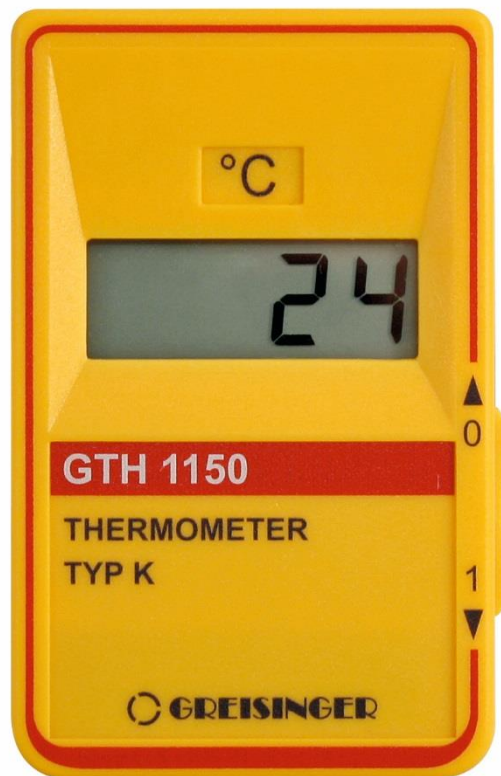





Operating manual

Quick-Response Thermometer

As of version 1.0

GTH 1150



-  Please carefully read these instructions before use!!
-  Please consider the safety instructions!
-  Please keep for future reference!



WEEE-Reg.-Nr. DE 93889386

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1 Safety

1.1 General note

Read through this document attentively and make yourself familiar to the operation of the device before you use it. Keep this document in a ready-to-hand way in order to be able to look up in the case of doubt. Mounting, start-up, operating, maintenance and removing from operation must be done by qualified, specially trained staff that have carefully read and understood this manual before starting any work. The manufacturer will assume no liability or warranty in case of usage for other purpose than the intended one, ignoring this manual, operating by unqualified staff as well as unauthorized modifications to the device. The manufacturer is not liable for misprints.

1.2 Intended Use

The device is designed for temperature measurements in various media in seconds.

The measuring range is -50... +1150 °C.

The device has a 2-pole standard flat-plug connection suitable for all type K thermocouple probes. Refer to chapter 6 Type K-sensor to view a selection of the available probes.

The safety requirements (see below) have to be observed.

The device must be used only according to its intended purpose and under suitable conditions.

Use the device carefully and according to its technical data (do not throw it, strike it ...)

Protect the device from dirt.

1.3 Qualified staff

All instructions have to be well understood and complied with.

To be sure that there's no risk arising due to misinterpretation of measured values, the operator must have further knowledge in case of doubt - the user is liable for any harm/damage resulting from misinterpretation due to insufficient knowledge.

1.4 Safety signs and symbols

Warnings are labeled in this document with the followings signs:



Caution! This symbol warns of imminent danger, death, serious injuries and significant damage to property at non-observance.



Attention! This symbol warns of possible dangers or dangerous situations which can provoke damage to the device or environment at non-observance.



Note! This symbol point out processes which can indirectly influence operation, possibly cause incorrect measurement or provoke unforeseen reactions at non-observance.

1.5 Reasonably foreseeable misuse



This device must not be used at potentially explosive areas!

Do not use these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury or material damage.

Failure to comply with these instructions could result in death or serious injury and material damage.



This device must not be used at a patient for diagnostic or other medical purpose.

1.6 Safety guidelines

This device has been designed and tested in accordance with the safety regulations for electronic devices. However, its trouble-free operation and reliability cannot be guaranteed unless the standard safety measures and special safety advises given in this manual will be adhered to when using the device.



If there is a risk whatsoever involved in running it, the device has to be switched off immediately and to be marked accordingly to avoid re-starting.

Operator safety may be a risk if:

- there is visible damage to the device
 - the device is not working as specified
 - the device has been stored under unsuitable conditions for a longer time.
- In case of doubt, please return device to manufacturer for repair or maintenance.



