

Thermometer

**TTX 100/110/120**

Dear customer,  
Congratulations on the purchase of an ebro product.

We hope than you can make use of this product for a long time and that it helps you with your work.

Information that are useful and important for understanding the function are highlighted in the instructions text.

### Standards:



The conformity certificate confirms that this product fulfills CE guidelines.

The types TTX100 and TTX110 fulfills the guidelines in accordance with EN 13485.

### Suitability:

S (Storage), T (Transport)

### Location:

A (Food storage and distribution systems) and E (Transportable thermometer)

### Accuracy classification:

1 for measurement of the air temperature and of the internal product temperature.

### Measurement range:

-50 ... +350°C

*In accordance with EN 13485, this device is subject to regular (yearly) inspections as per EN 13486.*

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# 1 Introduction

## 1.1 General

Please read these operating instructions carefully before using your new thermometer.

These instructions guide you through working with the thermometer with clear and simple directions.

Any information which is useful or relevant in the understanding of the functionality is headlined as such in the instructions.

To ensure safe operation of the thermometer, follow all those safety instructions as indicated by the  symbol.

## 1.2 Safety notes



- Never expose the device to high temperatures ( $> 50^{\circ}\text{C}$  /  $> 120^{\circ}\text{F}$ )!
- Under no circumstances measure live components with this device and external sensors
- Do not use the device in explosion-endangered areas!
- The instrument should only be operated within the parameters specified in the **Technical data**.
- The instrument should only be opened if expressly described in the instruction manual for maintenance purposes.
- Force should never be applied.
- Please dispose of batteries according to environment regulations.
- Do not put into trash-bin.
- You can return the instrument directly to us at the end of its service life. We shall recycle it according to rules.

## Warranty

2 years

## 1.3 Cautions

The thermometer should be protected from the following:

- Electro Static Discharge
- “Thermal shock” caused by large or abrupt ambient temperature changes — allow 30 minutes for unit to stabilize before use when exposed to “thermal shock”.
- Do not leave the unit on or near objects of high temperature.

## 2 Extent of supply

Check contents of the packing for completeness and integrity.

If you discover any damage or have any reason for complaint, please contact your distributor or:

**ebro Electronic GmbH & Co. KG**

Peringerstr. 10

85055 Ingolstadt

Tel.: (0841) 9 54 78-0

Fax: (0841) 9 54 78 80

E-mail: [info@ebro.de](mailto:info@ebro.de)

Internet: <http://www.ebro.de>

*Parts list:*

Thermometer with:

- Calibration certificate
- Instruction manual

## 3 Description

### 3.1 General

Powered by a replaceable lithium battery, the thermometer is a handy, temperature measurement device for a whole range of measurement and control applications.

- 1.....Display (LCD)
- 2.....Key ON/HOLD
- 3.....active temperature unit, switchable between °C and °F

### 3.2 Operation

#### 3.2.1 Switching on the thermometer

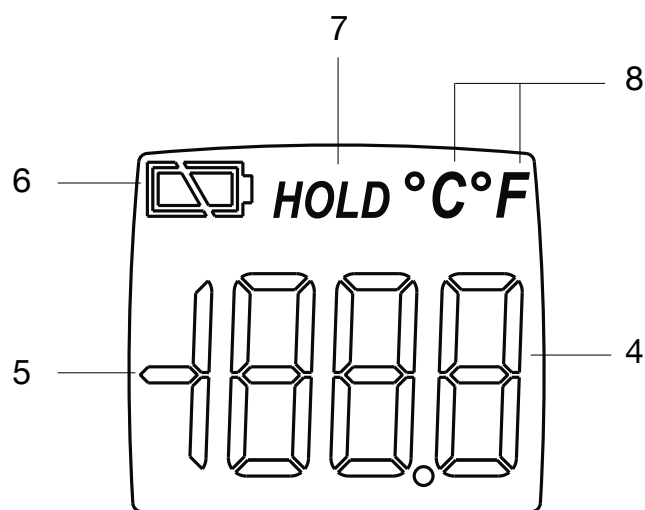
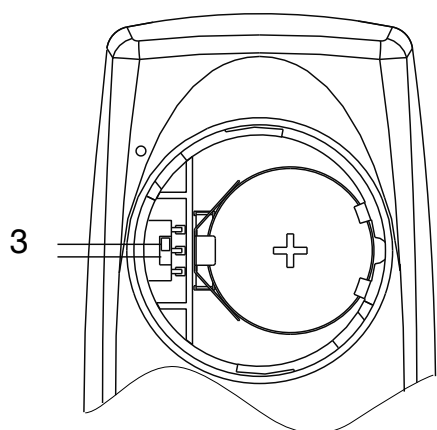
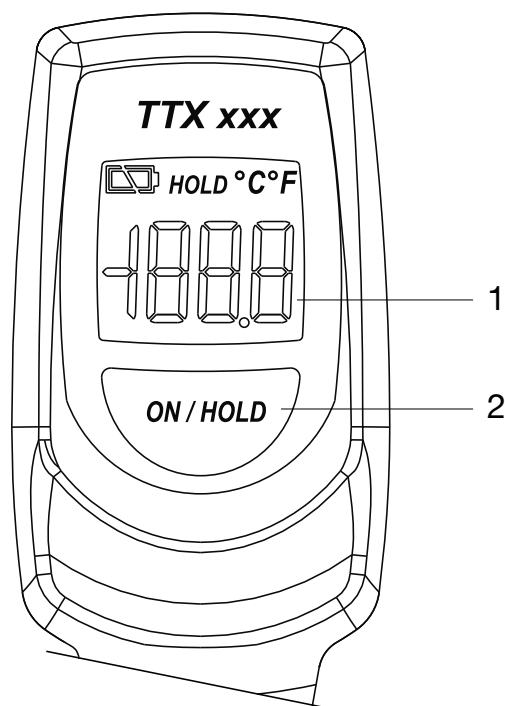
To switch the thermometer on, keep key »ON/HOLD« (2) pressed for approximately one second.

