

Product Datasheet - Technical Specifications



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PeakTech®

Prüf- und Messtechnik

 Spitzentechnologie, die überzeugt



PeakTech® 4955

Bedienungsanleitung/ Operation Manual

„5 in 1“

**Umwelt-Video Messgerät /
Environment Video Meter**

1. Safety precautions

This product complies with the requirements of the following European Community Directives: 2014/30/EU (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

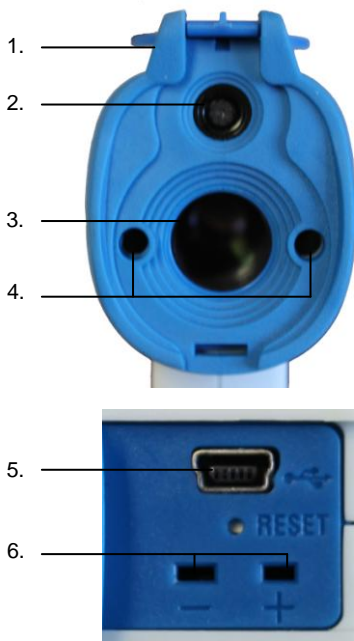
Clean only with a damp soft cloth and a commercially available mild household cleanser. Ensure that no water gets inside the equipment to prevent possible shorts and damage to the equipment.

2. General specifications

This 5 in 1 Environment Video Meter offers a variety of measurement functions and combines it with ease of handling and latest technology. It is universally used in industry, electrical engineering, maintenance and service, quality assurance, construction and energy consulting. Perfect for the documentation of important measurements using the integrated data logger and camera function.

- * 5.6 cm (2.2 ") color TFT LCD display with a resolution of 640 x 480 pixels
- * Easy to use intuitive graphical menu navigation
- * Humidity, air temperature, dew point, K-type contact and wet bulb temperature measurement
- * Infrared temperature measurement up to 2200 ° C.
- * Optical resolution 50: 1 and dual-laser for measuring point detection
- * Adjustable emissivity factor of 0.1 ... 1.0
- * Fast response time and high accuracy
- * Internal data logger for all measured values
- * Photo- (JPG) and video (3GP) function
- * 72 MB internal memory and Micro SD Slot* USB interface for data transfer and battery charge
- * Safety: IEC-0825, Class 2

3. Controls



1. Protective cover for the camera and IR sensor
2. Camera
3. IR sensor
4. Dual-laser marking
5. USB port
6. Type K temperature probe connection



7. TFT-LCD display
8. "ESC" & ON / OFF button
9. Camera & ▲ - key
10. Enter key
11. Video & ▼ button
12. Trigger button
13. Battery
14. Micro-SD slot (in the battery compartment)
15. Tripod thread

3.1. Main Menu

After switching on the device by pressing the "ESC" key several seconds, the main menu appears with six different sub-menus. By pressing the ▲ - and ▼ button you can select a menu item, which is highlighted blue when selected. To open the selected menu, confirm the selection with the "Enter" key.



- IR CAM:** Infrared camera mode to record measurements and documentation via photo- or video camera.
- IR MEASURE:** measuring infrared mode for rapid data collection without documentation
- DEW POINT:** infrared measurement mode with automatic calculation of dew point and graphic warning cold bridge
- DATALOG:** Data logger for automatic recording and storage of all measured values and graphical representation of the temperature curve value
- DATA MEMORY:** Summary for organizing and opening the saved data
- SETTINGS:** Menu option to default the device

3.1.1. IR Cam



The IR camera mode is useful for documenting and storing measurement data in photo or video format. After selecting the IR camera mode from the main menu the photo mode is enabled automatically. Pressing the trigger- key starts the display of measurement data such as infrared temperature, air temperature (AT), relative humidity (RH), dew point temperature (DP), the wet bulb temperature (WB), differential temperature (DIF), average temperature (AVG) , Type-K contact temperature probe (TK) and the minimum and maximum values (MIN, MAX).

The values can be activated and disabled in the "MEASURE SET" submenu. You can enter the submenu "MEASURE SET" by pressing the "ENTER" key in the IR camera mode.

In the IR camera mode there is also general information displayed such as date / time, battery charge, laser ON / OFF (☀), record / pause (▶ ||), zoom in / out (↑ ↓) and the emission factor (ε).

To record the current readings, press the "Camera / ▲"- key while holding the trigger-key. You will hear a camera sound and you have the option to save the photo by pressing the "camera / On" button or the "Video ▼" key to delete the snapshot. After saving, the device automatically returns to the IR camera menu.

