display	Dual LCD-Display for temperature or humidity with backlight
Infrared-meas. ranges	-50 °C ... +500 °C / -58 °F ... +932 °F
Humidity ranges	5% ... 95% RH
Sample rate	2,5 x per sec.
Over range indication	LCD will show "OL"
Polarity	Automatic (no indication for positive polarity) / Minus (-) Sign for negative polarity)
IR – Spectral Response	6-14 µm
Laser	class 2 output: < 1mW wave length: 630 ~ 670 nm
Power off	Automatic shut off after 10 minutes, approx.
Operating temperature	0 °C ... 50 °C / 32 °F ... 122 °F
Operating humidity	max. 80% RH -18-

Battery	9 V Battery
Weight	approx: 360 g
Dimensions	90 x 170 x 45 mm

Infrared-Thermometer Specifications

Range		Resolution	Accuracy
-50 °C...200 °C	-50 °C~-20 °C	0,1 °C	±5 °C
	-20 °C~200 °C		±2% rdg. or ±2 °C
200 °C...500 °C		1 °C	

Range		Resolution	Accuracy
-58 °F...200 °F	-58 °F~-4 °F	0,1 °F	±9 °F
	-4 °F~200 °F		±2% rdg. or ±4 °F
200 °F...932 °F		1 °F	

Note:

1. Accuracy is given at 18 °C to 28 °C (64 °F to 82 °F), less than 80 % RH.
2. Accuracy is specified for emissivity of 0,95.

Emissivity settings	0,95 fixed
Distance factor	D:S = approx. 8:1 (D=Distance, S=Spot)

Relative Humidity / Airtemperature specifications

Range	Resolution	Accuracy
5,0% RH ~ 95,0% RH	0,1% RH	± 3,5% RH
-20,0 °C ~ 60,0 °C	0,1 °C	± 2 °C
-4,0 °F ~ 140 °F	0,1 °F	± 3 °F

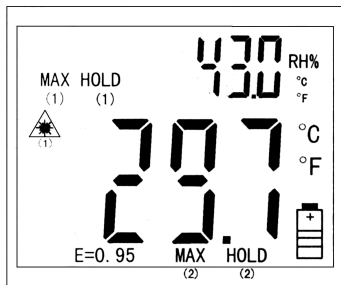
Note:

1. Accuracy is given at 18 °C to 28 °C (64 °F to 82 °F), less than 80 % RH.
2. Reaction time humidity is about 80 sec., windless.
3. The measuring range is from 0% to 100%, but above 95% and below 5% the deviation is not specified.

4. Front Panel Description



1. Laser pointer beam
2. IR – sensor
3. %RH and probe temperature measurement reading
4. Infrared thermometer measurement reading
5. Power (ON/OFF) button
6. °C/°F – (IR-Temp.) select button
7. IR measurement Data Hold
8. 0,1 °/1 ° (IR Temp.) select button
9. IR temperature Laser pointer button
10. IR measurement MAX hold button
11. Backlight button
12. %RH/°C/°F (Probe temp.) select button (upper display)
13. %RH/°C/°F (Probe temp.) measurement DATA Hold button (upper display)
14. %RH/°C/°F (Probe temp.) MAX Hold button (upper display)
15. Humidity and Probe temperature sensor (upper display)



5. Measurement Considerations

Holding the meter by it's 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.

6. Non-Contact IR Measurement Operation

6.1. Power ON/OFF

1. Press the ON (5.) key to take a reading. Read the measured temperature on the LCD.
2. Read the measured IR-Temperature (°C/°F) and the simultaneously measured relative humidity at LCD-display. The unit shuts off after 10 minutes automatically.

6.2. %RH / °C / °F select button

This button is for switching between relative humidity (RH) and sensor temperature (airtemperature) in °C and °F.

6.3. °C / °F select button

This function lets you select the temperature reading in °C or °F. Turn the unit on by using the POWER button and select with the °C/°F-button the needed °C or °F-range.

6.4. Selecting the temperature-range (0,1° / 1°)

High resolution: 0,1 °C or 0,1 °F

Low resolution: 1 °C or 1 °F

Over range indication will be shown in the display, if measured value exceeds the measuring range. If you intent to make measurements above 199,9°, change the resolution to 1°.

6.5. DATA-HOLD

Press the "HOLD"-button to freeze the present measuring value. The "HOLD"-symbol will be shown in the display. Press the "HOLD"-button again to return to normal use.

