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Safety notes



WARNING

An additional source of danger is posed by mechanical parts which can cause severe personal injury.

Objects can also be damaged (e.g., the instrument itself can be damaged).



WARNING

An electric shock can result in death or severe injury. It can also lead to property damage and damage to this instrument.



WARNING

Never point the laser beam directly or indirectly (on reflective surfaces) towards the eyes. Laser radiation can cause irreparable damage to the eyes. You must first deactivate the laser beam when measuring close to people.

General safety notes



Unauthorized changes or modifications of the instrument are forbidden – such changes put the approval (CE) and safety of the instrument at risk. In order to operate the instrument safely, you must always observe the safety instructions, warnings and the information in the "Proper and Intended Use" Chapter.



WARNING

Please observe the following information before using the instrument:

- | Do not operate the instrument in the proximity of electrical welders, induction heaters and other electromagnetic fields.
 - | After an abrupt temperature fluctuation, the instrument should be allowed to adjust to the new temperature for about 30 minutes before using it. This helps to stabilize the IR sensor.
 - | Do not expose the instrument to high temperatures for a long period of time.
 - | Avoid dusty and humid surroundings.
 - | Measurement instruments and their accessories are not toys. Children should never be allowed access to them!
 - | In industrial institutions, you must follow the accident prevention regulations for electrical facilities and equipment, as established by your employer's liability insurance organization.
-

Proper and intended use

This instrument is intended for use in applications described in the operation manual only. Any other usage is considered improper and non-approved use and can result in accidents or the destruction of the instrument. Any misuse will result in the expiry of all guarantee and warranty claims on the part of the operator against the manufacturer.



Remove the batteries during longer periods of inactivity in order to avoid damaging the instrument.



We assume no liability for damages to property or personal injury caused by improper handling or failure to observe safety instructions. Any warranty claim expires in such cases. An exclamation mark in a triangle indicates safety notices in the operating instructions. Read the instructions completely before beginning the initial commissioning. This instrument is CE approved and thus fulfils the required guidelines.

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Disclaimer and exclusion of liability



The warranty claim expires in cases of damages caused by failure to observe the instruction! We assume no liability for any resulting damage!

Testboy is not responsible for damage resulting from:

- failure to observe the instructions,
- changes in the product that have not been approved by Testboy,
- the use of replacement parts that have not been approved or manufactured by Testboy,
- the use of alcohol, drugs or medication.

Correctness of the operating instructions

These operating instructions have been created with due care and attention. No claim is made nor guarantee given that the data, illustrations and drawings are complete or correct. All rights are reserved in regards to changes, print failures and errors.

Disposal

For Testboy customers: Purchasing our product gives you the opportunity to return the instrument to collection points for waste electrical equipment at the end of its lifespan.



The WEEE directive regulates the return and recycling of electrical appliances. Manufacturers of electrical appliances are obliged to take back and recycle all electrical appliances free of charge. Electrical devices may then no longer be disposed of through conventional waste disposal channels. Electrical appliances must be recycled and disposed of separately. All equipment subject to this directive is marked with this logo.

Disposing of used batteries



As an end user, you are legally obliged (by the relevant laws concerning battery disposal) to return all used batteries. Disposal with normal household waste is prohibited!

Contaminant-laden batteries are labelled with the adjacent symbol which indicates the prohibition of disposal with normal household waste.

The abbreviations used for heavy metals are:

Cd = Cadmium, **Hg** = mercury, **Pb** = lead.

You can return your used batteries for no charge to collection points in your community or everywhere where batteries are sold!

Certificate of quality

All aspects of the activities carried out by Testboy GmbH relating to quality during the manufacturing process are monitored permanently within the framework of a Quality Management System. Furthermore, Testboy GmbH confirms that the testing equipment and instruments used during the calibration process are subject to a permanent inspection process.

Declaration of Conformity

The product conforms to the present directives. For more detailed information, go to www.testboy.de

Operation

Thank you for choosing a Testboy® TV 325.

The Testboy® TV 325 has been constructed using state of the art technology and components. This device complies with the currently applicable standards and fulfils the requirements of all valid European and national guidelines.

Enjoy your new Testboy® TV 325!

The Testboy® TV 325 is a measuring device intended for non-contact temperature measurements.

Use

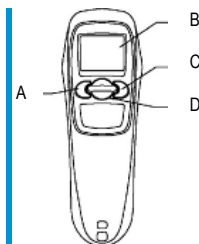
The intended use includes the non-contact measurement of temperatures from -60 °C to +500 °C as well as the contact temperature measurement from -64 °C to +1400 °C using the optional type-K probe. You can only use 1.5 V micro LR03/AAA batteries or identical types for its power supply.

Product description

Non-contact temperature measurements are ideally suited for applications where parts are rotating or under a live electrical load, or any such application involving parts where standard contact measurements are not possible. This device comes in a sturdy, practical pistol-shaped housing. It also features a quick response time and a wide temperature measuring range. The additional socket for a type-K probe means that the measuring range of the TV 325 is almost unlimited. The data-hold function allows the measure value to be saved temporarily. This device also features the following: an alarm function, a continual measurement function, °C/°F toggle, min./max./avg. measurements, background lighting and a disengageable laser / LED spotlight combination.

