CondenseSpot Pro

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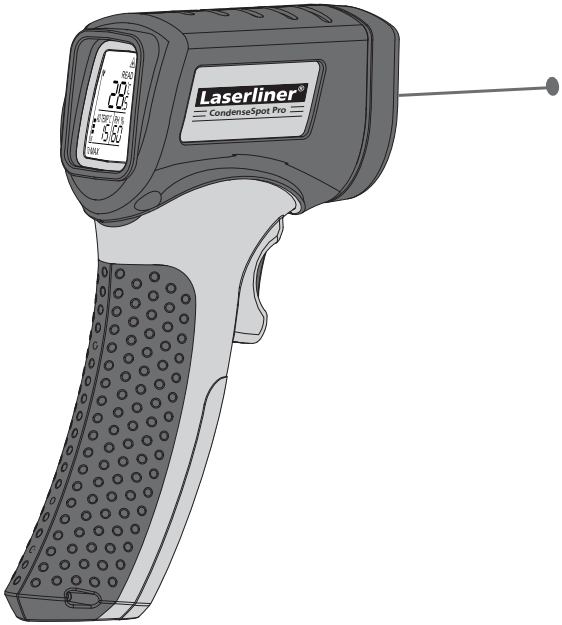
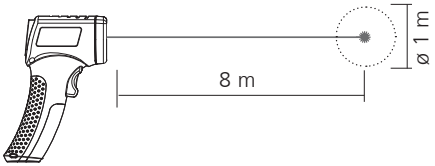
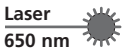
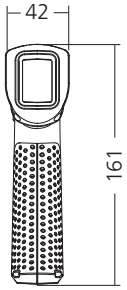
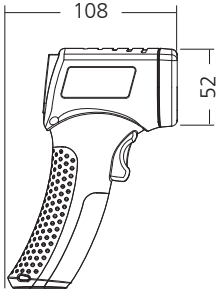
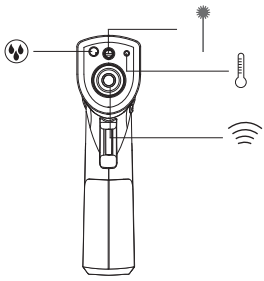










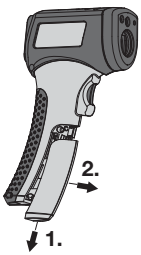


Laserliner®
Innovation in Tools

Function/Application

The CondenseSpot Pro is an infrared temperature measuring instrument with integrated hygrometer which permits non-contact temperature measurements on surfaces as well as the measurement of relative humidity and ambient temperature. The instrument measures how much electromagnetic energy is emitted in the infrared wavelength range and uses this information to calculate surface temperature. During this process, two additional integrated sensors detect relative humidity and ambient temperature.
The dew point is also calculated.

1



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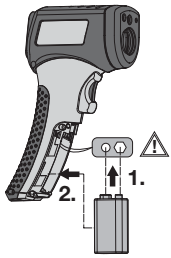

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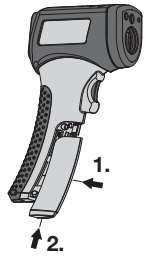
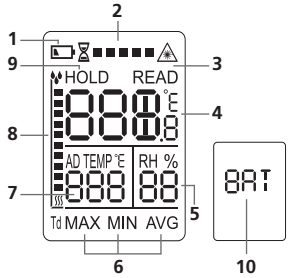
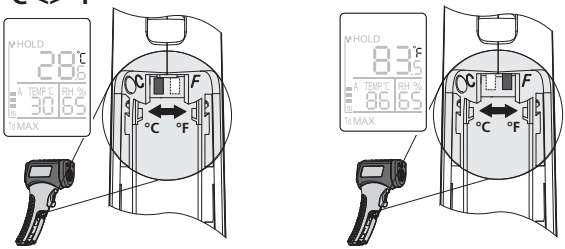




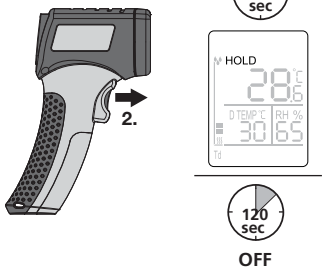
1 low battery charge
2 stability progress bar for relative humidity measurement
3 laser beam switched on, temperature measurement (infrared)
4 measurements in °C or °F
5 relative humidity in %
6 min/max and average measurement values
7 dew point temperature (D Temp) and ambient temperature (A Temp) in °C or °F
8 condense water indicator
9 last measurement value will be displayed briefly (7 s)
10 replace battery

