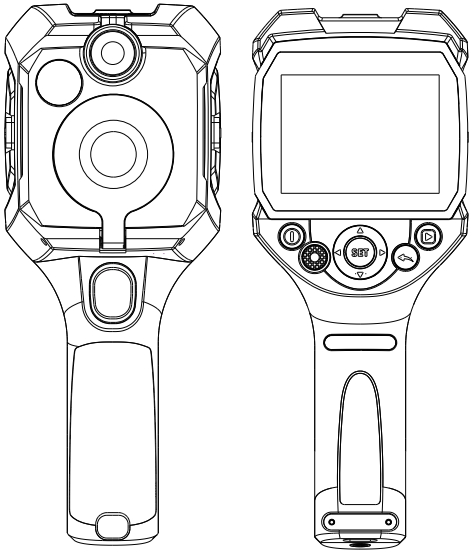
USER MANUAL

322.315 TEMPVIEWER 10800D



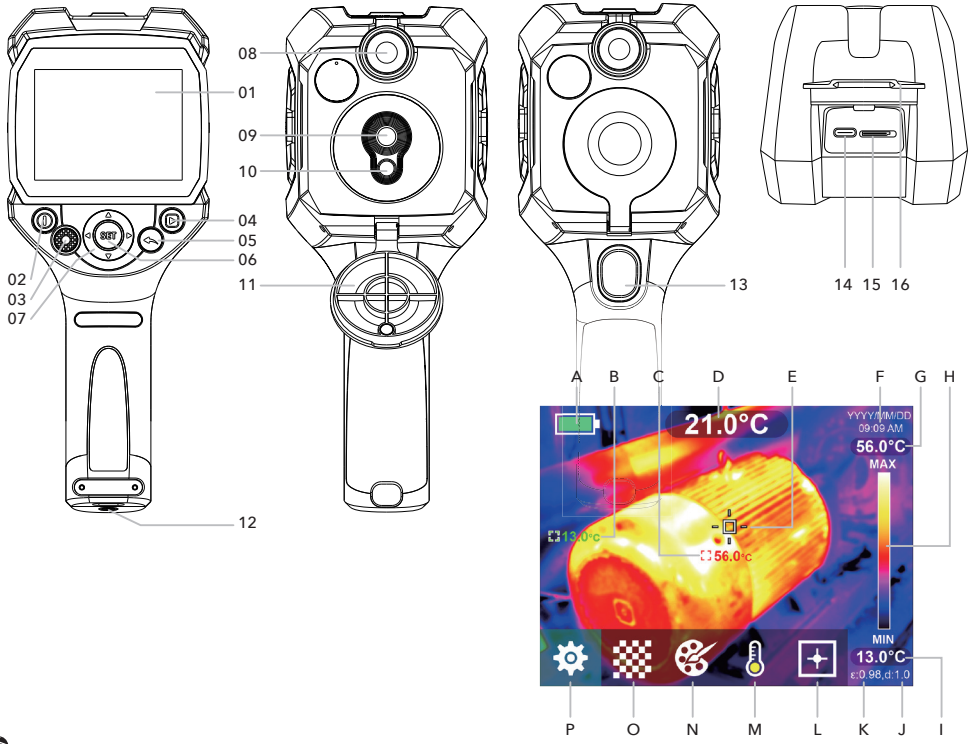
EN ENGLISH

Manual in your language?