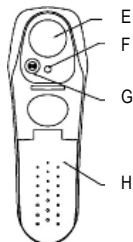
Front

- A "Down" key
- B Display
- C "Up" key
- D MODE key



Back

- E Infrared sensor
- F Laser
- G LED spotlight
- H Battery compartment



Display



Laser turned on



Backlight turned on



Measurement active



Alarm values



Temperature holding phase active (hold function)



Continuous measurement



Battery symbol



Measured temperature value



Temperature unit



Measuring functions



Maintenance and cleaning



To avoid electrical shocks, do not allow liquid to penetrate the housing.

- Clean the housing at regular intervals using a dry cloth without any cleaning agents. Do not use abrasive, scouring or solvent-based cleaners.
- Blow loose dirt particles from the IR lens. Brush off any remaining dirt using a fine lens brush.

Safety



If the housing is opened, remember that some internal capacitors may still hold potentially lethal voltages even after the device has been switched off. In the event of errors or unusual operation, stop using the device and ensure that it cannot be used until it has been carefully checked out and repaired.

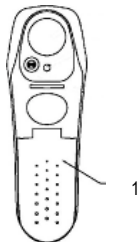
Changing the batteries

If the device is not to be used for a long time, remove the batteries and store the device in a place that is neither too hot nor too humid.

Do not leave used batteries in this device. Even anti-leakage batteries can corrode and release chemicals which can damage both the device and your health.

Procedure

- When the battery working voltage is too low, the battery symbol is shown in the LCD; the batteries must then be replaced.
- The Testboy® TV 325 requires two Micro LR03/ AAA batteries or identical types.
- Turn off the device
- Open the battery compartment (1) by pushing the battery compartment cover downwards and then folding it away from the handle.
- Replace the batteries with new ones of the same type, fold the cover back in place onto the handle and push it upwards.



Do not dispose of batteries in normal household rubbish. Use an authorised local collection point!

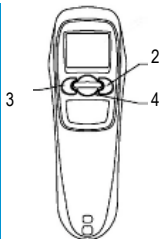
Explanation of the buttons

Direction keys

The "Up" (2) and "Down" (3) buttons are used to activate functions like background illumination, laser, lock mode, selection F/°C; they are also used to navigate through the menu.

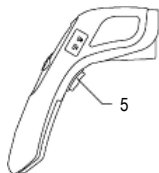
MODE key

You can switch between the various measurement functions in the display by pressing the MODE key (4):
Measurement is interrupted during the hold function!



Temperature measurement key

Press the (5) key to start measuring the temperature.



Temperature measurement

To measure the temperature point the IR sensor's opening towards the object to be measured and press the key to measure the temperature.

Make sure that the measurement spot size is not larger than the object to be measured. The currently detected temperature is shown in the LCD. To locate the hottest spots of an object, point the Testboy® TV 325 at a location outside the desired area. Then search for the hottest point by moving the detector across the surface of the object in a zigzag pattern holding down the temperature measurement key all the while until you find the warmest spot.

After releasing the temperature measurement key the temperature detected will be shown in the display for approximately 60 seconds. During this time, "HOLD" will be shown. The device will switch itself off to save batteries after approximately 60 seconds.

Choose the unit you wish to be displayed (°C/°F) using the "AB" key. The laser, when it is turned on, shows the mid-point of the measurement area approximately. This means you can easily make accurate readings. To activate the laser, press the temperature measurement key and the "Down" key until the laser is turned on. The LCD then shows the laser symbol. To turn the laser off again, press the temperature measurement key and the "Down" key again until the laser symbol disappears.

When taking measurements in a dark environment you can turn on the background illumination for the display using the buttons temperature measurement and "Up".

Functions

MODE key

By pressing the mode key, you can switch between the various measurement functions:

"MIN"	Displays the lowest temperature value found during the measurement
"MAX"	Displays the highest temperature value found during the measurement
"DIF"	Shows the difference between the highest and the lowest temperature value
"AVG"	Shows the average value

After the Testboy® TV 325 has been turned off, the measured temperature values can be shown again by pressing the MODE key. With each new measurement, the value of the old measurement is overwritten and replaced with the new one. You can also use the MODE key to set the alarm values for "high alarm" (HAL), "low alarm" (LAL) and emissivity (E). The Testboy® TV 325 changes the function with each press of the MODE key.

Use the MODE key to set the alarm values and emissivity as needed. Use the two arrow keys to set the required value.

Lock function (continuous measurement)

The Testboy® TV 325 can be turned to continuous measurement using the lock function. To activate continuous measurement, press the "Up" key (arrow pointing upwards) on the operating panel with the device switched on. You can see that the lock function is active as "Lock" is shown in the display.

