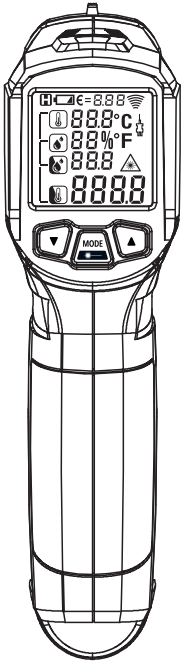
USER MANUAL

TM8120 INFRARED THERMOMETER



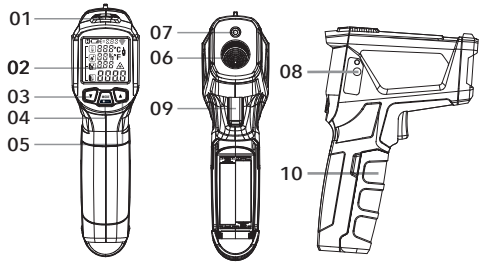
EN ENGLISH

Manual in your language?

Check the back cover

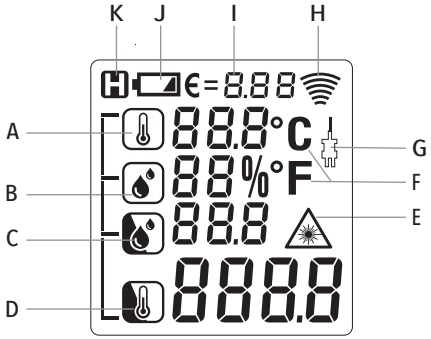
FUTECH MAKE IT EASY

OVERVIEW



■ DEVICE

01 Alarm indicator
02 LCD screen
03 Down button
04 Laser control button / Mode button
05 Up button
06 Infrared sensor
07 Laser light
08 K-type thermocouple socket
09 Trigger
10 Battery cover



■ DISPLAY

A Environmental temperature
B Environmental humidity
C Dew temperature
D Surface temperature
E Laser symbol "On"
F Temperature unit
G K-Type thermocouple
H Measurement indicator
I Emissivity
J Low battery indicator
K Data hold

SAFETY

Please read the safety instructions provided as separate booklet with the device.

While the product is in operation, be careful not to expose your eyes to the emitting laser beam.

Class 2 laser radiation, do not stare into beam!

CAUTION

- When the environmental temperature changes suddenly, it is required to place the thermometer in the environment for 30 minutes. You can measure when internal and external temperatures of the thermometer are equally.
- Avoid any electromagnetic fields (EFM) caused by electric welding and induction heating.
- Do not place or leave the thermometer close to or on a high temperature object.
- Keep the thermometer clean and avoid dust from entering the unit.

BATTERY

This Infrared thermometer is powered by AAA batteries, which will need to be replaced when the batteries are running low.

When the low battery indicator [J] appears on the LCD screen [02] promptly replace the batteries.

Carfully open the battery cover [10] and insert (2) AAA batteries

FIRST TIME USAGE

Remove all protection foils.

MEASUREMENT METHODS

USE

Remove all protection foils.

- To activate the device pull the trigger [09] for 2 seconds

MILDEW ALARM

The dew temperature [C] is the temperature below which water droplets begin to condense into droplets, mist or dew. Condensation water occurs when the temperature of and inside wall of window is lower than the dew point temperature of the room. These areas become damp and are a breeding ground for mildew / mould and can cause possible material damage.

The mildew alarm mode is a useful feature of this laser. By assessing the surface temperature [D], environmental temperature [A], environmental humidity [B] and dew temperature [C], this non contact intrared thermometer helps you avoid unwanted air pollutants. The thermometer compares the surface temperature [D] to the ambient conditions and dew temperature [C] to warn of potential moisture and mildew issues.

- Pull the trigger [09] 2 seconds to activate the LCD screen [02].

The LCD screen [02] displays the current environmental temperature [A], environmental humidity [B], dew temperature [C] and surface temperature [D].

The alarm indicator [01] will indicate the probability of condensation moisture occuring. When there is no risk of condensation the alarm indicator [01] will turn green.

When there is a risk of condensation the alarm idicator [01] will turn red .

When the measured object has the tendency to condense the alarm indicator [01] will turn yellow.

■ TEMPERATURE DIFFERENCE ALARM MODE

- Press the mode button [04] once to switch to the temperature difference alarm mode.
- Pull the trigger [09].