To start a video recording, press the "VIDEO / ▼"-key in IR camera menu. In the next submenu, you can press the "ESC" key to return to photo mode or start video recording by Pressing the "VIDEO / Down" key again and the Trigger key afterwards. The maximum recording time in hours, minutes and seconds is shown in display.

The duration is depending on the inserted storage medium (Micro SD) or the remaining space of the internal memory.



In the video recording mode, the same measurement values are shown, as in the photography mode. These can be switched ON or OFF in the submenu "MEASURE SET ". Enter the "MEASURE SET "- menu by pressing the "ENTER"-key in IR-Camera mode.

In addition, general information such as lasers ON / OFF (☀), record / pause (▶ ||) and the emission factor (ϵ) are shown in display.

Furthermore, the current recording time ([●]) is shown in hours, minutes and seconds.

After the measurement, press the "Esc" key. The video recording is automatically saved and can be found in the main menu under the menu item "Data Memory".

In "Data Memory" mode you can display or delete the recorded video files.

Note: Video files do not display measurement values if copied to your PC system.

3.1.2. IR Measure



The IR measurement mode is useful for quick and easy data acquisition and storage without documentation of the measurements.

In the IR-measurement mode, the same measurements are displayed as in the IR-camera mode. These can be activated and deactivated in the submenu "MEASURE SET" by pressing the "ENTER" button.

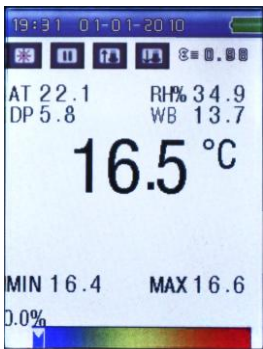
Pressing the Trigger-key starts the display of measurement data such as infrared temperature, air temperature (AT), relative humidity (RH), dew point temperature (DP), the wet bulb temperature (WB), differential temperature (DIF), average temperature (AVG), Type-K contact temperature probe (TK) and the minimum and maximum values (MIN, MAX)

In the IR measurement mode additional general information is displayed such as date / time, battery charge, laser ON / OFF (☀), record / pause (▶ ||) and the emission factor (ϵ).

Furthermore, a bar graph is displayed. The left end indicates the minimum measured value (MIN) and the right end of the bar graph indicates the maximum reading (MAX). For additional measurements it provides a pointer of the actual measured value relative to the minimum and maximum measured value.

Press the "ESC" key to return to the previous menu after completion of the measurement.

3.1.3. Dew Point



The dew point measurements enable a quick and clear detection of thermal bridging and condensation probability surfaces. By the ratio of surface temperature to relative humidity (RH%) can locate the danger of mould infestation in a housing.

In this mode, no values are stored. The display of the individual measured values can be in the submenu "SETTING. MEASUREMENTS" on and off. Pressing the shutter button starts the display of measurement data such as infrared temperature, air temperature (AT),

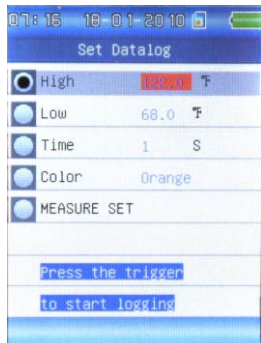
relative humidity (RH), dew point temperature (DP), the wet bulb temperature (WB), differential temperature (DIF), average temperature (AVG), Type-K contact temperature probe (TK) and the minimum and maximum values (MIN, MAX)

In addition, dew point Messodus general information such as date / time, battery charge, lasers are shown ON / OFF (☀), record / pause (▶ ||) and the emission factor (ϵ).

In addition, at the bottom of the screen a dew point bar graph appears, showing the measured IR-temperature values in relation to relative humidity (RH%). The figure ranges from blue to 0% (low rate of condensation) to red and 100% (high condensation rate). Ideally, the display is at 0%. Cool in room corners or other thermal bridges and high humidity, the meter will be made in the yellow and red. This measurement can now be measures to eliminate thermal bridges and take the resulting wet surfaces.

Press return after completion of the measurement, the "ESC" key to return to the previous menu.

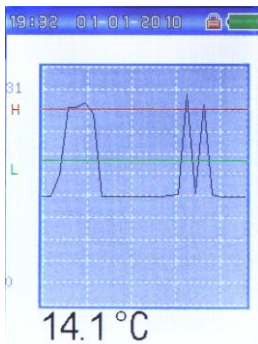
3.1.4. Datalog



The data logging function allows the long-term measurement and data storage of measured values in a tabular test report. The stored data tables can be accessed on the PC for further processing.

