

CONDROL

EN Infrared thermometer
RU Инфракрасный пирометр



Maxwell 4

EN User manual
RU Руководство пользователя

Infrared thermometer Maxwell 4

User manual

Congratulations on your purchase of infrared thermometer Maxwell 4 CONDROL. Safety instructions given in this user manual should be carefully read before you use the product for the first time.

SAFETY REGULATIONS

Attention! This user manual is an essential part of this product. The user manual should be read carefully before you use the product for the first time. If the product is given to someone for temporary use, be sure to enclose user manual to it.

- Do not misuse the product
- Do not remove warning signs and protect them from abrasion, because they contain information about safe operation of the product.



Laser radiation!
Do not stare into beam
Class 2 laser
<1 mW 630-670nm
EN60825-1: 2007-03

- Do not look into the laser beam or its reflection, with unprotected eye or through an optical instrument. Do not point the laser beam at people or animals without the need. You can dazzle them.
- To protect your eyes close them or look aside.
- Do not let unauthorized people enter the zone of product operation.
- Store the product beyond reach of children and unauthorized people.
- It is prohibited to disassemble or repair the product yourself. Entrust product repair to qualified personnel and use original spare parts only.
- Do not use the product in explosive environment, close to flammable materials.
- Avoid heating the batteries to avoid the risk of explosion and electrolyte leakage. In case of liquid contact with skin, wash it immediately with soap and water. In case of contact with eyes, flush with clean water during 10 minutes and consult the doctor.

FUNCTIONS/APPLICATIONS

Infrared thermometer Maxwell 4 CONDROL is designed to measure object's surface temperature by non-contact method. It is equipped with temperature and humidity sensors as well as an infrared sensor for object surface temperature measurement, which can detect the «cold bridges» and places where mildew can form. One touch on the trigger allows to identify poorly insulated areas in windows or to detect leaking areas in external walls.

PACKAGE

Infrared thermometer Maxwell 4 – 1 pc.
Power supply (1.5V AAA) - 2 pcs.
User manual - 1 pc.

TECHNICAL SPECIFICATIONS

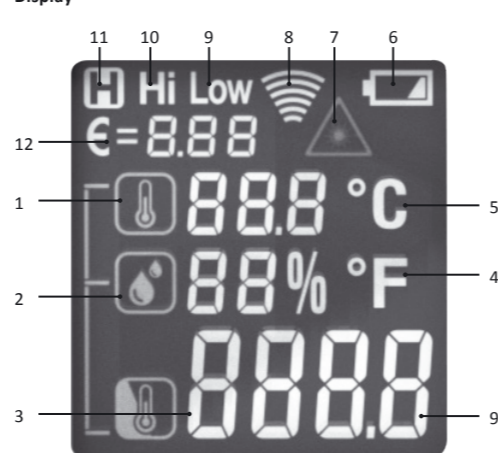
Measuring range of object temperature	-30 °C...550 °C -22 °F...1022 °F	
Accuracy of surface temperature measurement	-30 °C...0 °C / -22 °F...32 °F	±3 °C
	0 °C...550 °C / 32 °F...1022 °F	±(1,5% + 2 °C)
Measuring range of ambient temperature	-10 °C...60 °C (14 °F...140 °F)	
Accuracy of ambient temperature measurement	-10 °C...0 °C (14 °F...32 °F)	±1.5 °C/3 °F
	0 °C...40 °C (32 °F...113 °F)	±1.0 °C/2 °F
	40 °C...60 °C (113 °F...140 °F)	±1.5 °C/3 °F
Measuring range of relative humidity	0% ...100% RH	
Accuracy of relative humidity measurement	0%...20%: ±5.0% RH	
	20%...80%: ±4.0% RH 80%...100%: ±5.0% RH	
Optical resolution	12:1	
Response time	<0.5 sec	
Automatic shutdown	30 sec	
Spectral sensitivity	8...14 μm	
Emissivity	0.1...1.0 adjustable	
Working temperature	0°C ...40°C	
Storage temperature	-10°C...60°C	
Relative humidity	10...95% for operation < 80% for storage	
Power supply	2 x 1.5V AAA alkaline	
Laser	Class II, 630-670 nm, <1 mW	
Dimensions	148 x 102 x 46 mm	
Weight	130 g	