The LCD screen [02] displays the current environment temperature [A] and surface measurement temperature [D]. The meter judges according to the temperature difference between the surface temperature [D] of the measured object and the current environment temperature [A]:

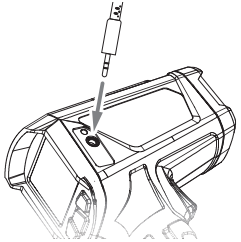
When the difference between surface temperature [D] and the environment temperature [A] is less than 5°C / 41°F, the alarm indicator [01] turns green.

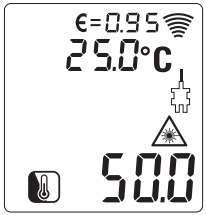
When it is more than 5°C / 41°F, the alarm indicator [01] turns red. If undecided,the alarm indicator [01] turns yellow.

■ TEMPERATURE MEASUREMENT OF K-TYPE THERMOCOUPLE

- Press the mode button [04] twice to set the K-type thermocouple [G] temperature measurement mode.
- Insert the K-type thermocouple probe into the thermocouple socket [08] of the thermometer
- Pull the trigger [09].

The thermometer displays both the K-type temperature [G] and the surface temperature [D].





■ EMISSIVITY

The emissivity value characterizes the ability of an object to radiate infrared rays.

A larger emissivity value corresponds to a stronger emission ability of the object surface.

Emissivity of the majority of organic materials or metallic oxidized surfaces ranges between 0.85 and 0.98.

The thermometer assumes a emissivity of the measured surface of 0.95 by default.

During measurement, set the emissivity of the instrument equal to the emissivity of the measured object.

During measurement, please pay attention to the impact of

emissivity on measurement results.

- Press the mode button [04] three times to set the emissivity setting mode

The emissivity indication [I] area will flash.

- Press the up [05] / down button [03] to raise or lower the emissivity value.
- Hold the up [05] / down button [03] for a long time to quickly raise or lower the set value.

NOTE
You can find a short list with emissivity values further in this manual.

■ TEMPERATURE UNIT

- Press the mode button [04] four times
- Choose between °C and °F using the up [05] / down button [03]

■ TURNING THE LASER ON AND OFF

- Hold the mode button [04] for 2 seconds to turn the laser On / Off.

The screen will display the laser symbol [E] when On.

■ NON-CONTACT TEMPERATURE

- Aim the thermometer at the object and hold the trigger [09] to measure temperature continuously.
- Release the trigger [09]

The measurement result will remain.

When holding the trigger [09], the instrument will display the maximum value of the measured temperature.

When the measured value is higher than the upper measurement limit, or less that the lower measurement limit, the red alarm indicator will turn on (3.1).

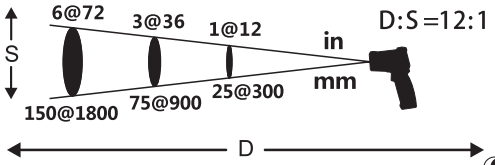
TARGET DISTANCE (D:S RATIO)

As the distance (D) from the target surface being measured increases, the spot size (S) of the area being measured becomes larger.

■ FIELD OF VIEW

The device's field of view is 12:1 (Ex. If the thermometer is 12 mm from the surface (spot), the diameter of the target must be greater than 1 mm).

When accuracy is critical, make sure the target is at least twice as large as the spot size. The smaller the target, the closer the thermometer should be to it when being measured. In general, measurements should be made as close to the target as possible.