The data logger menu you can set different from the data recording Meeting, which you select the ▲ and ▼ and to press the "Enter" key to change:

High	Creates a top marker for a high temperature value, which is shown as a red line in the measurement chart
Low	Below Creates a marker for a low temperature value, which is represented in the sample chart as a green line
Time	Set the measurement interval from one measurement per second (1 s) to one measurement per hour (3600 S)
Color	Changes the color of the line graph, with which the readings are displayed on the XY axis
Measure Set	Opens the options menu in which all measured values can be switched on or off



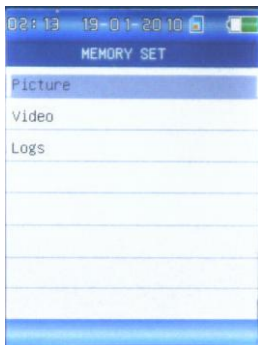
After completing the settings, start the measurement by pressing the trigger-key.

In the following menu the infrared temperature value is displayed as a line graph and a numerical value. The unit also records automatically all other measurements such as infrared temperature, air temperature (AT), relative humidity (RH), dew point temperature (DP), the wet bulb temperature (WB), differential temperature (DIF),

average temperature (AVG), type-K contact temperature probe (TK) and the minimum and maximum values (MIN, MAX) and lists these values tabular into a data file format.

Press the "ESC" key to save the measurements and return to the previous menu. The diagrams can be opened in the "DATA MEMORY" menu.

3.1.5. Data Storage



In the data storage menu you can manage and display the stored measurement data. This includes photos, video and data logs.

Use the ▲ and ▼ keys to select the desired file type, and press the "Enter" key.

In the following menu a list of stored files is displayed, which you can select with the ▲ and ▼ keys and confirm with "ENTER" key to call.

If the file is displayed, you can press the "Enter" key to open a submenu in which you can delete the file with the ▲ key and return to the previous menu with the ▼ key.

Finally press the "ESC" key to go back to the previous menu.

3.1.6. Settings



The Settings menu lets you define the basic system settings.

Press the ▲ and ▼ buttons to select the desired menu item, where you want to change options. Afterwards press the "Enter" key to confirm the executed changes.

The following items can be changed:

Date/time	To set the time and date, which are found in the test reports and photos
Units (C°/F°)	Set measurement unit to Celsius or Fahrenheit (C°, F°)
Language	Set language to English, German, French, Finnish and Dutch
Font colour	Set the font colour for measurement modes
Cursor	Set the target crosshairs on IR camera (off, cross, circle)

Brightness	Set display brightness (30 – 100%)
Auto Power Off	Set the time until device powers off automatically (disabled, 3/15/60 min)
Display Timeout	Set the time until display powers off automatically (disabled, 30/60/180 sek.)
Keypress signal	Enable/Disable key sound
Memory status	Displays the stored data and selected Memory Type (internal, micro-SD in MB)
Factory setting	Reset device to factory settings

Change the desired options exit the menu by pressing the "ESC" key to return to the previous menu. The changes are saved automatically.

3.1.7. Measure Set



The menu "MEASURE SET" is a sub-menu you can reach from the IR camera, IR measurement and the measurement of dew point" with pressing the "ENTER" key during the measurement in one of these modes.

Press the ▲ and ▼ keys to select the desired menu item, where you want to change options. Afterwards press the "Enter" key to confirm the executed changes.

Emissivity	Set the emissivity factor value manually from 0.01 up to 1.00 depending on the measured surface character
Alarm High	Set the high- temperature value for setting off an acoustic and optical Alarm
Alarm Tief	Set the low- temperature value for setting off an acoustic and optical Alarm
Laser	Switch ON- or OFF the dual target laser
Auto mode	Set if the trigger must be pressed for measurement or if the device makes automatic measurement
Max/Min	Enable/Disable the display of the maximum(MAX) or minimum (MIN) measurement values
Average/Dif.	Enable/Disable the display of the average value(AVG) or the differential measurement value (DIF) from the minimum and maximum measurement values
Ambient Temp. %RH	Enable/Disable the display of the ambient air temperature value (AT) and the relative humidity (RH) in %
Dewpoint/Wetblub	Enable/Disable the display of the dewpoint temperature (DP) or the wetbulb temperature (WB)
Type-K	Enable/Disable the display of the Type-K temperature probe

3.2. Functions and operation

To start a measurement, the main menu select the desired menu item and press the "Enter" key. A measurement is then made by pressing the shutter.

Functions in the "IR-camera" and "Data Logger" photos, videos or reading tables are stored, which are in the internal memory of the meter, or possibly an attached micro-SD card saved.

The stored data can either look at the device via the menu option "Storage" manage, or transfer to the PC.