PRODUCT DESCRIPTION



- 1 - LED indicator
- 2 - Display
- 3 - Button for activation/deactivation of the laser point/adjustment of emissivity (decrease value)
- 4 - Button for parameter setting
- 5 - Button for switching on/off LCD backlight/adjustment of emissivity (increase value)
- 6 - Laser exit window
- 7 - Infrared sensor
- 8 - Trigger
- 9 - Battery cover

Display

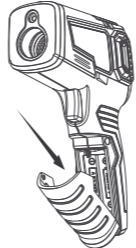


- 1 - Ambient temperature value
- 2 - Relative humidity value
- 3 - Surface temperature value
- 4 - Measuring unit – Fahrenheit
- 5 - Measuring unit – degrees Celsius
- 6 - Battery charge level
- 7 - Indication of activated laser point
- 8 - Indication of active measurement
- 9 - Indication of temperature beyond the set limit (temperature is below the limit)
- 10 - Indication of temperature beyond the set limit (temperature is above the limit)
- 11 - Indication of data hold on the display
- 12 - Emissivity value

OPERATION

Install/replace the batteries

Open the battery cover. Install the batteries observing correct polarity. Put the battery cover back and push it until a click is heard. If the symbol of low battery change level appears on the display, replace the batteries by new ones.



Switch on/off

Short press the trigger to switch the device on. The device is ready to work. The device switches off automatically in 30 seconds after the last press on any button.

1) Laser point

Short press the button , to activate the laser point*. Symbol will appear on the display. Short press the button to switch off the laser point. Symbol will disappear from the display. Laser point is only used for aiming and can be switched off when working at short distance to save the battery power.

*Laser point is on as long as the trigger is pressed.

2) Display backlight

Short press the button to switch on/off the display backlight.

3) Indication of temperature beyond the set limit

High temperature alarm limit

Press and hold the button **MODE** during 2 seconds to enter parameter setting mode. Symbol **Hi** will appear on the display. Short press the buttons and to adjust the high temperature alarm limit. To exit the parameter setting mode short press the trigger or press and hold the button **MODE** during 3 seconds.

Low temperature alarm limit

Press and hold the button **MODE** during 2 seconds to enter parameter setting mode. Short press the button **MODE** to select the setting of low temperature alarm limit (Low). Symbol **Low** will appear on the display. Short press the buttons and to adjust the low temperature alarm limit. To exit the parameter setting mode short press the trigger or press and hold the button **MODE** during 3 seconds.

4) Emissivity

All objects emit thermal energy. The volume of radiated energy depends on the surface temperature and emissivity of the object. The IR-thermometer measures the intensity of radiation and uses it to calculate the temperature of the object. Objects with different surfaces but equal temperature emit different amount of thermal energy. Most of the objects and materials, for example, painted metals, wood, water, leather, fabric have a high emissivity (0.9 and more) and emit more energy than shiny surfaces and unpainted metals with emissivity less than 0.6. Adjustment of emissivity allows the device to take it into account and to minimize the measurement error.

