

ARCTIC
HAYES

INFRARED DIGITAL THERMOMETER

NON CONTACT
User Manual



AH650



Before using the instrument, please read this manual carefully, and save for future reference.

Please read the user manual before operating the instrument. Protection is based on exposure being limited by the natural aversion response (0.25secs)

Safety Symbols



Important notices against hazards.



Compliant with EU legal requirements.

Warning!

laser must be prevented from aligning itself towards human eyes or reflective surfaces.

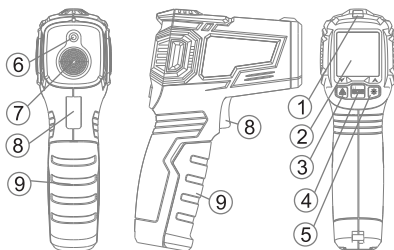


Laser Radiation, Do Not stare Into Beam, Class 2 Laser Product

Laser Radiation

- Do not stare into beam.
Class 2 laser product. Turn the laser beam on only when using this tool.
- 1. **Do not** remove or deface the product labels.
- 2. Avoid direct eye exposure. The laser beam can cause flash blindness.
- 3. **Do not** operate the tool around children or allow children to operate the tool.
- 4. **Do not** place the tool in a position that may cause anyone to stare at the laser beam, whether intentionally or unintentionally.
- 5. **Do not** use on surfaces such as sheet steel that have shiny, reflective surfaces. The shiny surface could reflect the beam back at the operator.
- 6. Always turn the laser tool off when not in use.
Leaving the tool on increases the risk of someone inadvertently staring into the laser beam.
- 7. **Do not** attempt to modify the performance of this laser device in any way. This may result in a dangerous exposure to the laser radiation.
- 8. **Do not** attempt to repair or disassemble the laser measuring tool. If an unqualified person attempts to repair this product, serious injury may occur. Any repair required on this laser product should be performed only by qualified service personnel.

Physical Appearance



1. Alarm indicator
2. LCD display
3. Laser key / digital adjusting control key decreases
4. Mode key
5. Backlight key / digital regulation increase key
6. Laser
7. Infrared sensor induction zone
8. Measure trigger switch
9. Battery cover

Height - 148mm

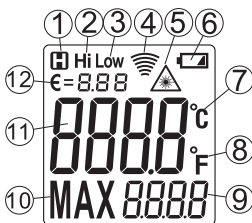
Width - 102mm

Length - 46mm

Weight - 113g

(without batteries)

LCD Screen



1. Data hold indicator
2. Temperature upper limit alarm indicator
3. Temperature lower limit alarm indicator
4. Measuring indicator
5. Laser on indicator
6. Low battery indicator
7. Centigrade unit
8. Fahrenheit degree unit
9. Maximum display
10. Maximum indicator
11. Temperature display
12. Radiance display

LCD	Colour LCD
Distance to Spot	12:1
Emissivity	0.10~1.00
Response Spectrum	8~14um
Laser Output	<1mW~Class 2
Wavelength	$\lambda=630-670\text{nm}$
Beam Divergence	1mrad
Response Time	<0.5S
Automatic Shut-down	30 Seconds
Operational Temperature	0 ~ 40°C
Storage Temperature	-10°C~60°C
Power	2 x 1.5V AAA Battery (included)
Infrared Temperature Measuring Range (non-contact)	-30°C~380°C (-22°F~716°F)
Infrared Accuracy Range	-30°C~0°C (-22°F~32°F): $\pm 3^{\circ}\text{C}$ 0°C~380°C (-32°F~716°F): $\pm 1.5^{\circ}\text{C}$

Maintenance Information

- Use a dry, clean cloth to clean the instrument.
- Do not use solvents.
- For extra protection, always store the instrument in the case provided when not in use.
- If there is a sudden change in the environmental temperature, the instrument should be acclimatised for a minimum of 30 minutes. This will ensure the ambient temperature is the same, both inside and outside of the thermometer.
- The electromagnetic field from electric welding and inductive heating must be minimized.
- **Do not** place the thermometer near to hot objects.
- The meter must be kept clean so that dust is denied access to the lens cone.

Measurement Operation

Setting the high alarm.

- Pull trigger and press mode key once for two seconds, then release trigger. This will show HI. Use the left and right buttons ▲ / ▼ to set the required alarm level.
- Once high values are set, press the mode button one more time & this will show LOW. Use the left & right buttons ▲ / ▼ to set the required low alarm level.
- When alarm levels are reached RED LED light will illuminate.

Setting the emissivity

- To set the emissivity, pull the trigger and press mode for two seconds. scroll through by pressing mode until the display shows E.
The emissivity can now be set (see values on page 12/13).
Use the left & right buttons ▲ / ▼ to set the required emissivity level.

Setting the Celsius & Fahrenheit

- To set the temperature unit, pull the trigger and press mode for two seconds. scroll through by pressing mode until the display shows °C.