4 °C <> °F

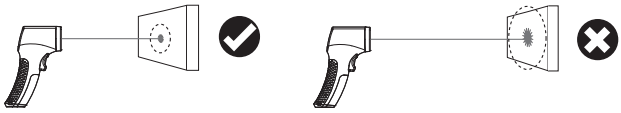


5 Continuous Mode

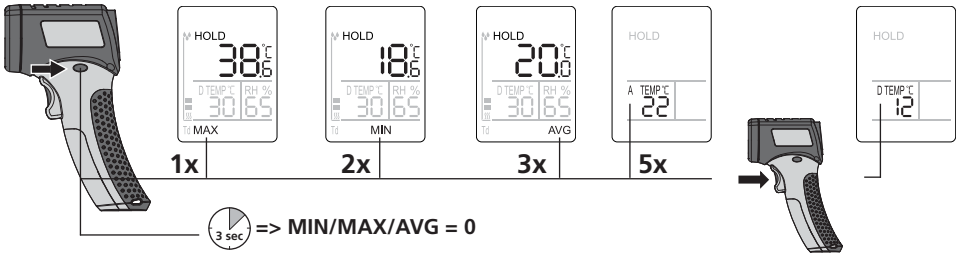
6 Hold / OFF



Laser: The laser is a targeting aid to sight the location for the infrared measurement. Only the surface's temperature is measured.

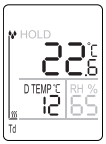


7 Displaying Min/Max/Avg, Ambient temperature, Dew point temperature

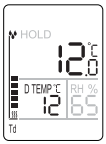


8 Dew point temperature

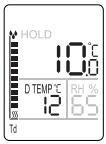
Dew point temperature is the temperature at which current air conditions would produce condensation. The CondenseSpot Pro calculates the dew point temperature from ambient temperature, relative humidity and ambient atmospheric pressure. In combination with the infrared thermometer, thermal bridges are easily detected. If the temperature of the measured location drops below the dew point, condensation (water) will form on the surface.



IR-temperature ≥ 2.5 °C than dew point temperature:
bar graph shows no indication.
No condensation.



IR-temperature equal to dew point temperature: bar graph displays 5 segments.
Condensation begins.

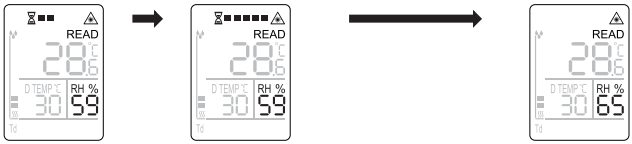


IR-temperature ≤ 2.5 °C than dew point temperature: bar graph displays 10 segments.
Condensation.

9 Relative humidity

Relative humidity is indicated in relation to maximum possible humidity (100 %) at which air forms water vapour. The ability of air to hold water is temperature dependent. Thus humidity is the volume of water vapour in the air. The range for humidity is 0 ... 100%. 100% = saturation point. Under these conditions for temperature and atmospheric pressure, air cannot absorb any more water.

Relative humidity is automatically determined and displayed during the measurement process.



When temperature fluctuations (± 1 °C) and/or changes to relative humidity (± 1%) are rapid, the sensor must adapt itself to the new conditions. An hour-glass with progress bar are displayed during this stabilisation process. During this process, displayed values are only approximations. Only after these symbols have switched off is a stable value presented which represents maximum accuracy.

10 Setting the emission coefficient

A built-in sensor head detects the material/surface-specific infrared rays emitted by every object. The level of these emissions is determined by the material's emission coefficient (0.01 to 0.99). This instrument is preset to an emission coefficient of 0.95, which is applicable to most organic materials as well as plastics, ceramics, wood, rubber and stone. For details of those materials with a different emission coefficient, please refer to the table.

Unknown emission coefficient:
Apply masking tape or black matt paint to the surface of the area whose temperature you wish to measure. Wait until the tape/paint has heated up. The temperature of the surface can then be measured with an emission coefficient of 0.95.

Emission coefficient tables

Nonmetals

Asbestos	0,93
Asphalt	0,95
Basalt	0,70
Coal Non-oxidised	 0,8 - 0,9
Graphite	0,7 - 0,8
Carborundum	0,90
Ceramics	0,95
Earthenware, matt	0,93
Clay	0,95
Concrete, plaster, mortar	0,93
Masonry	0,93
Brick, red	0,93
Lime malm brick	0,95
Fabric	0,95
Glass	0,85 - 0,94
Gravel	0,95

Gypsum	0,8 - 0,95
Ice Clear With heavy frost	 0,97 0,98
Limestone	0,98
Paper All colours	 0,95 - 0,97
Wallpaper, light-coloured	0,88 - 0,90
Plastic Translucent PE, P, PVC	 0,95 0,94
Soil	0,9 - 0,98
Water	0,93
Wood Untreated Beech, planed	 0,8 - 0,95 0,94
China Brilliant white With glaze	 0,7 - 0,75 0,92