3.2.1. Internal Memory

The device has an internal memory of 72 MB. This lasts for about 5 hours of video at 320 x 240 pixels, or approximately 1000 photographs with measured data at the standard resolution of 640 x 480 pixels.

3.2.2. External Memory

Measurement data, video and photos are stored automatically on Micro-SD card if inserted to the slot. You can manually switch between the internal memory and Micro SD card in the "Settings" menu under the menu item "Memory status".



Insert the memory card:

- * Open the battery compartment
- * The contacts must point to the outside of the unit
- * Insert the memory card into the card slot side
- * The card is positioned correctly when a short snapping sound is heard

Remove the memory card:

- * Open the battery compartment
- * Press down on the edge of the card until a snapping sound is heard
- * Pull out the card

3.2.3. USB interface

With the USB interface, data can be exchanged with the computer.

For the detection of the device under Windows, no drivers are required and the installation runs automatically. The internal memory and the memory card will be detected under Windows operating system as a removable media which you can access with "computer" or "My Computer".

Furthermore, the battery charges via the USB interface if an appropriate battery is inserted. The battery charge is done both in connection with the included AC power adapter, as well as in connection with the PC. For more information, see the chapter 6.2.



To connect to a PC or charger, plug-in the included USB cable to the mini-port USB and the other end of the USB connector to the charger or the PC USB interface.

- * In connection with the PC, a USB icon appears in the display of the device. You can now share data but do not use measuring functions. The battery is charged.
- * In connection with the AC adapter you can use all the measurement functions. The charging of the battery is displayed with a refilling battery icon.

3.2.4. Type K temperature measurement



This device is equipped with a type-K multi-function sensor. It is the only external sensor of the *Peaktech*[®] 4955 and must be used with the K-type connector (+ -) which is placed in the service panel. It can also be used with any other type-K probes.

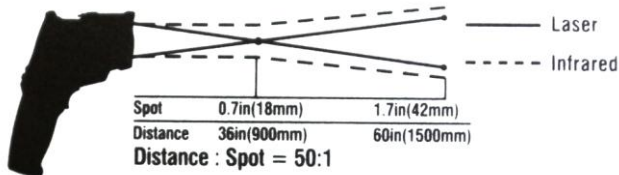
- * Plug the connector into the marked + and - terminals
- * Pay attention to the correct polarity
- * After this the Type K temperature measurement (TK) is available in all measurement modes

4. Measurement method

The PeakTech 4955 has three internal sensors for infrared-temperature (IR), air temperature (AT) and relative humidity (RH%) and an external temperature sensor using type-K (TK) connection.

- * The dew point (DP) is calculated from the ratio of the surface temperature (IR) and relative humidity (RH%).
- * The wet bulb temperature is calculated from the ratio of the air temperature (AT) and relative humidity (RH%).

4.1. IR Distance to Spot size



D: Distance
S: Spot size

As “Distance to Spot size” the ratio of the distance from the measured object to the size of the measuring surface is referred to.

The further away you are from the target during the infrared measurement, the bigger the Spot size will be. This can cause that not only the desired object, but also environmental factors are measured which can cause bad measurement results.

The higher the optical resolution (distance to spot size) is, the more accurately can be measured at greater distances.

2.4. Emissivity

For an infrared temperature measurement, the different surface conditions must be minded, as these have an influence on the measurement result. The emission factor describes the characteristics of the reflectivity of materials. The duller and darker the object is, the more accurate the measurement will be.

A measurement of very shiny, reflective or transparent objects distorts the measurement result. It is here recommended to colour the targeting surface in dull- black or to attach a dull-black tape on it, which you can use as measurement surface after the temperature harmonized.

Most organic, painted or oxidized surfaces have an emissivity of 0.95, so this is set as default for the *PeakTech*[®] 4955.

You can set different emission factors before each measurement in the "MEASURE SET "menu as listed in the following table:

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 500°C ... 1000°C	0.1 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 125°C ... 525°C	0.74 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
	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
Lead	grey, oxidized	20°C	0.28
	at 200°C oxidized	200°C	0.63
	red, powder	100°C	0.93
	Lead sulfate, Powder	normal temperature	0.13 ... 0.22
Quecksilver	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 500°C ... 1000°C	0.06 ... 0.07 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
	sheet, rolled	50°C	0.56
	rustless, rolled	700°C	0.45
	rustless, sand-blasted	700°C	0.70
Cast Iron	poured	50°C 1000°C	0.81 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 1000°C	0.50 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 200°C ... 1200°C	0.97 ... 0.93 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