#### 3.2.2 Display

All necessary information is displayed on an LCD (Liquid Crystal Display).

The individual symbols have the following meanings:

- 4.....Display for current measured values
- 5.....Minus sign (negative measured values)
- 6.....Battery status indicator
- 7.....„HOLD“ -- Auto shut down after 15 sec
- 8.....Temperature unit



### 3.3 Measuring temperature

Select the required unit of measurement, °C or °F, from the chapter 3.1.

Position the tip of the probe where you wish to measure the temperature and press ON/HOLD key. Wait till the temperature has stabilized and subsequently read the value from the display.

Now, the current temperature is displayed for about 4 min.

If you press ON/HOLD a second time, the word "**HOLD**" appears in the Display. The last measured value is frozen and the thermometer deactivates itself automatically after about 15 seconds to save battery power.



## 4 Error messages

The following error messages are displayed while using the TTX thermometer.

**“Hi”** --> for temperature to be measured above +350°C/+1200°C.

**“Lo”** --> for temperature to be measured under -50°C/-60°C.

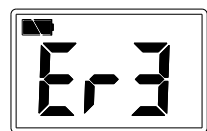
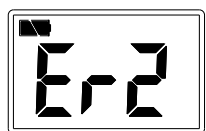
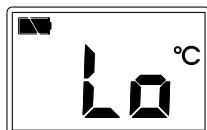
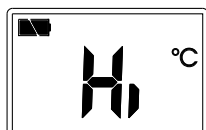
**“Er 2”** --> too quick a change in the ambient temperature.

**“Er 3”** --> Ambient temperature either -20°C or above +50°C.

--> Bring the device within the prescribed operating temperature range and wait for about 30 min.

**“Er ”** --> for all other probable errors.

--> “Reset” to be executed after removing the battery from the battery compartment, (**see point 6.3**) wait for about 1 min, insert the battery and restart the device.



## 5 Calibration service

In order to guarantee a high measuring precision, the thermometer must be calibrated every year. Therefore **ebro Electronic GmbH & Co. KG** offers a calibration service.

- Fill in the enclosed service card.
- After one year we will recall your thermometer for calibration.
- The calibrated thermometer will be returned within one week.

## 6 Servicing and waste disposal

### 6.1 Cleaning

Clean the device with a damp cloth. Do not use any solvents such as Aceton as they corrode the plastic.

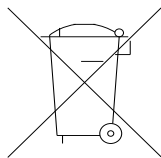
Isopropyl alcohol may be used to disinfect.

### 6.2 Waste disposal

Should the device become unsuitable for use, it must be disposed of professionally, such as at recycling centres that accept electronic scrap.

Never dispose of the device in household waste.

Please dispose of spent batteries responsibly.



## 6.3 Replacing the battery

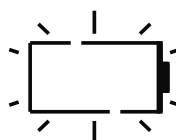
The battery symbol on the display (Figure 6 on page 12) indicates that the battery needs to be replaced.