Due to the pointed probe design there is a risk of stitch injury for devices with insertion probe.



Trouble-free operation and reliability of the device can only be guaranteed if the device is not subjected to any other climatic conditions than those stated under 0 Specification. If the device is transported from, a cold to a warm environment condensation may cause in a failure of the function. In such a case, make sure the device temperature has adjusted to the ambient temperature before trying a new start-up.

2 Product description

2.1 Scope of delivery

The scope of supply includes:

GTH 1150	GTH 1150- Gourmet- SET
Device	Device
9V- battery	9V- battery
Operating Manual	Operating Manual
	Sensor GTE 130 OK

2.2 Operating and Maintenance

Battery operation:

If the "BAT" symbol is displayed at the bottom left of the display, the battery is weak and should be replaced soon. However, the device will still operate for a certain length of time.

If an additional "bAt" symbol is shown in the display, the battery is depleted. Battery replacement: (see chapter 7 **Fehler! Verweisquelle konnte nicht gefunden werden.**).



The battery has to be removed, when storing device above 50°C.
We recommend taking out the batteries if device is not used for a longer period of time.



Treat device and probes carefully. Use only in accordance with above specification. (do not throw, hit against etc.). Protect plug and socket from soiling.



Make sure that the device and the probe plug are always exposed to the same temperature. Therefore, do not hold the probe plug in your hand too long and do not expose the device to an additional heat source; otherwise faulty measurements can occur.



Wire probes, e.g.: GTF 300 can be shortened or, in case of a break, repaired by stripping about 10mm of the insulation off of the wire ends and twisting them together.
Measurement is not possible with open wire ends.

3 Operation

3.1 Display element



Current temperature Measured value

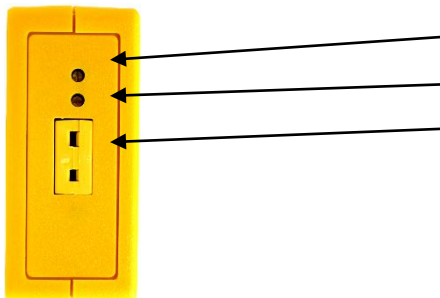
BAT: Low battery

3.2 Pushbuttons



Slide on / off
Position 0 = off
Position 1 = on

3.3 Connections



Scale (pitch potentiometer)

NP (NP potentiometer)

2-pole Norm-flat connection suitable for all NiCr-Ni (Typ K)- sensors

4 Adjustment

The device is calibrated and adjusted at the factory so that any standard probe offered by Greisinger can be plugged in without recalibration. If the value deviates excessively over time, we offer factory re-calibration.

4.1 Manual Adjustment



Manual adjustment changes the factory settings, which can no longer be simply restored!

If you want to adjust the device to the available probe, the probe must be plugged in first. Then the zero-point potential must be adjusted. See chapter **Fehler! Verweisquelle konnte nicht gefunden werden**. Connections.



Ensure that the thermometer has adjusted to room temperature for the zero-point potentiometer adjustment!

4.1.1 Zero point-Adjustment

Put ice cubes in a glass and pour cold water until ice cubes are almost covered. Put sensor into glass, wait approx. 30 minutes, then stir water with a spoon handle. Wait for stable value to be displayed, and then turn zero point potentiometer by means of a screwdriver until display shows **0**.

4.1.2 Scale Adjustment

An additional temperature reference is required for the scale adjustment. Adjust the display with the gradient potentiometer (scale) to the desired reference value.

5 Basics of the measurement

5.1 Probe accuracy/device accuracy

DIN EN 60584-2

Class	Type	Deviation	Validity
1	K	+/- 1.5 °C	-40... +375 °C

5.2 Possible errors

5.2.1 Immersion depth

For measurements in liquids the probe should be immersed sufficiently deep (depending on probe diameter, at least 20 mm with \varnothing 3 mm and 10 mm with \varnothing 1.5 mm) and subsequently stirred.