Paint Black, matt Heat-resistant White	 0,96 - 0,98 0,92 0,85 - 0,95
Transformer paint	0,94
Rubber Hard Soft, grey	 0,94 - 0,95 0,89
Cotton	0,77
Lime	0,3 - 0,4
Tar	0,79 - 0,84
Tar paper	0,91 - 0,93
Snow	0,80
Human skin	0,98
Quartz glass	0,93
Heat sink Black, anodized	 0,98
Marble Black, dull finish Greyish, polished	 0,94 0,93

Metals

Aluminium	
Oxidised	0,2 - 0,4
Polished	0,04 - 0,06
Alloy A3003	
Oxidised	0,3
Roughened	0,1 - 0,3
Brass	
Polished	0,3
Oxidised	0,5
Copper	
Oxidised	0,4 - 0,8
Elect. terminal strips	0,6
Haynes	
Metal alloy	0,3 - 0,8
Inconel	
Oxidised	0,7 - 0,95
Sandblasted	0,3 - 0,6
Electropolished	0,15

Iron	
Oxidised	0,5 - 0,9
With rust	0,5 - 0,7
With red rust	0,61 - 0,85
Iron, cast	
Oxidised	0,6 - 0,95
Non-oxidised	0,2
Molten mass	0,2 - 0,3
Iron, forged	
Matt	0,9
Lead	
Rough	0,4
Oxidised	0,2 - 0,6
Molybdenum	
Oxidised	0,2 - 0,6
Nickel	
Oxidised	0,2 - 0,6
Platinum	
Black	0,9

Steel	
Cold rolled	0,7 - 0,9
Ground plate	0,4 - 0,6
Polished plate	0,1
Alloy (8% nickel, 18% chromium)	0.35
Galvanised	0.28
Oxidised	0.80
Heavily oxidised	0.88
Freshly rolled	0.24
Rough, flat surface	0.95 - 0.98
Rusty, red	0.69
Sheet, nickel plated	0.11
Sheet, rolled	0.56
Zinc	
Oxidised	0,1

Technical data

Technical revisions reserved. 01.10

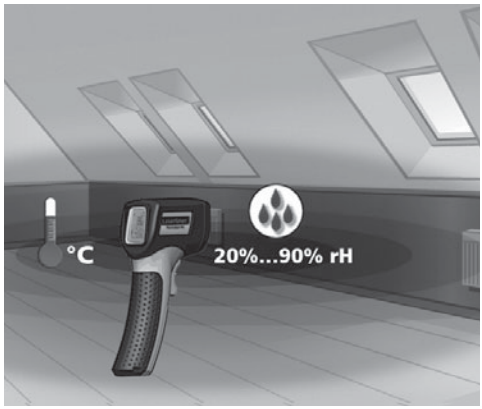
Measured quantities	°C (°F) infrared temperature measurement, %rH relative humidity, °C (°F) ambient temperature measurement
Infrared measurement range	-40 °C … 600 °C (-40 °F … 1112 °F)
Ambient temperature measurement range	-10 °C … 60 °C (32 °F … 140 °F)
Relative humidity measurement range	20 % … 90 % rH
Dew point indicator	-20 °C … 60 °C
Infrared accuracy	± 1 °C (-10 °C … 60 °C); ± 1.5 °C (< 10 °C and > 60 °C) or ± 1.5 % whichever value is greater
Ambient temperature accuracy	± 2 °C
Relative humidity accuracy	± 3%
Infrared resolution	0.1 °C
Relative humidity resolution	1%
Dew point resolution	1 °C
Emission coefficient	Adjustable, 0.10 ... 0.99
Operating temperature	0 °C … 40 °C
Storage temperature	-20 °C … 70 °C
Optics	8:1 (distance : measured spot)
Laser wavelength	650 nm
Laser type	Class 2M, < 5 mW
Power supply	Type 9 V E block battery

General safety instructions. Attention: Do not look directly into the laser beam! The laser may not get into the hands of children! Do not point this device unnecessarily toward persons.

LASER RADIATION!
DO NOT STARE INTO THE BEAM OR OBSERVE IT DIRECTLY WITH OPTICAL INSTRUMENTS.
LASER CLASS 2M
< 5 mW · 635-650 nm
EN 60825-1:2007-10

Warranty

The warranty period is 2 years from the date of purchase. The warranty covers all material or manufacturing defects occurring during this time. The following are excluded from warranty: Damage due to improper use (e.g. operation with wrong type of current/voltage, connection to unsuitable power source, fall onto hard surface, etc.) or improper storage, normal wear and tear, and defects which only insignificantly impair the value or suitability for use. Any tampering by unauthorised persons will render this warranty void. In the event that you need to claim warranty, please take the complete device together with all information and the invoice to one of our dealers or send it in to Umarex-Laserliner.



SERVICE

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