To disable continuous measurement, press the "Up" key again.

You can switch the laser and the background illumination on and off during continuous measurement.

Targeting laser

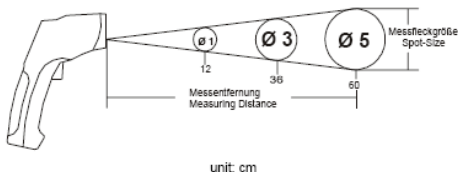
When the laser is turned on, the laser point shows you the approximate middle of the measuring surface. This makes more exact measurements possible. When the instrument is turned on, you can activate the laser by pressing the "measure key" and the "down key". Hold until the laser symbol appears in the LCD display. Now when you press the temperature measurement key, the laser beam will point at the middle of the surface to be measured. In addition, the LED spotlight provides additional illumination for poorly lit measurement objects. Press the "measure key" and the "down key" again until the laser symbol disappears. This will turn off the laser.

Size of measuring surface - distant-to-spot ratios (D/S)

In order to get accurate measuring results, the object to be measured must be larger than the measuring surface of the infrared thermometer. The detected temperature is then the average temperature of the measured surface area. The smaller the object is the shorter the distance to the infrared thermometer should be. The exact size of the measurement area can be seen in the following diagram. This is also printed on the outside of the instrument.



For exact measurements, the object to be measured should be at least twice the size of the measured surface area!



°C/°F toggle

Using the "down key", you can change the temperature display between °C and °F.

Contact measurement with a type-K probe

In addition to the non-contact infrared measurement feature, the Testboy® TV 325 is equipped with a type-K probe for performing contact measurements. In order to make contact measurements, connect a standard commercially-available type-K probe with a standardized mini-plug into the appropriate socket on the instrument.

Use the MODE key to select the "PRB" function. The temperature value from the type-K probe will then be shown in the lower display row.

Alarm function

Use the MODE key to select the value that you wish to set for the alarm value. "HAL" for the upper alarm value (high alarm) or "LAL" for the lower alarm value (low alarm). Use the two arrow keys to set the required value. The instrument issues an optical and audible alarm if a non-contact measurement falls below or above these alarm values. The display then shows the alarm symbols "Hi" or "Low".

The emissivity is a value that is used to describe a material's energy radiation characteristic. The higher this value, the higher the ability of the material is to send out radiation. Many organic materials and surfaces have emissivity of approximately 0.95. Attached is a list of the emissivity values of several materials. Metallic surfaces or shiny materials have low emissivity. Therefore, the Testboy® TV 325 is fitted with an emissivity-setting feature. Despite this adjustable emissivity

setting feature, we do not recommend taking measurements of shiny surfaces such as stainless steel. You will get more precise measured values if you blacken or tape over the surface to be measured. Measurements cannot be made through transparent surfaces, like through glass for example. You will actually measure the surface temperature of the glass instead.

Emissivity

Setting the emissivity

Press the MODE key until "IEI" appears in the lower display row. The required emissivity value can now be set using the up and down keys.

Press the MODE key to go back to the normal measuring mode.

Emissivity table

The values given in the table can differ in practice due to the surface texture, geometry or other interfering factors.

Surface	Emissivity
Aluminium	0.30
Asbestos	0.95
Asphalt	0.95
Basalt	0.70
Brass (oxidised)	0.50
Stone	0.90
Carbon	0.85
Ceramic	0.95
Concrete	0.95
Copper (oxidised)	0.95
Dirt	0.94
Frozen food	0.90
Hot food	0.93
Glass	0.85
Ice	0.98
Iron (oxidised)	0.70
Lead (oxidised)	0.50
Sandstone	0.98
Paint	0.93
Paper	0.95
Plastic (full over 20 µm)	0.95
Rubber	0.95

Technical data

Surface	Emissivity
Sand	0.90
Skin	0.98
Snow	0.90
Steel (oxidised)	0.80
Textiles	0.94
Water	0.93
Wood (untreated)	0.94
Oil	0.94

Technical data

Operating temperature	0-40 °C, < 80 % rel. humidity, non-condensing
Storage temperature	0-50 °C, < 70% rel. humidity, without batteries
Power supply	2 x 1,5 V Micro LR 03, AAA batteries
Measurement range	-60 to +500 °C / -64 to 1400 °C using the optional type-K probe
Accuracy (IR) 15~35 °C	± 1% or 1.0 °C
Accuracy (IR) -60~500 °C	± 2% or 2 °C
Working height	< 2000 m
Emissivity	0.95, adjustable from 0.10 to 1.00 (in 0.01 steps)
Response time	1 s
Resolution (-9.9 to 199.9 °C)	0.1 °C
Battery level display	Battery symbol in display
Distance to spot	12:1
Battery life	at least 140 hours continuous use, without laser, spotlight and background illumination
Dimensions	48.8 x 132.7 x 146 mm (W x H x D)
Weight	approx. 222 g (including batteries)
Display	Liquid crystal display
Accessories	Instruction manual, type-K probe, case