6.6. MAX-HOLD

Press the "MAX"-button to freeze the max. measured value in the display. The "MAX"-symbol will be shown in the display. Press the "MAX"-button again to return to normal use.

6.7. LCD-Backlight

1. Turn the unit on by pressing the "POWER"-button.
2. Press the "BACKLIGHT"-button for switching on the backlight.
3. Press the "BACKLIGHT"-button again for turning off the backlight.

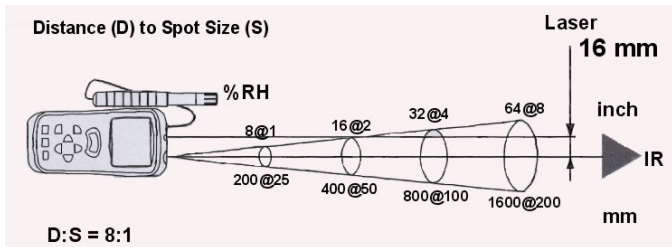
6.8. Using the Laser pointer beam

For using the laser pointer beam make the following steps:

1. Turn the unit on by pressing the "POWER" button.
2. Press the -button

3. Laser pointer beam is activated and the -symbol will be shown in the display.
4. For turning off the laser pointer beam, press the -button again.

6.9. Description of Laser beam



D = Distancefactor (avoid expose-laser radiation is emitted from this aperture) approx. 8 : 1

S = Laser beam diameter: 16 mm

1 ln = 2,5 cm

6 ln = 15 cm

2 ln = 5 cm

12 ln = 30 cm

4 ln = 10 cm

24 ln = 60 cm

6.10. Measuring operation

Hold the unit with it's laser pointer beam straight to the object to measure the temperature. The thermometer compensates the temperature-deviation of the surrounding-temperature automatically. Please note, that the instrument has to stabilise to the surrounding-temperature for 30 minutes, especially after taking the instrument from warm in cold rooms or reversed.

If you made measurements of high temperatures, the thermo-meter needs a few minutes to cool down.

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. 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.

7.1. 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.

7.2. 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

Reminders

1. Not recommended for use in measuring shiny or polished metal surface (stainless steel, aluminium, etc.) See emissivity
2. The unit cannot measure through transparent surfaces such as glass. It will measure the surface temperature of the glass instead.

3. Steam, dust, smoke, etc. can prevent accurate measurement by obstructing the unit's optics.

7.3. Emissivity

Most (90 % of typical applications) organic materials and painted or oxidised surfaces have an emissivity of 0,95 (pre-set in the unit). 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.

7.4. Emissivity Values

Substance	Thermal emissivity	Substance	Thermal emissivity
Asphalt	0,90 to 0,98	Cloth (black)	0,98
Concrete	0,94	Human skin	0,98
Cement	0,96	Lather	0,75 to 0,80
Sand	0,90	Charcoal (powder)	0,96
Earth	0,92 to 0,96	Lacquer	0,80 to 0,95
Water	0,92 to 0,96	Lacquer (matt)	0,97
Ice	0,96 to 0,98	Rubber (black)	0,94
Snow	0,83	Plastic	0,85 to 0,95
Glass	0,90 to 0,95	Timber	0,90
Ceramic	0,90 to 0,94	Paper	0,70 to 0,94
Marble	0,94	Chromium oxides	0,81
Plaster	0,80 to 0,90	Copper oxides	0,78
Mortar	0,89 to 0,91	Iron oxides	0,78 to 0,82
Brick	0,93 to 0,96	Textiles	0,90

8. 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.

Open the battery compartment (see picture below) and remove the battery, then install a new battery and replace the cover.

ATTENTION !

Batteries, which are used up dispose duly. Used up batteries are hazardous and must be given in the for this supposed collective container.

8.1. Statutory Notification about the Battery Regulations

The delivery of many devices includes batteries, which for example serve to operate the remote control. There also could be batteries or accumulators built into the device itself. In connection with the sale of these batteries or accumulators, we are obliged under the Battery Regulations to notify our customers of the following:

Please dispose of old batteries at a council collection point or return them to a local shop at no cost. The disposal in domestic refuse is strictly forbidden according to the Battery Regulations. You can return used batteries obtained from us at no charge at the address on the last side in this manual or by posting with sufficient stamps.



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).

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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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