Check the back cover

FUTECH
futech-tools.com

OVERVIEW


08
01
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14 15 16
A B C D E F G H
21.0°C
YYYY/MM/DD
09:08 AM
56.0°C
MAX
MIN
13.0°C
ε:0.98,d:1.0
13.0°C
56.0°C
P O N M L K J I

■ HOUSING

01 3.5 inch screen
02 ON/OFF button
03 LED light button
04 Picture memory
05 Return
06 Set button
07 Up/Down/Left/Right button
08 LED flashlight
09 Infrared camera
10 Visible light camera
11 Camera cover
12 1/4" tripod screw
13 Picture taking trigger
14 USB connector (Type C)
15 Micro SD card slot
16 Connection cover

■ SCREEN

A Battery status
B Min. temp. and position
C Max. temp. and position
D Center point temperature
E Center point
F Current date and time
G Max. temp. of color bar
H Color bar
I Min. temp. of color bar
J Set detection distance
K Set detection emissivity
L Cursor options
M Temperature unit options
N Palette options
O Infrared/Visible mix options
P Settings menu

QUICK START GUIDE

BUTTON	NAME	FUNCTION	
2	On/off button	Hold	Turn ON/OFF the device
3	LED light button	1st Press 2nd Press 3rd Press ...	Turn ON the flashlight, 1 gear Switch to 2 gears Turn OFF the flashlight ...
4	Picture memory	Press	Show the saved pictures
5	Return	Press	Return
6	Set button	Press	- Open the settings menu OR - Set choosen option
13	Picture taking trigger	Press	Take and save a picture

SAFETY

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

Please use a demp cloth or weak soap liquid to clean the housing. Do not use abrasives, isopropyl alcohol or solvents to clean the instrument shell, lens and windows.

Please do not use this product in flammable, explosive, steamy, humid or corrosive environments.

Please stop using the product if it is damaged, dropped of modified to avoid inaccurate measurement results.

FIRST TIME USAGE

Remove all protection foils.

The li-ion battery is installed by the manufacturer. Make sure the battery is fully charged.

BATTERY AND CHARGER

This device works with a 3.7V 5000mAh LI-ION rechargeable battery (type 26650). To charge this battery, you can connect the USB connector (Type C) [14] with the provided USB cable to your computer or an AC power adapter (not included).

NOTE

When being charged, the internal temperature of the device will rise, which will lead to inaccurate temperature measurements. It is not recommended to take measurements during or right after charging.

The battery is installed by the manufacturer. In case it needs to be replaced, contact an authorised technician.

USE

Hold the power button [02] to turn on/off the device.

NOTE

Power consumption may increase the internal temperature of the device. To ensure the measurement accuracy, please warm it up for about 10 minutes before measuring if the device has not been used for a long time.

▪ INSTALLING THE MICRO SD CARD

To store pictures, a Micro SD Card is mandatory.

· Insert the Micro SD Card in the Micro SD Card slot [15].

▪ STORE A PICTURE

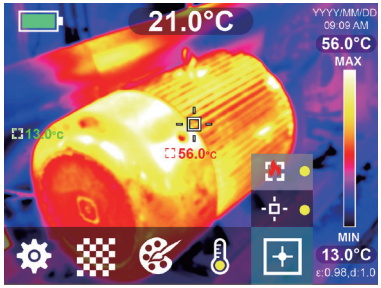
· Point the device at the point from which you want to take a thermal image

· Pull the Picture taking trigger [13].

The image currently visible on the screen will be saved. “SAVE OK” appears on the screen.

IMAGE SETTINGS

CURSOR OPTIONS



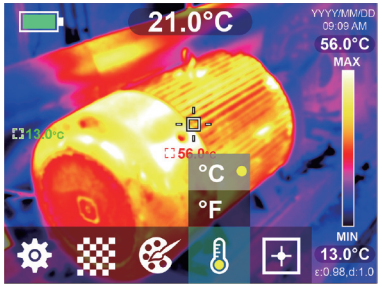
You have the possibility to change the indicators on screen.

- Press the Set button **[06]** to open the menu
- Navigate to the cursor options **[L]** using the Left or Right button **[07]** and press Set **[06]**
- Navigate to the option you want to (de-)activate using the Up and Down button **[07]** and press Set **[06]** to (de-)activate.

The yellow spot indicates the function is active.