Table 1. Emissivity of materials

Material		Emissivity
Aluminum	Oxidized	0.2~0.4
	Oxidized allow	0.3
	Rough alloy	0.1~0.3
Brass	Polished	0.3
	Oxidized	0.5
Copper	Oxidized	0.4~0.8
	Electronic terminal board	0.6
Hastelloy		0.3~0.8
Chromium-nickel-iron alloy	Oxidized	0.7~0.95
	Sandblast	0.3~0.6
	Electro polished	0.15
Iron	Oxidized	0.5~0.9
	Rusted	0.5~0.7
Iron (cast)	Oxidized	0.6~0.95
	Unoxidized	0.2
	Melt and cast	0.2~0.3
Iron forged passivated		0.9
Lead	Rough	0.4
	Oxidized	0.2~0.6
Molybdenum oxidized		0.2~0.6
Nickel oxidized		0.2~0.5
Platinum black		0.9
Steel	Cold rolled	0.7~0.9
	Sanding plate	0.4~0.6
	Polished plate	0.1
Zinc	Oxidized	0.1
Asbestos		0.95
Asphalt		0.95
Basalt stone		0.7
Carbon		0.8~0.9
Graphite		0.9
Silicon carbide		0.95
Clay		0.95
Concrete		0.95
Fabric		0.95
Glass plate		0.85
Sand gravel		0.95
Gypsum		0.8~0.95
Ice		0.98
Limestone		0.98
Paper		0.95
Plastic		0.95
Soil		0.9~0.98
Water		0.93
Wood (natural)		0.9~0.95

Press and hold the button **MODE** during 2 seconds to enter parameter setting mode. Press the button **MODE** 2 times. Symbol **€=0.88** will appear on the display. Short press the buttons and to adjust the emissivity value. To exit the parameter setting mode short press the trigger or press and hold the button **MODE** during 3 seconds.

5) Measuring unit

Press and hold the button **MODE** during 2 seconds to enter parameter setting mode. Short press the button **MODE** 3 times. Symbol **°C** will appear on the display. Short press the buttons and to select the measuring unit (°C – degrees Celsius / °F – Fahrenheit degree). To exit the parameter setting mode short press the trigger or press and hold the button **MODE** during 3 seconds.

Measurements

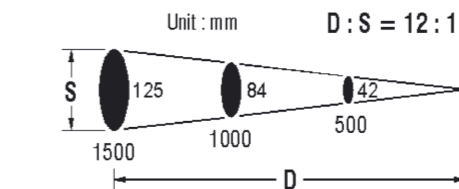
Switch on the device. Aim the device at the object of measurement and press the trigger. Keep the trigger pressed to enter continuous measurement. Symbol of active measurement will appear on the display. Measurement results will appear on the display in real time mode. If measurement result is beyond the set limit, LED indicator turns red, the symbol **Hi** or **Low** appears on the display. When the trigger is released, the device keeps the last measured values on the display. The symbol appears on the display.

OPTICAL RESOLUTION

As the distance from the device to the object increases, the size of the measured spot on object surface increases as well. To determine the size of the spot (S) you need to divide the distance from the device to the target (D) by 12. Laser points serve as the reference to determine the size and position of measured spot.

125 84 42 - spot (S)

1500 1000 500 - distance (D)



CARE AND MAINTENANCE

Attention! The product is an accurate optical mechanic device and requires careful handling. Maintenance of the following recommendations will extend the life of the device:

- Keep the product clean and protected from any bumps, dust and dampness; do not allow getting moisture, dust or other dirt inside of the product.
- Do not expose the product to extreme temperatures.
- If liquids get inside the product first remove the batteries, then contact a service center
- Do not store or use the product under high humidity conditions for a long time.
- Clean the product with soft wet cloth.
- Keep the device optics clean and protect it from mechanical impact.

Failure to observe the following rules may result in leakage of electrolyte from the batteries and damage the device:

- Remove the batteries from the product if you do not use it for a long time.
- Do not leave discharged batteries in the device.

UTILIZATION

Expired tools, accessories and package should be passed for waste recycle. Please send the product to the following address for proper recycle:

CONDROL GmbH
Wasserburger Strasse 9
84427 Sankt Wolfgang
Germany



Do not throw the product in municipal waste!
According to European directive 2002/96/EC expired measuring tools and their components must be collected separately and submitted to environmentally friendly recycle of wastes.

