FUTECH
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TEMPPOINTER2

MANUAL

Congratulations!
On choosing this FUTECH instrument. FUTECH provides measuring instruments of precision and quality. Contributions from professional end users enable us to offer innovative, easy-to-use equipment.

TEMPPOINTER 2

IMPORTANT!
Read the instructions for use carefully before using the instrument. Keep them in a safe place for consultation when necessary.
Whether on or off, keep the instrument out of reach of children.
This equipment is a high quality precision instrument which must be handled with care. Avoid shocks and vibration. After use, always replace the instrument in its carrying bag. Make sure that the bag and instrument are dry; otherwise condensation may occur in the device. Make sure that the windows are free of dirt, and clean them using a soft cloth and a glass cleaning product only. Always use the locking device during transportation. Regularly inspect the accuracy of the instrument, especially when starting any major square-setting work. You have sole responsibility for the accuracy of your work. Do not use any optical equipment such as a magnifying glass to view the laser beam, and take care to remove all reflecting objects to avoid damage to the eye. Locate the laser in such a way that it is not possible for any person to look at the laser beam (intentionally or otherwise). Under no circumstances take the instrument apart, since this may expose you to powerful laser radiation. The laser is only to be used for the projection of laser lines. Do not use the instrument in rain or near flammable materials. Technical modification or alterations to the instrument may be carried out without prior notice. The manufacturer's responsibility shall in no case exceed the value of the costs of repair or replacement of the instrument. Respect the environment and do NOT discard the instrument or batteries in household waste. Take them to a recycling centre.

Parts of the housing

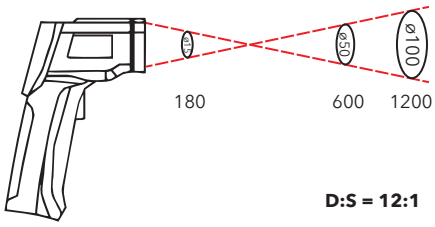
1. Laser beam
2. Infrared sensor
3. Measuring head
4. Battery cover
5. Handle
6. LCD Display
7. Arrow up
8. Display Lighting / Laser
9. Mode
10. Arrow down
11. Measurement result
12. Scan
13. Hold
14. Laser point
15. Emissivity
16. Unit of measurement - ° C / ° F
17. Battery indicator
18. Settings / Function

How does an infrared thermometer work?
Each object transmits infrared rays. The power of these rays depends on the type of material (expressed as "radiation coefficient" or "emissivity" of a material) and of course the temperature of the object. An infrared detector absorbs these rays and the electrons in the device turn them into temperature (° C or ° F).

This thermal camera shows the temperature of all objects in the vicinity on a thermal image (color scale with, for example, blue is cold and red is warm). This camera can mix the thermal image with an optical image. This will make the measuring area more visible and you can understand where a cold or hot spot is exactly.

Radiation coefficient or 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 most materials between 0.10 and 1.00. Materials with low emissivity (<0.60) emit little energy, typically for materials with a shiny, light surface (eg metals). Materials with high emissivity (>0.90) emit much energy, typically for matte dark areas. The lower the emissivity, the more difficult it is to accurately measure.

The emissivity values of Temppointer 2 are adjustable from 0.10 to 1.00.
Look for the correct value in the table next to it. In case of doubt, set the emissivity value to 0.95.
To set the emissivity, press the MODE key until EMS at the bottom of the screen appears. Use the arrows up and down to set the value.



How big is the measuring area?
The further you are of the object whose temperature you want to measure, the greater the measurement area. The larger the measuring surface, the less the accuracy. We therefore recommend using the camera as close as possible to the objects to be measured.
This infrared thermometer has a measurement ratio of 12: 1. This means that when measuring at a distance of 12cm of the object, the measuring surface is approximately 1x1cm in size. The projected laser beam indicates the center of the measurement range.

GOOD TO KNOW...
- *An infrared thermometer must adapt to ambient temperature. This may take up to 30 minutes to adjust to high temperature fluctuations. So wait a few minutes between measuring a hot and cold object.*
- *An infrared thermometer can not be measured through transparent surfaces (eg. glass). He will then measure the temperature of the glass.*
- *Steam, dust, smoke ... make measurements with an infrared thermometer less accurate to unreliable..*

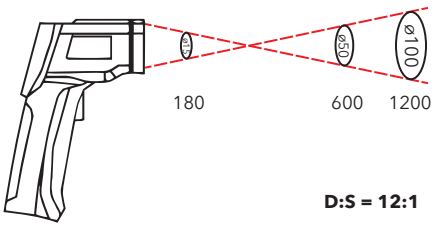
SAFETY
Be very careful when the laser is activated. Never aim the device on any person's / animal's eyes. Never look directly or indirectly (eg through reflection) in the laser beam. Never point the laser to a gas that can explode.