- *min. & max. temp. / position on screen*
- *center point on screen*

TEMPERATURE UNIT OPTIONS



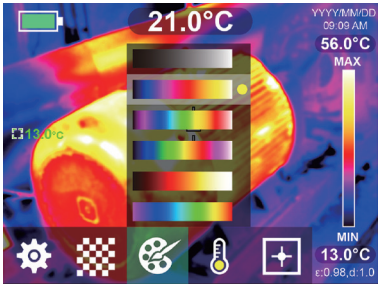
This device can show temperatures in Celcius or Fahrenheit.

- Press the Set button **[06]** to open the menu
- Navigate to the temperature unit options **[M]** using the Left or Right button **[07]** and press Set **[06]**
- Navigate to the unit you want to use with the Up and Down button **[07]**.

The yellow spot indicates which unit is used.

- °C *Celcius*
- °F *Fahrenheit*

PALETTE OPTIONS

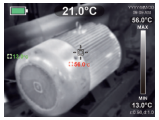


There are 6 different color palettes available to show the thermal image.

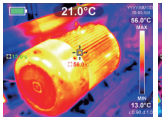
- Press the Set button **[06]** to open the menu
- Navigate to the pallete options **[N]** using the Left or Right button **[07]** and press Set **[06]**
- Navigate to the palette you want to use with the Up and Down button **[07]**.

The yellow spot indicates which palette is used.

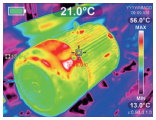
- *White hot mode*
- *Iron mode*
- *Medical treatment*
- *Arctic*
- *Lava*
- *Rainbow mode*



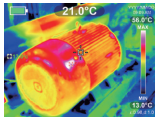
White hot mode



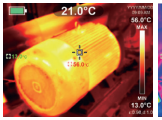
Iron mode



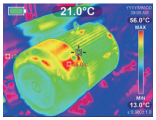
Medical treatment



Arctic

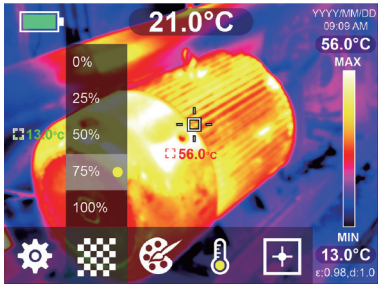


Lava



Rainbow mode

INFRARED/VISIBLE MIX OPTIONS



This device can display both visible images and thermal images, or a mix of both.

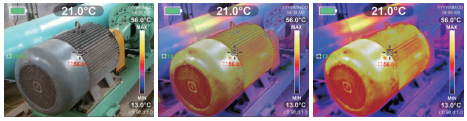
- Press the Set button **[06]** to open the menu
- Navigate to the Infrared/Visible mix options **[O]**

using the Left or Right button **[07]** and press Set **[06]**

· Navigate to the mix you want to use with the Up and Down button **[07]**.

The yellow spot indicates which mix is used.

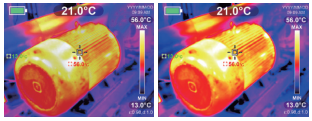
- 0% *0% thermal image*
- 25% *25% thermal image*
- 50% *50% thermal image*
- 75% *75% thermal image*
- 0% *100% thermal image*



0% thermal
100% visible

25% thermal
75% visible

50% thermal
50% visible



75% thermal
25% visible

100% thermal
0% visible

LED LIGHT

This device has a LED flashlight **[08]**.

· (De-)activate the LED flashlight **[08]** by pressing the LED light button **[03]**.

NOTE

To avoid the long-time LED lighting causing the temperature of the device increase and affect the measurement accuracy, the LED light will turn off automatically after 5 minutes of continuous lighting. If you need to use it longer, you have to turn it on again.

SETTINGS

· Press the set button **[06]** to open the menu

· Press the set button **[06]** again to enter the settings

· Change the setting you want as described in the steps below

· Close the setting menu by pressing the return button **[05]** the number of times until the menu is completely closed and the camera image is visible again.