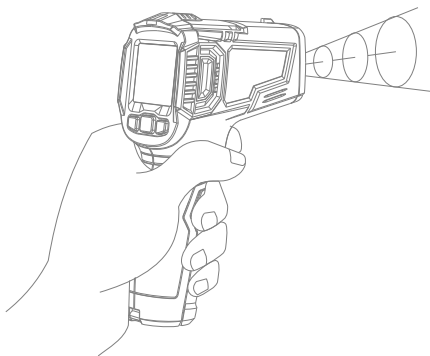
Use the left & right buttons ▲ / ▼ to set the required temperature unit required °C/ °F .

Enabling the Laser

- Enable / disable laser. Press  key to enable or disable laser. The instrument will display the symbol for laser 

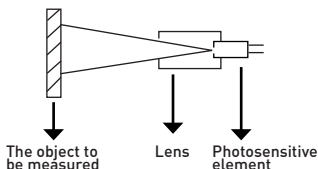
Non-contact temperature measurement

- Target the IR thermometer at an object and pull the trigger. Hold the trigger to take continuous measurement of temperature.



Proportion between the distance from the instrument to an object and the diameter of the object to be measured (D:S)

The IR Thermometer has a certain angle and field of vision, as shown in the diagram below:

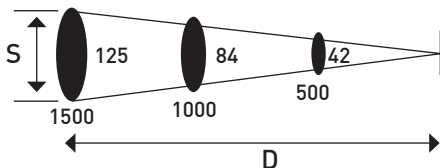


It must be ensured that the object to be measured is fully within the field of vision afforded by the IR Thermometer, that is, the laser ring can see nothing but the object to be measured. The greater the object to be measured, the further the distance between the object & thermometer must be. The smaller the object is, the shorter the distance between the object & thermometer must be. The proportion between the distance to be measured and the size of the object to be measured (D:S) is 12:1, as shown on page 10.

Distance To Spot Ratio (D:S)

Unit: mm

D:S = 12:1



While measuring an object, the instrument will emit an indicative ring. The measured temperature of the surface is the internal temperature of the ring.

Emissivity

Emissivity refers to the ability of an object to emit infrared ray. The greater the emissivity is, the stronger the emission ability of the surface of an object is.

The emissivity of most organic substances or oxidized surfaces of metals falls within the range of 0.85 ~ 0.98. The default emissivity of this measurement device is 0.95.

The instrument's emissivity is set to be consistent with that of the object to be measured at the moment of measurement result must be noticed at the time of measurement.

Emissivity Reference Table

Surface measured		Emissivity
Aluminium Metal	Oxidized	0.2 ~ 0.4
	A3003 Alloy Oxidized	0.3
	A3003 Alloy Rough	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

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

Emissivity Reference Table

Iron (cast)	Oxidized No Oxidized Melt & Cast	0.6 ~ 0.95 0.2 0.2 ~ 0.3
Iron (forged) passivated		0.9
Lead	Rough Oxidized	0.4 0.2 ~ 0.6
Mo Oxidized		0.2 ~ 0.6
Nickel Oxidized		0.2 ~ 0.5
Platinum Black		0.9
Steel	Cold Rolled Sanding Plate Polished Plate	0.7 ~ 0.9 0.4 ~ 0.6 0.1
Zinc	Oxidized	0.1
Asbestos		0.95
Asphalt		0.95
Basalt Stone		0.7
Carbon		0.8 ~ 0.9
Non-Oxidized		0.7 ~ 0.8
Graphite		0.9
Silicone Carbide		0.95
Clay		0.95
Concrete		0.95
Fabric		0.95
Glass Plate		0.85

Battery

When the battery power is low, the battery symbol indicator will show on the LCD screen. At such moment you must replace the existing battery.

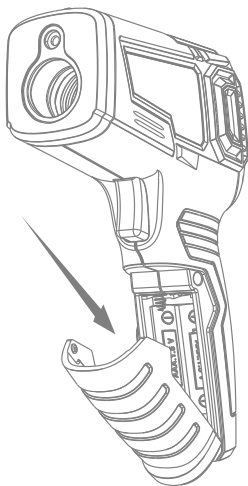
Open the battery cover and replace the old battery with two new AAA batteries.

Refer to the diagram below:

Note:

All set values for alarm & Emissivity will return to the default readings.

- 2 x AAA battery (included)



Limited warranty

1 year warranty against any manufacturing defects or faulty workmanship. This warranty does not cover fuses, disposable batteries or damage from accident, neglect, misuse, alteration, contamination or abnormal conditions of operation or handling.

 **WEEE Directive 2012/19/EU At the end of the product life, dispose of the instrument & batteries in a corresponding recycling centre. Do not dispose of the unit with the usual domestic refuse. Do not burn the product.**



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