When measuring gases the probe should also emerge as deep as possible in the gas to be measured (e.g. when measuring in channels/pipes) and the gas should flow around the probe at sufficient flow.

5.2.2 Surface effects and bad heat transfer

For surface temperature measurements special surface probes are necessary. Surface quality, heat transfer and ambient temperature have an influence on the measurement result.



Thermally conductive paste between the probe and surface can also increase measurement accuracy in some cases.

5.2.3 Cooling (evaporation)

For air temperature measurements, the probe should be dry, otherwise it can be possible that a too low temperature could be measured.

5.2.4 Response time

Before reading the measured value at the measuring process, it is necessary to wait a sufficient time (see chapter 6 Type K-sensor).

5.2.5 Limit values



If this is disregarded, the probe can be destroyed!

Thermocouples are suitable for detecting very large temperature ranges. However, the permissible limits of your probe must be observed when measuring high temperatures. See chapter 6 Type K-sensor.

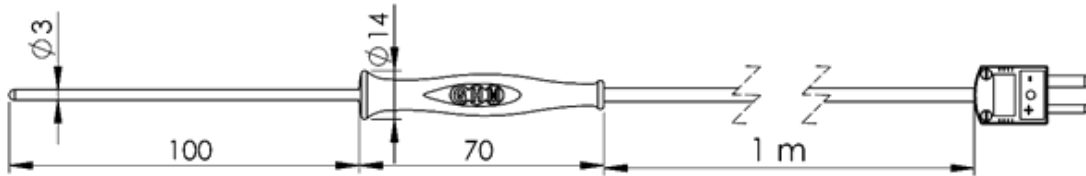
6 Type K-sensor

6.1 Details about the sensors

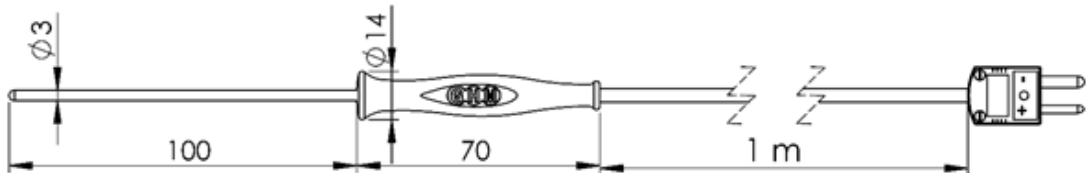
Application	Temperature range	Response time T ₉₀	Sensor
Insertion sensor	-65... +550 °C	40 s	GF 1TK- T3
Einstechfühler für weichplastische Medien	-65... +550 °C	12 s	GF 1TK- E1.5
	-65... +550 °C	40 s	GF 1TK- E3
	-65... +550 °C	3 s	GES 130
Surface sensor	-65... +900 °C	2 s	GOF 130
Wire sensor	-65... +300 °C	0,3 s	GTF 300