EMISSIVITY

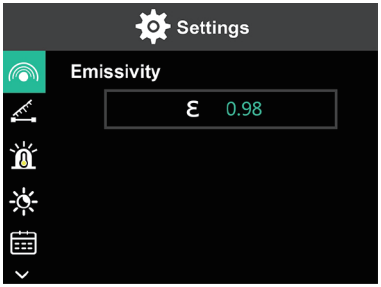
Selecting the correct emissivity is very important for accuracy of temperature measurement, as emissivity has a significant impact on the meas-

ured surface temperature.

Emissivity values between 0.01 and 0.99 can be set.

NOTE

More information about emissivity and a short list with emissivity values, see further in this manual.

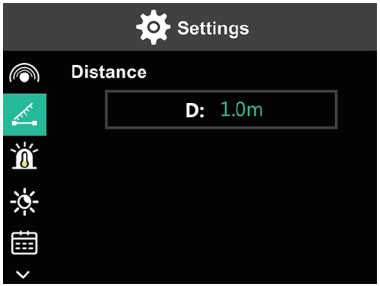


- After entering the settings menu, navigate to the emissivity with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select the emissivity you need and confirm with the Set button **[06]**.

DISTANCE SETTINGS

Setting the distance before detecting can ensure more accurate temperature detection.

The distance can be set from 0.10 to 9.0 meters.



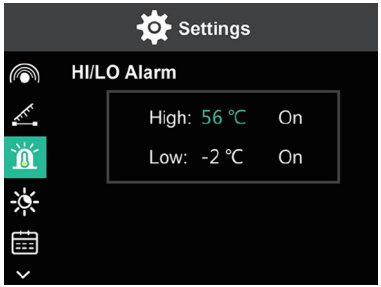
- After entering the settings menu, navigate to the Distance with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select the distance you need and confirm with the Set button **[06]**.

ALARM TEMPERATURE SETTING

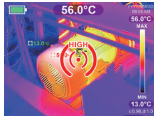
If you set alarm values in the device, and activate them, a message will appear on the screen when these values are exceeded.

High temperature alarm can be set from 40°C to 400°C.

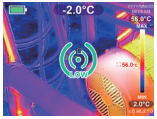
Low temperature alarm can be set from −20°C to 40°C.



- After entering the settings menu, navigate to HI/LO Alarm with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select the High temperature alarm you want and go to the next step with the Set button **[06]** or the Right button **[08]**.
- Use the Up and Down button **[07]** to choose whether you want to show the High temperature alarm (ON) or not show it (OFF) and go to the next step with the Set button **[06]** or the Right button **[08]**.
- Use the Up and Down button **[07]** to select the Low temperature alarm you want and go to the next step with the Set button **[06]** or the Right button **[08]**.
- Use the Up and Down button **[07]** to choose whether you want to show the Low temperature alarm (ON) or not show it (OFF) and go to the next step with the Set button **[06]** or the Right button **[08]**



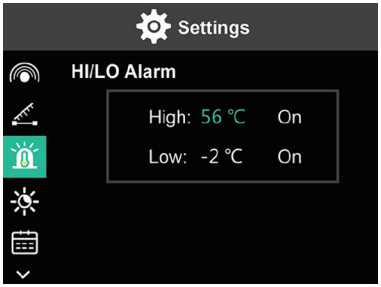
High temperature



Low temperature

DISPLAY BRIGHTNESS

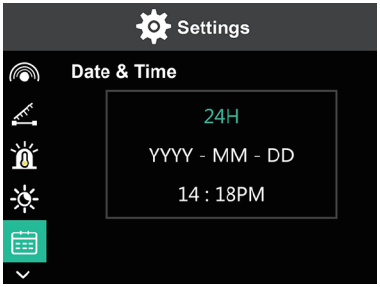
It is possible to adjust the brightness of the screen.



- After entering the settings menu, navigate to Brightness with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select the distance you need and confirm with the Set button **[06]**.

