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GREISINGER

EN

Operating Manual for
Digital Quick-Response Thermometer

GTH 1150 / GTH 1160



CE

Made in Germany

WEEE-Reg.-Nr. DE93889386

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1 General Note

Read this document carefully and get used to the operation of the device before you use it. Keep this document within easy reach near the device for consulting in 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 any costs or damages incurred at the user or third parties because of the usage or application of this device, in particular in case of improper use of the device, misuse or malfunction of the connection or of the device.
The manufacturer is not liable for misprints.

2 Safety

2.1 Intended Use

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.

The device is are digital pocket thermometers for quick response temperature measurements.
Depending on the used measuring probe measurements on surfaces, in liquids, soft media, air/gases, at smallest objects, etc. are possible.

2.2 Safety signs and symbols

Warnings are labelled 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 or provoke unforeseen reactions at non-observance.

2.3 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.

1. 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 "Specification".
2. 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.
3. 
DANGER

   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.
4. **Warning:** Do not use this product 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.

3 Product Specification

3.1 Scope of supply

The scope of supply includes:

- Device, incl. 9V battery block
- Operation Manual

3.2 Operation and maintenance advice

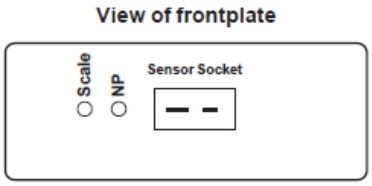
- **Battery operation:**
  If ‘bAt’ is shown in the lower display the battery has been used up and needs to be replaced. However, the device will operate correctly for a certain time. If ‘bAt’ is shown in the upper display the voltage is too low to operate the device; the battery has been completely used up.

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

- Treat device carefully. Use only in accordance with above specification. (do not throw, hit against etc.). Protect plug and socket from soiling.
- Make sure that sensor and device are always subjected to the same temperature, i.e. try to avoid holding sensor plug in your hand for a longer period of time as well as subjecting device to an additional heat source as this may result in measuring inaccuracies.
- The length of measuring sensor (GTF 300, GTF 300GS) can be reduced as desired so that it will be fully operational again after sensor has been broken. To do so, please strip both wire ends for approx. 10mm and twist well. Measurements are not possible as long as wire ends are exposed.
- The battery hast o be taken out, when storing device above 50°C.It is recommended to take the battery out, when storing device for a longer period of time.

4 Recalibration

The measuring device will be calibrated before leaving our works. A recalibration is, therefore, not necessary.
If you want to calibrate the device for an existing sensor, please proceed as follows: (calibrate 0°C before scale as otherwise correct adjustment cannot be guaranteed)
Normally sensor adjustment by means of 0° C potentiometer is sufficient. We do not recommend scale compensation in order to maintain the specified accuracy of the device. If an accurate reference temperature is available, choose highest temperature possible to calibrate the device.



Calibration point 0°C: Put ice cubes in a glass and pour cold water till ice cubes are almost covered. Put sensor into glass, wait approx. 15 minutes, then stir water with a spoon handle. Wait for stable value to be displayed, then turn zero point potentiometer (NP, Potentiometer next to sensor connection) by means of a screw driver till display shows "000" resp "0.3" (for GTH1160).
Calibration point scale: To set the pitch (Scale) a fixed reference temperature is required (the higher the better). Subject sensor to this temperature and set respective display value according to correction table value (e.g. reference temperature 700°C -> value to be set: 711) by means of pitch potentiometer (outer potentiometer).
Please note that boiling water should not be used as a temperature reference as the boiling temperature is dependent on the atmospheric pressure. (If using a reference thermometer stating the precise temperature you may, however even use boiling water.)
Please note : During the waiting time the device should have assumed ambient temperature (we recommend a temperature of 20 to 25°C). Please avoid holding device in your hand as well as subjecting it to an additional heat source (e.g. radiator, lamp, sun).

Correction table

Temperature	Display	Temperature	Display	Temperature	Display	Temperature	Display	Temperature	Display	Temperature	Display
-50	-45.8	160	159.7	370	369	580	587	790	802	1000	1007
-40	-36.9	170	169.5	380	379	590	597	800	812	1010	1016
-30	-27.9	180	179.2	390	390	600	607	810	822	1020	1026
-20	-18.6	190	188.9	400	400	610	618	820	832	1030	1035
-10	-9.3	200	198.7	410	410	620	628	830	842	1040	1045
0	0.3	210	208	420	421	630	639	840	852	1050	1054
10	10.0	220	218	430	431	640	649	850	862	1060	1063
20	19.8	230	228	440	441	650	659	860	871	1070	1073
30	29.6	240	238	450	452	660	670	870	881	1080	1082
40	39.6	250	248	460	462	670	680	880	891	1090	1091
50	49.6	260	258	470	472	680	690	890	901	1100	1100
60	59.7	270	268	480	483	690	700	900	911	1110	1110
70	69.8	280	278	490	493	700	711	910	920	1120	1119
80	80.0	290	288	500	504	710	721	920	930	1130	1128
90	90.0	300	298	510	514	720	731	930	940	1140	1137
100	100.1	310	308	520	524	730	741	940	949	1150	1146
110	110.2	320	318	530	535	740	751	950	959	1160	1155
120	120.2	330	328	540	545	750	762	960	969	1170	1164
130	130.2	340	339	550	556	760	772	970	978	1180	1173
140	140.1	350	349	560	566	770	782	980	988		
150	149.9	360	359	570	576	780	792	990	997		

5 Specification

Resolution:	
Range 1:	0,1 °C (only GTH1160)
Range 2:	1 °C
Measuring range:	
Range 1:	-50.0 ... +199.9 °C (only GTH1160)
Range 2:	-50 ... 1150 °C
Accuracy:	(at nominal temperature) -20 to +550°C and 920 to 1150°C: < 1% ± 1 Digit; 550 to 920°C: < 1,5% ± 1 Digit. For more detailed values please refer to att. correction table.
Sensor:	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:
GTF 300:	2 teflon-isolated, helically winded thermoelement wires with a dia. of 0,2mm each, length approx. 1m with miniature flat plug, free from thermo-voltage. Sensor is suitable for surface and immersion measurements. Response time in liquids 0,3sec, Measuring range: -65 to 300°C.
GTF 300 GS:	2 teflon-isolated, helically winded thermoelement wires with a dia. of 0,2mm each, length approx. 1m with miniature flat plug, free from thermo-voltage. Sensor is suitable for air and surface measurements (not suitable for liquids). Response time in liquids 0,3sec, Measuring range: -65 to 400°C.
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:	-10 ... +70 °C
Display:	approx. 13 mm high, 3½-digit LCD
Power supply:	9V-Battery, type IEC 6F22
Battery service life:	approx. 700 hours (GTH1150) or approx. 300 hours (GTH1160)
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. 150 g (incl. battery)
EMC:	The device corresponds to the essential protection ratings established in the Directives oft he European Parliament and of the council on the approximation of the laws of the memberstates relating to the electromagnetic compatibility (2004/108/EC).

6 Reshipment and Disposal

6.1 Reshipment



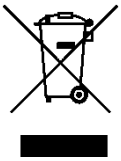
DANGER

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.

6.2 Disposal instructions



Batteries must not be disposed in the regular domestic waste but at the designated collecting points.

The device must not be disposed in the unsorted municipal waste! Send the device directly to us (sufficiently stamped), if it should be disposed. We will dispose the device appropriate and environmentally sound.