How to use the Tempviewer2
PInsert 1x 9V battery into the device. Consider the polarity. This is indicated in the device.

To turn on the device, pull the trigger or use the MODE button.
Point the thermometer to the surface to be measured and hold the trigger.

During measurement, the average temperature is displayed within the measurement range. With the mode key you can read the following information: max temp, min temp, difference between max and min temp, average, max alarm value, min alarm value.

The measurement result remains on screen for 7 seconds after measurement.



Duo-laser / lighting
When the device is on and HOLD is visible on the display, press the Lighting / Laser key.

The device has: 4 options:
- Display light OFF Laser ON
- Display light ON Laser ON
- Display light OFF Laser OFF
- Display light ON Laser OFF

The laser beam shows the upper and lower limits of the measuring range. The laser points are positioned so that they cross at a distance of 200mm. The size of the measuring range is 16.67mm (D: S = 12: 1). This is the appropriate distance to the target for most measurements.

Alarm temperatur
Press MODE button until you LAL (minimum alarm value) or HAL (max alarm value). Set the required limit value using the up or down arrow. A beep signal is heard when the limit values are exceeded.

Temperature out of range
When the temperature is out of range, "HI" appears on the display if the value is too large, "LO" if the value is too low.

Change temperature unit
Change the measuring unit from ° C to ° F (and vice versa) by pressing the MODE button for a few seconds.

Continuous measuring (scan)
To activate the continuous measurement, press the Lighting / Laser key for a few seconds. To stop the continuous measurement, press 2sec. On the MODE button.
Is the measured temperature> HAL or <LAL, you hear a beep sound.

Memory
The device can store up to 20 results. To save a result:
- *Device is in HOLD mode*
- *Press MODE button several times until LOG symbol is visible on the display.*
- *Use the up and down keys to select the desired location*
- *To save a temperature at the selected location, press the Lighting / Laser button. Pressing this button again will reset the value.*

Use the up and down keys to view or change other saved values.

Mode options

EMS	Emissivity
MAX	Max. data
MIN	Min. data
DIF	Difference
AVG	Average
HAL	Alarm level for high temperatures
LAL	Alarm levelg for low temperatures
LOG	Memory

GENERAL

Description

The following directions should enable the person responsible for the product, and the person who actually uses the equipment, to anticipate and avoid operational hazards. The person responsible for the product must ensure that all users understand these directions and adhere to them.

Adverse Use

- Use of the product without instruction.
- Use outside of the intended limits.
- Disabling safety systems.
- Removal of hazard notices.
- Opening the product using tools, for example screw- driver, unless this is specifically permitted for certain functions.
- Modification or conversion of the product.
- Use after misappropriation.
- Use of products with obviously recognizable damages or defects.
- Use with accessories from other manufacturers without the prior explicit approval of FUTECH.
- Inadequate safeguards at the work site, for example when using on or near roads.
- Deliberate dazzling of third parties.
- Controlling of machines, moving objects or similar monitoring application without additional control and safety installations.

WARNING

Adverse use can lead to injury, malfunction and damage. It is the task of the person responsible for the equipment to inform the user about hazards and how to counteract them. The product is not to be operated until the user has been instructed on how to work with it.

LIMITS OF USE

Environment

Suitable for use in an atmosphere appropriate for permanent human habitation: not suitable for use in aggressive or explosive environments.

DANGER

Local safety authorities and safety experts must be contacted before working in hazardous areas, or in close proximity to electrical installations or similar situations by the person in charge of the product.

RESPONSIBILITIES

Manufacturer of the product

Laseto N.V., Belgium, BE0808.043.652, hereinafter referred to as FUTECH, is responsible for supplying the product, including the user manual and original accessories, in a completely safe condition.

Manufacturers of non FUTECH accessories

The manufacturers of non FUTECH accessories for the product are responsible for developing, implementing and communicating safety concepts for their products, and are also responsible for the effective- ness of those safety concepts in combination with the FUTECH product.

Person in charge of the product

The person in charge of the product has the following duties:

- To understand the safety instructions on the product and the instructions in the user manual.
- To be familiar with local regulations relating to safety and accident prevention.
- To inform FUTECH immediately if the product and the application becomes unsafe.