EMISSIVITY TABLE

ADHESIVE TAPE	0.96
ALUMINIUM PLATE	0.09
ALUMINUM, A3003 ALLOY (OXIDIZED)	0.3
ALUMINUM, A3003 ALLOY (ROUGHENED)	0.1 - 0.3
ALUMINUM, BLACK	0.95
ALUMINUM, OXIDIZED	0.2 - 0.4
ASBESTOS	0.95
ASPHALT	0.90 - 0.98
ASPHALT, PAVEMENT	0.93
ASPHALT, TAR PAPER	0.93
BASALT	0.7
BRASS, OXIDIZED	0.5
BRASS, POLISHED	0.3
BRICK	0.93 - 0.96
BRICK	0.75
CARAMICS	0.95
CARBON	0.8 - 0.9
CAST IRON	0.81
CEMENT	0.96
CERAMIC	0.90 - 0.94
CHARCOAL (POWDER)	0.96
CHROMIUM OXIDES	0.81
CLAY	0.95
CLOTH	0.95
CLOTH (BLACK)	0.98
CONCRETE	0.94 - 0.97
COPPER OXIDES	0.78
COPPER PLATE	0.06
COPPER, ELECTRICAL TERMINAL BLOCKS	0.6
COPPER, OXIDIZED	0.4 - 0.8
FERRO-NICKEL, ABRASIVE BLASTING	0.3 - 0.6
FERRO-NICKEL, ELECTRO POLISHING	0.15
FERRO-NICKEL, OXIDIZED	0.7 - 0.95
GLASS	0.85 - 0.95
GLASS, FIBER GLASS	0.75
GRAPHITE, UNOXIDIZED	0.7 - 0.8
GRAVEL	0.95
GYPSUM	0.75
HASTELLOY	0.3 - 0.8
SKIN, HUMAN	0.98
ICE	0.95 - 0.99
IRON OXIDES	0.78 - 0.82
IRON, CAST MOLTEN	0.2 - 0.3
IRON, CAST OXIDIZED	0.6 - 0.95
IRON, CAST PASSIVATED	0.9
IRON, CAST UNOXIDIZED	0.2
IRON, OXIDIZED	0.5 - 0.9
IRON, RUST	0.5 - 0.7
LACQUER	0.80 - 0.95
LACQUER (MATT)	0.97
LEAD, OXIDIZED	0.2 - 0.6
LEAD, ROUGHENED	0.4
LEATHER	0.75 - 0.80
LIMESTONE	0.98
MARBLE	0.94
MOLYBDENUM, OXIDIZED	0.2 - 0.6
MORTAR	0.89 - 0.91
NICKEL, OXIDIZED	0.2 - 0.5
PAINT	0.9
PAPER	0.70 - 0.99
PAPER, WHITE	0.68
PAPER, BLACK	0.90
PLASTER	0.8 - 0.95
PLASTICS	0.85 - 0.95
PLATINUM, BLACK	0.9
POLYCARBONATE	0.8
PVC PLASTIC	0.93
RUBBER	0.85 - 0.97
RUST	0.8
SAND	0.9
SILICON CARBIDE	0.9
SNOW	0.83
SOIL/EARTH	0.90 - 0.98
STAINLESS STEEL	0.14
STEEL, COLD-ROLLED	0.7 - 0.9
STEEL, GROUND SHEET	0.4 - 0.6
STEEL, POLISHED SHEET	0.1
TEXTILES	0.70 - 0.95
TIMBER	0.9 - 0.95
WATER, SEAWATER	0.90 - 0.98
WATER	0.67
WOOD	0.85
ZINC, OXIDIZED	0.1
ZINC, GALVANIZED	0.2 - 0.3

TECHNICAL SPECIFICATIONS

MODEL		TM8120
LCD screen		Color LCD dispay
D:S		12:1
Emissivity		0.10 ~1.00
Response spectrum		8 -14 µm
Laser type		Class 2 / <1mW 630 - 670 nm
Response time		<0.5seconds
Automatic power Off		30 seconds
Service temperature		0°C ~ 40°C (−58°F ~ 104°F) −10°C ~ 60°C (14°F ~ 140°F)
Power supply		2x AAA 1.5V batteries
Measurement temperature	Range	−50°C ~ 800°C (−58°F = 1472°F)
	Precision	−50°C ~ 0°C (−58°F ~ 32°F): ± 3°C 0°C ~ 800°C (32°F ~ 1472°F): ±(1.5% ~ reading + 2°C / 4°F)
Ambient Temperature	Range	−10°C ~ 60°C (1°F ~ 122°F)
	Precision	−10°C ~ 0°C: ±1.5°C (14° ~ 32°F: ±3°F) 0°C ~ 45°C: ±1°C (32°F ~ 113°F: ±2°F) 45°C ~ 50°C:±1.5°C (113°F ~ 140°F: ±3°F)
Ambient Humdity	Range	0% ~ 99% RH
	Precision	±4% RH (20% ~ 80%) ±5% RH (0% ~ 20%, 80% ~ 99%)

CE

DECLARATION OF CONFORMITY

Futech (Belgium) declares under its own responsibility that this device:
- TM8120 INFRARED THERMOMETER

is in conformity with the standards
- EN 61326-1: 2021
- EN 61326-2-2: 2021
- EN 61000-3-2: 2019+A1:2021
- EN 61000-3-3: 2013+A1:2019+A2:2021

Under Electromagnetic Compatibility (EMC) Directive 2014/30/EU

Lier, Belgium,
March 17, 2023
Patrick Waûters

USER MANUAL
other languages:

DA DANSK

DE DEUTSCH

ES ESPAÑOL

ET EESTI KEEL

FI SUOMEN KIELI

FR FRANÇAIS

IS ÍSLENSKA

IT ITALIANO

NL NEDERLANDS

NO NORSK

PT PORTUGUÊS

SL SLOVENŠČINA

SV SVENSKA

FUTECH MAKE IT EASY

Facebook
@futechtools

LinkedIn
futechtools

World Wide Web
futech-easy.com

YouTube
@futechtools

231109170055