6.2 Sensors

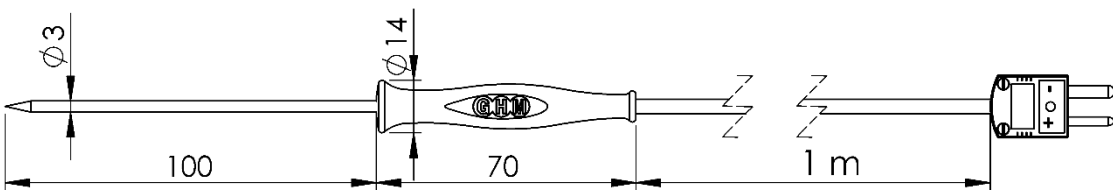
6.2.1 GF 1TK-T3



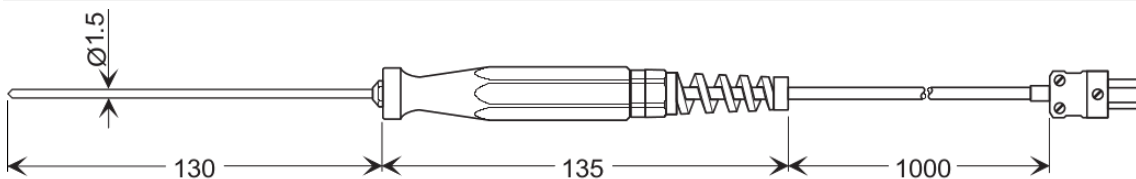
6.2.2 GF 1TK-E1.5



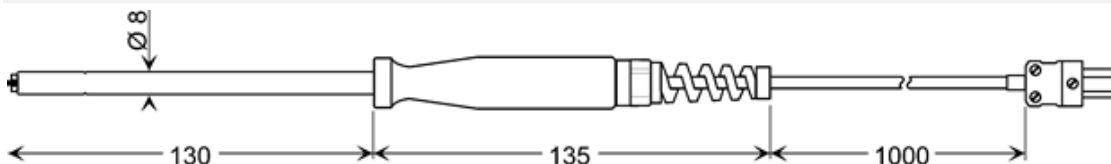
6.2.3 GF 1TK-E3



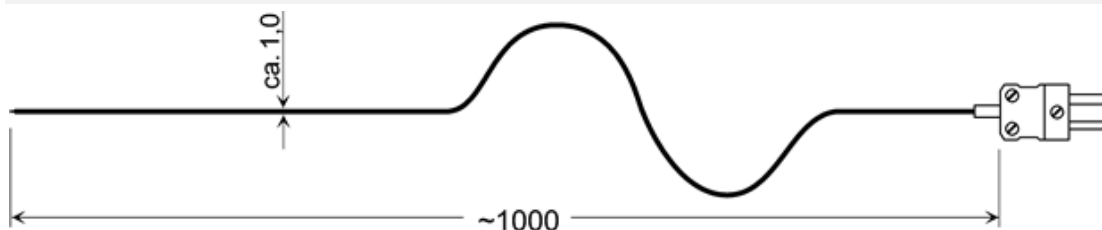
6.2.4 GES 130



6.2.5 GOF 130



6.2.6 GFT 300



You will find more Type K sensors in our catalogue on page 24 to 27.

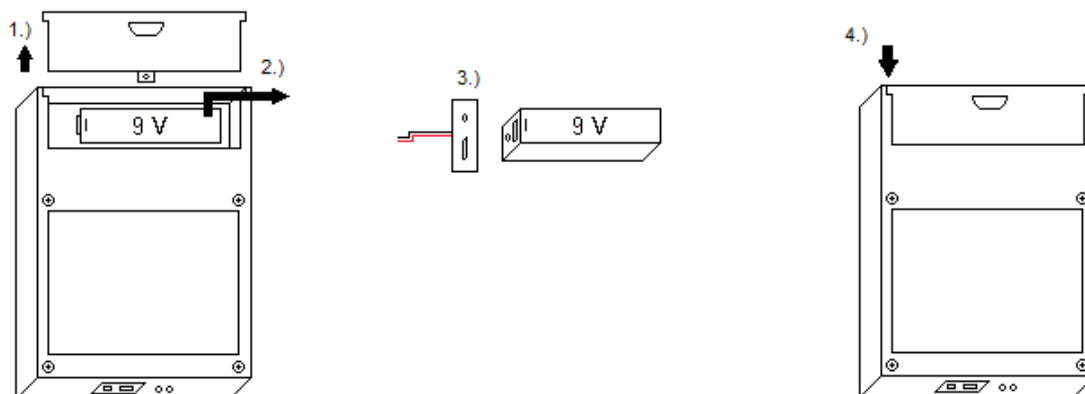
7 Replacing batteries



The use of damaged or unsuitable batteries could lead to further heating, whereby the batteries can burst or in the worst case exploding.

Ensure that the device is switched off when replacing the battery. The switch must be in Position 0, see chapter **Fehler! Verweisquelle konnte nicht gefunden werden. Fehler! Verweisquelle konnte nicht gefunden werden.** and turn it over so that the rear side is facing upwards.