DATE AND TIME SETTING

You can adjust the date and time settings.

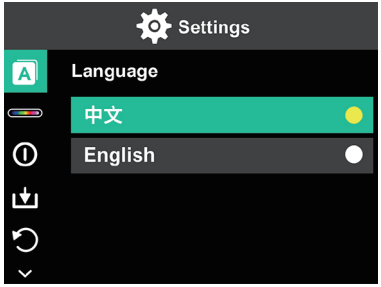


- After entering the settings menu, navigate to Date & Time with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to choose between 12H or 24H display and go to the next step with the Set button **[06]** or the Right button **[08]**.
- Use the Up and Down button **[07]** to set the year and go to the next step with the Set button **[06]** or the Right button **[08]**.
- Use the Up and Down button **[07]** to set the month and go to the next step with the Set button **[06]** or the Right button **[08]**.

- Use the Up and Down button **[07]** to set the day and go to the next step with the Set button **[06]** or the Right button **[08]**.
- Use the Up and Down button **[07]** to set the hour and go to the next step with the Set button **[06]** or the Right button **[08]**.
- Use the Up and Down button **[07]** to set the minutes and go to the next step with the Set button **[06]** or the Right button **[08]**.
- If you have chosen the 12H display, use the Up and Down button **[07]** to set AM or PM and go to the next step with the Set button **[06]** or the Right button **[08]**.

LANGUAGE SETTINGS

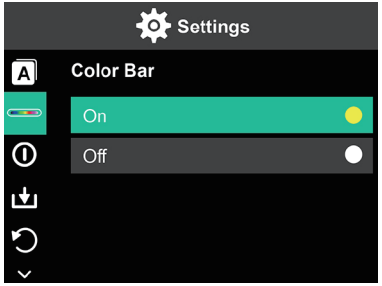
You can adjust the language on screen.



- After entering the settings menu, navigate to language with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select the language you want and confirm with the Set button **[06]**.

COLOR BAR SETTING

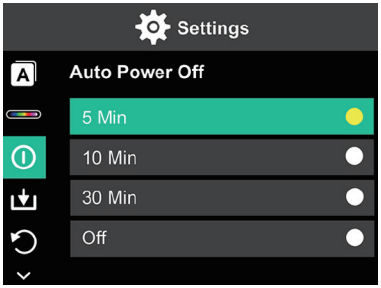
When the camera is active, you can choose to show a color bar on the screen with minimum and maximum values or not.



- After entering the settings menu, navigate to color bar with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select if the color bar mus be visible (ON) or not (OFF) and confirm with the Set button **[06]**.

AUTO POWER OFF

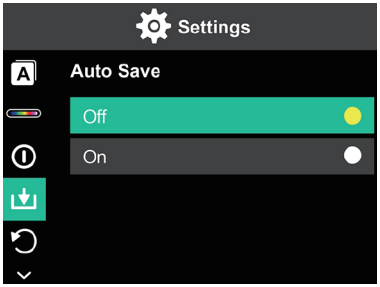
To save battery power, you can choose to have the device switch off automatically after a period of inactivity.



- After entering the settings menu, navigate to Auto power off with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select the time after which the device switches off or to disable this function (OFF) and confirm with the Set button **[06]**.

AUTO SAVE

When you take a picture, you can choose to have it saved automatically (ON) or that your confirmation is required before the photo is saved (OFF).



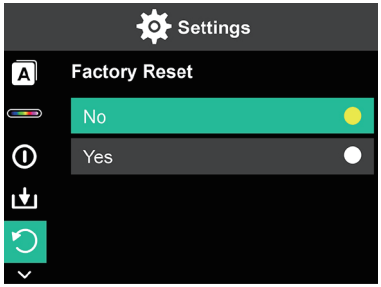
- After entering the settings menu, navigate to Auto save with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select the time after which the device switches off or to disable this function (OFF) and confirm with the Set button **[06]**.