5. Technical Specifications

Display	5,6 (2,2") LCD-TFT display with a resolution of 640 x 480 pixels and backlight
Camera	JPG- format (640 x 480 Pixels) 4 x digital zoom
Video	3GP-format (240 x 320 Pixels)
Response time	150 mS
Spectral sensitivity	8 ~ 14 um
Emissivity	0.10 - 1.00 adjustable
Laser:	Class 2, Output < 1 mW, Wavelength 630 – 670 nm
Optical resolution (DS)	50 : 1
Operating temperature	0°C – 50°C
Storage temperature	-10°C – 60°C
Relative Humidity	10 – 90% (non condensing)
Power supply	5V DC 1A via USB or 3,7V DC 1400 mAh Li-Ion Battery
Dimesions	62 x 205 x 155 mm
Weight	410 g

5.1. Specifications

Infrared-Range

Range	-50 ... + 2200°C	
Distance to Spot size	50 : 1	
Resolution	0.1°C < 1000°C ; 1°C > 1000°C	
Accuracy	Tolerance	Range:
	+/- 3, 5 °C	-50 ... 20°C
	+/- 1% + 1°C	20 ... 500°C
	+/- 1.5%	500 ... 1000°C
	+/- 3.5%	1000 ... 2200°C

Note!

Accuracy at 18 ° C to 28 ° C and Humidity less than 80%.

Field of View:

Make sure that the target to be measured is bigger than the laser beam. The smaller the target, the closer you should be located to it during measurement. If the accuracy is not given, make sure that the target is 2 x larger than the laser beam.

Type-K Range

Display symbol	TK	
Measurement range	-50 ... + 1370°C	
Resolution	0.1°C < 1000°C ; 1°C > 1000°C	
Accuracy	Tolerance	Range:
	+/- 0.5% + 1.5°C	< 1000°C
	+/- 2.5°C	> 1000°C

Air Temperature

Display symbol	AT	
Measurement range	0 ... + 50°C	
Accuracy	Tolerance	Range:
	+/- 0.5°C	10 ... 40°C
	+/- 1.0°C	Other ranges

Relative Humidity

Display symbol	RH%	
Measurement range	0 ... 100%	
Accuracy	Tolerance	Range:
	+/- 3%	40% ... 60%
	+/- 3.5%	20% ... 40% ; 60% ... 80%
	+/-5%	0% ... 20 % ; 80% ... 100%

Dewpoint Temperature

Display symbol	DP	
Measurement range	0 ... + 50°C	
Accuracy	Tolerance	Range:
	+/- 0.5°C	10 ... 40°C
	+/- 1.0°C	others

6. General Maintenance

- * Do not store or operate the equipment in places where the device is exposed to direct Sunlight for a longer time.
- * The device should be opened, repaired and serviced only by qualified personnel.

6.1. Charging the battery

At delivery the internal Li-Ion battery is already charged. If this is not the case, we recommend to fully charge the battery before use. Charging takes about 2 hours, via USB port, as well as with the USB power adapter.

6.1.1. Charging the battery with the AC adapter



Charging the Li-ion battery is always done with the USB connection of your device. It does not matter if the USB cable is connected to your PC or the included AC power adapter.

The switching mode USB power adapter is specified with an AC voltage from 100V to 240V and a frequency of 50 Hz to 60 Hz. The output voltage is the usual USB voltage of 5V DC. The power adapter has a standard USB interface port, which fits to the included USB cable. Connect the other end of the cable to the "miniport" USB-port in your device.

If a battery is in the compartment the charging process starts automatically. This is illustrated by a refilling battery icon in the upper right corner of the screen.

6.1.2. Charging the battery via the PC

Charging the Li-ion battery is always done with the USB connection of your device. It does not matter if the USB cable is connected to your PC or the included AC power adapter.

If the meter is connected to a PC with the supplied USB cable, the Li-ion battery is automatically charged. This also happens during data transfer to the PC.

Since the USB port was designed for power supply of peripheral devices, it has no negative influence to the PC and can be seen as a permanent alternative to using the included AC adapter.

6.2. Replacing the battery

Under normal conditions, replacement of the lithium-ion battery is not necessary. If it does become necessary, then the exchange should be done only by qualified personnel. Only use a Li-Ion Battery of the same type and technical specifications.

Notification about the Battery Regulation

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.

Contaminated batteries shall be marked with a symbol consisting of a crossed-out refuse bin and the chemical symbol (Cd, Hg or Pb) of the heavy metal which is responsible for the classification as pollutant:



1. "Cd" means cadmium.
2. "Hg" means mercury.
3. "Pb" stands for lead.

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This manual considers the latest technical knowing. Technical changings 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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