- 1.) Open the cover of the device by carefully pushing it off of the device.
- 2.) Pull the battery out of the compartment and disconnect it.
- 3.) Ensure correct polarity when replacing the battery!
- 4.) Insert the battery in the compartment. Then position the cover correctly and slide it in until it engages.



8 Fault and System Messages

Error messages for measurement

	Description	What to do?
Er.1	Measured value above allowable range	Check: temperature not within sensor range? -> measuring value to high!
Er.2	Measured value below allowable range	Check: temperature not within sensor range? -> measuring value to low!
Er.7	System error	Note the working temperature of the device. Switch off the device and switch on again - when the error remains return to manufacturer for repair
BAT	Low battery	See chapter 7 Replacing batteries
BAT bAT	battery is ultimately exhausted	See chapter 7 Replacing batteries
----	• no suitable probe connected	Check: is a suitable probe connected?

9 Reshipment and disposal

9.1 Reshipment



All devices returned to the manufacturer have to be free of any residual of measuring media and other hazardous substances.

Measuring residuals at housing or sensor may be a risk for persons or environment



Use an adequate transport package for reshipment, especially for fully functional devices. Please make sure that the device is protected in the package by enough packing materials. Add the completed reshipment form of the GHM website <http://www.ghm-messtechnik.de/downloads/ghm-formulare.html>.

9.2 Disposal



Dispense exhausted batteries at destined gathering places The device must not be disposed in the unsorted municipal waste! Send the device directly to us (sufficiently stamped), considering the above if it should be disposed. We will dispose the device appropriate and environmentally sound.

Private user can return the device at the municipal collection points for small electrical appliances.

9 Specification

Resolution	1 °C														
Measuring range	-50 ... 1150 °C														
Accuracy (at nominal temperature)	±0.2 % v.MW. ±0.2 % FS. For more detailed values please refer to chapter 5 Basics of the measurement														
Sensor	Type K (NiCr-Ni), acc. to ½ DIN 43710, for plug-in operation. (Not included in scope off supply). Special design sensors incl. one of the following probes see chapter 6 Type K-sensor														
Nominal temperature	25 °C														
Working temperature	0 to +45 °C, please avoid quick temperature changes, if possible, otherwise a temperature adjustment time of approx. 15 minutes has to be taken into account														
Atmospheric humidity	0 ... 80 % RH (not-condensing)														
Storage temperature	-25 ... +70 °C (Over 50 °C please remove battery)														
Display	approx. 13 mm high, 3½-digit LCD														
Power supply	9V-Battery, type IEC 6F22														
Battery service life	> 1000 hours														
Low battery warning	„bAt“ displayed automatically in case of low battery.														
Dimensions of case	106 x 67 x 30 mm (L x B x D)														
Weight	approx. 130 g (including battery)														
Directives and standards	<p>The instruments confirm to following European directives:</p> <table> <tr> <td>2014/30/EU</td> <td>EMV directives</td> </tr> <tr> <td>2011/65/EU</td> <td>RoHS</td> </tr> <tr> <td>2012/19/EU</td> <td>WEEE</td> </tr> </table> <p>Applied harmonized standards:</p> <table> <tr> <td>EN 61326-1:2013</td> <td>emissions level: class B</td> </tr> <tr> <td></td> <td>emi immunity according to table 1 /A.1</td> </tr> <tr> <td></td> <td>additional error: < 0.5 % FS</td> </tr> <tr> <td>EN 50581:2012</td> <td></td> </tr> </table> <p>The device is for the mobile application or for the stationary operation in the course of specified working conditions without further restrictions construed.</p>	2014/30/EU	EMV directives	2011/65/EU	RoHS	2012/19/EU	WEEE	EN 61326-1:2013	emissions level: class B		emi immunity according to table 1 /A.1		additional error: < 0.5 % FS	EN 50581:2012	
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