HAZARDS OF USE

WARNINGS

- The person responsible for the product must ensure that it is used in accordance with the instructions. This person is also accountable for the training and the deployment of personnel who use the product and for the safety of the equipment in use.
- The absence of instruction, or the inadequate imparting of instruction, can lead to incorrect or adverse use, and can give rise to accidents with far-reaching human, material, financial and environmental conse- quences.
- All users must follow the safety directions given by the manufacturer and the directions of the person responsible for the product.
- Watch out for erroneous measurement results if the product has been dropped or has been misused, modified, stored for long periods or transported.
- Periodically carry out test measurements and perform the field adjustments indicated in the user manual, particularly after the product has been subjected to abnormal use and before and after important measurements.
- If the product is used with accessories, for example masts, staffs, poles, you may increase the risk of being struck by lightning.
- Do not use the product in a thunderstorm.
- Inadequate securing of the working site can lead to dangerous situations, for example in traffic, on building sites, and at industrial installations.
- Always ensure that the working site is adequately secured. Adhere to the regulations governing safety and accident prevention and road traffic.
- If the accessories used with the product are not properly secured and the product is subjected to mechanical shock, for example blows or falling, the product may be damaged or people may sustain injury.
- When setting-up the product, make sure that the accessories are correctly adapted, fitted, secured, and locked in position. Avoid subjecting the product to mechanical stress.
- During the transport, shipping or disposal of batteries it is possible for inappropriate mechanical influences to constitute a fire hazard.
- Before shipping the product or disposing of it, discharge the batteries by running the product until they are flat. When transporting or shipping batteries, the person in charge of the product must ensure that the applicable national and international rules and regulations are observed. Before transportation or shipping contact your local passenger or freight transport company.
- High mechanical stress, high ambient temperatures or immersion into fluids can cause leackage, fire or explosions of the batteries.
- Protect the batteries from mechanical influences and high ambient temperatures. Do not drop or immerse batteries into fluids.
- Short circuited battery terminals can overheat and cause injury or fire, for example by storing or transporting in pockets if battery terminals come in contact with jewellery, keys, metallized paper or other metals.
- Make sure that the battery terminals do not come into contact with metallic objects.
- During the operation of the product there is a hazard of squeezing extremities by moving parts.
- Keep extremities in a safe distance from the moving parts. If the product is improperly disposed of, the following can happen: If polymer parts are burnt, poisonous gases are produced which may impair health. If batteries are damaged or are heated strongly, they can explode and cause poisoning, burning, corrosion

or environmental contamination. By disposing of the product irresponsibly you may enable unauthorized persons to use it in contravention of the regulations, exposing themselves and third parties to the risk of severe injury and rendering the environment liable to contamination.

· The product must not be disposed with household waste. Dispose of the product appropriately in accordance with the national regulations in force in your country.

LASER CLASSIFICATION

General

The following directions (in accordance with the state of the art - international standard IEC 60825-1(2007-03) and IEC TR 60825-14 (2004-02)) provide instruction and training information to the person responsible for the product and the person who actually uses the equipment, to anticipate and avoid operational hazards. The person responsible for the product must ensure that all users understand these directions and adhere to them.

Products classified as laser class 1, class 2 and class 3R do not require:

· laser safety officer involvement,

· protective clothes and eyewear,

· special warning signs in the laser working area

if used and operated as defined in this user manual due to the low eye hazard level. Products classified as laser class 2 or class 3R may cause dazzle, flash blindness and afterimages, particularly under low ambient light conditions.

If your instrument does not reach the required tolerance, it should be returned to your service centre or to your reseller for service. Repairs carried out by unauthorised personnel will automatically and always invalidate the guarantee.

TECHNICAL SPECIFICATIONS

ACCURACY	-50°C ~ -23°C	± 7°C
	-23°C ~ -2°C	± 4°C
	-2°C ~ 94°C	± 2,5°C
	94°C ~ 204°C	± (1,0%RDG + 1°C)
	204°C ~ 426°C	± (1,5%RDG + 1°C)
	>426°C	± (3%RDG + 1°C)
TEMPERATURE RANGE	± -50°C ~ 650° (-58°F ~ 1022°F)	
DISPLAY	LCD	
SENSITIVITY	0,10°C (0,10°F)	
EMISSIVITY	0,10 ~ 1,00 (ADJUSTABLE)	
OPTICAL RESOLUTION	12:1	
LASER CLASS	CLASS 2 - 630-675NM - <1MW	
RESPONSE TIME	<1 SEC	
SPECIAL RESPONSE TIME	6 ~14 µM	
SCREW THREAD	✕	
INDICATION RANGE	TWO LASER BEAMS INDICATE THE SIZE (BOTTOM AND TOP) OF THE MEASUREMENT AREA	
DEGREE OF PROTECTION	IP54	
DIMENSIONS (L X B X H)	180 X 107 X 40 MM	
WEIGHT	150 G	
OPERATING TEMPERATURE	0°C ~ 50°C (31°F ~ 122°F)	
STORAGE TEMPERATURE	-10°C ~ 60°C (-4°F ~ 140°F)	
POWER SUPPLY	9V BATTERY	
RELATIVE HUMIDITY	10% ~90%RH (USE) / <80%RH (STORAGE)	

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