Battery operational

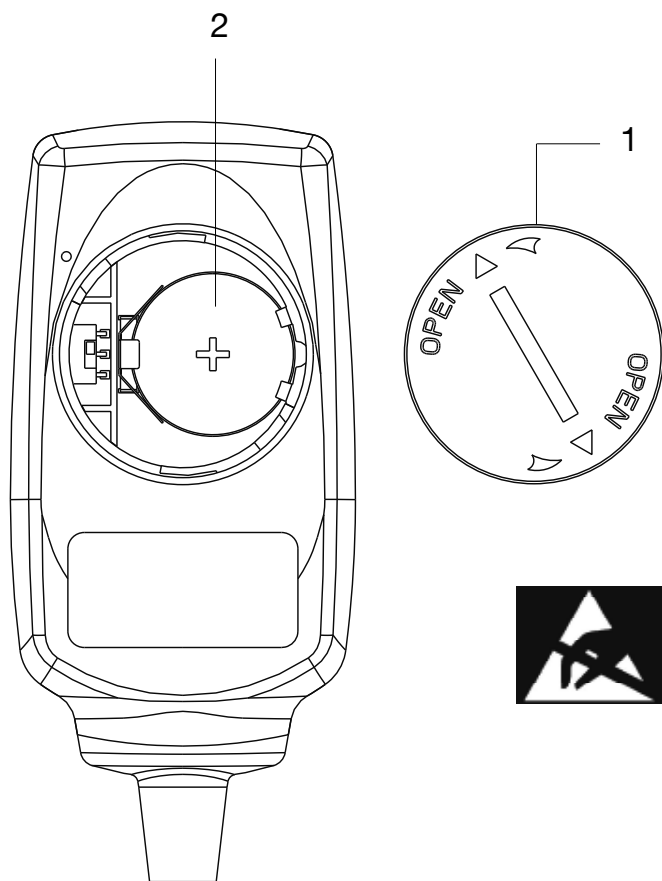


Battery shortly exhausted



Battery needs to be replaced

The thermometer must be opened to replace the battery.



### 6.3.1 Assembly of battery

Remove battery cover „1“ on the backside of the thermometer. for example with a coin. Insert a new coin cell „2“ type CR 2032 into battery compartment and close it again.

**Make sure that polarity is correct!**

***Avoid any electrostatic discharging during the battery replacement process.***

## 7 Warranty

ebro warrants this product to be free from defects in material and work-manship under normal use and service for a period of two years from date of purchase, except as hereinafter provided. This warranty extends only to the original purchaser (a purchase from ebro or ebro-licensed distributors is an original purchase).

This warranty shall not apply to batteries. The warranty shall not apply to any product which has been subject to misuse, neglect, accident, or abnormal conditions of operation or storage. In the event of failure under warranty, return this product to ebro or to the distributor or retailer from whom it was purchased for replacement or repair. Purchaser's exclusive remedy under warranty shall be replacement, repair, or refund of the purchase price.

The foregoing warranty is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. ebro shall not be liable for any special, incidental, or consequential damages, whether in contract, tort, or otherwise.

## I Technical data

Measuring range type T ...-50 to +350 °C

Measuring range type K ...-60 to +1200 °C

Sensor TTX100/110.....Thermocouple type  
T (Cu-CuNi)

Sensor TTX120.....Thermocouple type  
K (NiCr-Ni)

Operating temperature .....-20 to +50 °C

Storage temperature .....-30 to +70 °C

Resolution .....0.1 °C from -60°C  
to +199.9°C, other-  
wise 1°C

Precision type T.....± 0.8 °C or 0.8%  
whichever is  
greater

Precision type K .....± 1.0 °C or 1%  
whichever is  
greater

Battery .....Lithium coin cell  
3 V, type CR 2032

Life time of battery .....approx. 100h when  
used continuously  
(automatic cut-off  
after 15 sec)

Dimensions (LxWxH) .....90 x 20 x 42 mm

Housing material .....ABS

Safety class TTX100/110

.....IP 55

Safety class TTX120.....IP 40

Weight .....circa 40/45/60 g

### **Note**

*The system accuracy (probe + device) results from the addition of the single accuracies (system accuracy = accuracy device + accuracy probe).*



**Konformitätserklärung**  
**Conformity declaration**  
**Déclaration de conformité**

ebro Electronic GmbH & Co. KG  
Peringerstraße 10  
D-85055 Ingolstadt

erklärt in alleiniger Verantwortung, dass das Produkt  
*declares in sole responsibility that the product*  
déclare sous sa seule responsabilité que le produit

Geräteart:  
Type of device:  
Type d'appareil:

**Thermometer**  
**Thermometer**  
**Thermomètre**

Typ:  
Type: **TTX 100/110/120**  
Modèle:

auf das sich diese Erklärung bezieht, mit der folgenden Richtlinie  
übereinstimmt:  
*to which this declaration refers, complies with the following guideline:*  
*auquel cette déclaration se réfère, est conforme aux directive*

Richtlinie: EMV-Richtlinie 2004/108/EG  
Guideline: EMC Guideline 2004/108/EC  
Directive: CEM Directive 2004/108/CE

Im Bereich zwischen 123 MHz und 131 MHz bei 3 V/m kann es sein, dass das Gerät nicht der angegebenen Genauigkeit entspricht.

*Between 123 MHz and 131 MHz at 3 V/m, the instrument may not meet its stated accuracy.*

*Entre 123 MHz et 131 MHz à 3 v/m, il est possible que l'instrument ne soit pas conforme à cette précision nominale.*

Prüfstellen: TÜV Rheinland Product Safety GmbH  
Inspected by: Am Grauen Stein  
Organisme de contrôle: D-51105 Köln

**-ebro<sup>®</sup>**

Ingolstadt, 05.04.2005

  
Wolfgang Klün  
Geschäftsführer  
Managing director  
Directeur gérant