NOTE

It is recommended to save no more than 2000 pictures, avoid to affect the reaction speed of the device. When the number of pictures exceeds 2000, please clean up the SD card in time.

FACTORY RESET

You can reset the factory settings any time.

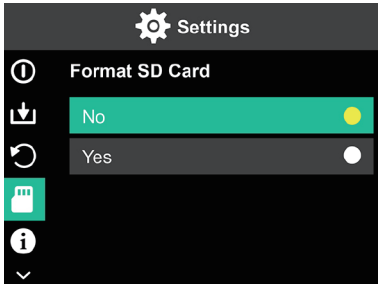


- After entering the settings menu, navigate to Factory reset with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select Yes (factory reset) or No (no factory reset) and confirm with the Set button **[06]**.

NOTE

Please use the factory reset prudently. Once reset is confirmed, all information in the device will be lost!

FORMAT SD CARD



- After entering the settings menu, navigate to Format SD card with the Up and Down button **[07]** and press Set **[06]**.
- Use the Up and Down button **[07]** to select Yes (format SD card) or No (no format SD card) and confirm with the Set button **[06]**.

SPECIFICATIONS

	322.315 TEMPVIEWER 10800D
Thermal imaging pixels	10800 (120x90)
Spectral response band	8~14µm
Field of view	50° * 63.4°
Pixel size	17µm
OutPut frame rate	≤20Hz
Termal sensitivity	<60mK
Working environment temperature	0°C ~ 35°C
Temperature range	−20°C ~ 400°C
Accuracy:	−20°C ~ 0°C: ±5°C 0°C ~ 100°C: ±3°C 100°C ~ 400°C: ±5%
Measurable distance range	0.5m ~ 1.2m
Color palettes	6
High/Low temperature alarm	
SENSOR non-uniformity	<5%
Size	3.5 inch

	322.315 TEMPVIEWER 10800D
Display resolution	320x240
Visible light resolution	640x480
Storage	External MicroSD card
Storage memory	SDRAM: 256Mbit + SPI NOR FLASH: 64Mbit
Communication interface	USB 2.0 (FS)
Power	26650 lithium battery 5000mAh / 3.7V
Light	High-power white LED
Protection class	IP65
Operating temperature	−10°C ~ 50°C
Storage temperature	−40°C ~ 70°C
Drop resistance	1.5m
Dimensions	238x95x85.5mm
Weight (W/I battery)	540g

EMISSIVITY

The amount of infrared energy radiated by an object is proportional to the temperature of the object and the ability of the material to radiate energy. This ability refers to "radiation coefficient" or "emissivity". Emissivity is the ratio of the average emission power to a black radiator at the same temperature. Emission is for materials between 0.10 and 1.00. Materials with low emissivity (<0.60) emit little energy, typically for materials with a shiny, light surface (e.g. metals). Materi- als with high emissivity (>0.90) emit much energy, typically for matte, dark areas. The lower the emissivity, the more difficult it is to measure accurately. (Check the emissivity table).

Most (90% of typical applications) organic materials and painted or oxidized sur- faces have an emissivity of 0,95 (pre-set in the unit). Inaccurate readings will result from measuring shiny or polished metal surfaces.

To compensate, cover the surface to be measured with masking tape of flat black paint. Allow time for the tape to reach the same temperature as the material underneath it. Measure the temperature of the tape or painted surface.

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

CE

DECLARATION OF CONFORMITY

Futech (Belgium) declares under its own responsibility that this device:

- 322.315 Tempviewer 10800D

is in conformity with the standards

EN IEC 61326-1:2021,
EN IEC 61326-2-2:2021,
EN IEC 61000-3-2:2019+A1:2021,
EN 61000-3-3:2013+A1:2019+A2:2021,

following the provisions of Directive(s):

Electromagnetic compatibility (EMC) Directive 2014/30/EU.

Lier, Belgium,
October 18, 2023
Patrick Waûters

NOTES

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

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