

CONDROL

EN Infrared thermometer
RU Инфракрасный пирометр



Maxwell 3

EN User manual 1
RU Руководство пользователя 2

FUNCTIONS/APPLICATIONS

Infrared thermometer Maxwell 3 CONDROL is designed for non-contact measurement of object surface temperature. Ergonomic, shock-resistant housing, small size and weight, intuitive interface, laser pointer, scanning mode provide ease and convenience of temperature measurement of dangerous, moving, hard-to-reach distant objects in less than one second at short press of the trigger. The principle of operation of infrared thermometer is based on measuring the intensity of infrared radiation of the object surface.

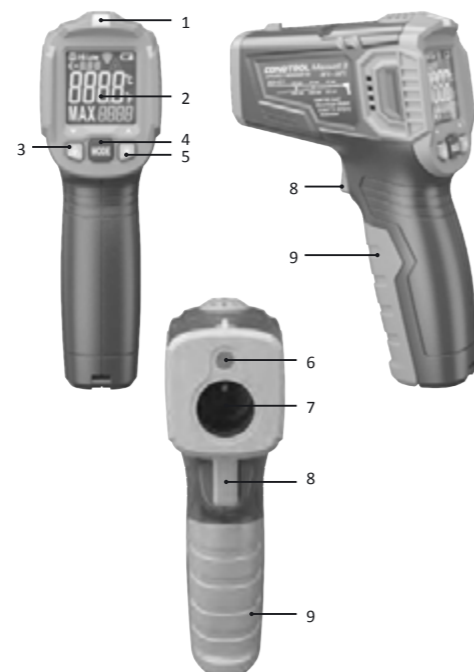
PACKAGE

Infrared thermometer Maxwell 3 – 1pc.
Power supply (1.5V AAA) - 2 pcs.
User manual - 1 pc.

TECHNICAL SPECIFICATIONS

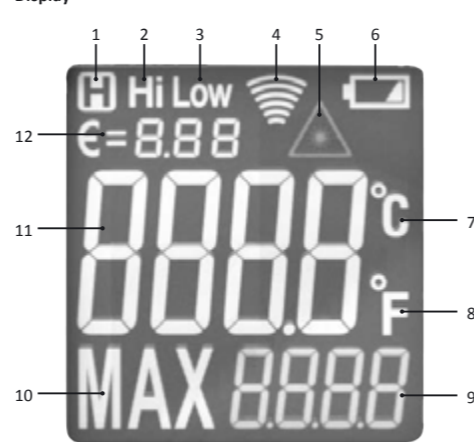
| | | |
|---|---|-------------------------|
| Measuring range of object temperature | -30 °C ... 380 °C -22 °F ... 716 °F | |
| Accuracy of surface temperature measurement | -30 °C...0 °C / -22 °F...32 °F | ±3 °C ±(1,5% + 2 °C) |
| Optical resolution | 12:1 | |
| Response time | <0.5 sec | |
| Automatic 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



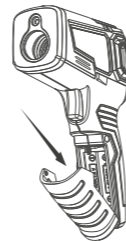
- 1 - Indication of data hold on the display
- 2 - Indication of temperature beyond the set limit (temperature is above the limit)
- 3 - Indication of temperature beyond the set limit (temperature is below the limit)
- 4 - Indication of active measurement
- 5 - Indication of activated laser point
- 6 - Battery charge level
- 7 - Measuring unit – degrees Celsius
- 8 - Measuring unit – Fahrenheit
- 9 - Maximum measurement value
- 10 - Indicator of maximum measurement value
- 11 - Surface temperature value
- 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 alloy | 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 **ε=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.

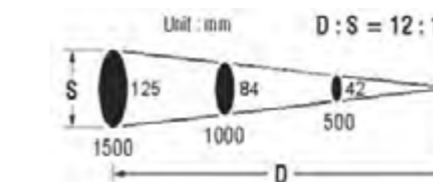
If measurement result is beyond the set limit, LED indicator turns red, the symbol **Hi** or **Low** appears on the display. When the trigger is released, the device keeps the last measured values on the display. The symbol appears on the display.

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.

WARRANTY

All CONDROL GmbH products go through post-production control and are governed by the following warranty terms. The buyer's right to claim about defects and general provisions of the current legislation do not expire.

1) CONDROL GmbH agrees to eliminate all defects in the product, discovered while warranty period, that represent the defect in material or workmanship in full volume and at its own expense.

2) The warranty period is 24 months and starts from the date of purchase by the end customer (see the original supporting document).

3) The warranty doesn't cover defects resulting from wear and tear or improper use, malfunction of the product caused by failure to observe the instructions of this user manual, untimely maintenance and service and insufficient care, the use of non-original accessories and spare parts. Modifications in design of the product relieve the seller from responsibility for warranty works. The warranty does not cover cosmetic damage, that doesn't hinder normal operation of the product.

4) CONDROL GmbH reserves the right to decide on replacement or repair of the device.

5) Other claims not mentioned above, are not covered by the warranty.

6) After holding warranty works by CONDROL GmbH warranty period is not renewed or extended.

7) CONDROL GmbH is not liable for loss of profit or inconvenience associated with a defect of the device, rental cost of alternative equipment for the period of repair.

This warranty applies to German law except provision of the United Nations Convention on contracts for the international sale of goods (CISG).

In warranty case please return the product to retail seller or send it with description of defect to the following address:

CONDROL GmbH
Wasserburger Strasse 9
84427 Sankt Wolfgang
Germany

