H62.0.31.6C-02

GREISINGER
electronic

EN

Operating manual
Fast precision air thermometer

as of version 2.1

GTH 200 air

CE

☞ Please carefully read these instructions before use!

☞ Please consider the safety instructions!

☞ Please keep for future reference!

Made in
Germany

WEEE-Reg.-Nr. DE 93889386

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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.

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 GTH 200 air measures the temperature of ambient air. The measurements uses a Pt1000 precision sensor located in the probe tube and has to be protected from any dirt.
The open probe design and the precise sensor ensures fastest temperature measurements.

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, etc.)
Protect the device from dirt.

Possible application areas include server rooms museums, churches administrative and residential buildings, storage rooms, green houses, pools, production rooms, cooling and air-conditioning technology and many more.

2.2 Safety signs and symbols

Warnings are labeled in this document with the followings signs:

⚠ GEFAHR

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”.
   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. ⚠ GEFAHR
   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.
3. When connecting the device to other devices the connection has to be designed most thoroughly as internal connections in third-party devices (e.g. connection GND with protective earth) may lead to undesired voltage potentials that can lead to malfunctions or destroying of the GFTB 200 and the connected devices.
4. ⚠ GEFAHR
   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.
5. ⚠ GEFAHR
   This device must not be used at potentially explosive areas! The usage of this device at potentially explosive areas increases danger of deflagration, explosion or fire due to sparking.
6.

2.4 Scope of supply

The scope of supply includes:

- Handheld measuring device GTH 200 air
- 9V battery
- Operating manual

2.1 Operation and maintenance advice

a.) Battery operation:
If BAT is shown in the left part of the display the battery has been used up and needs to be replaced. However, the device will operate correctly for a certain time.

ⓘ 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.

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

3 Handling

3.1 Display elements

1+2:	**Main display**	Display of temperature value
4:	**BAT**	Display for low battery warning
3:	**HLD**	The measuring value is ‘frozen’ (hold button).

3.2 Pushbuttons

Key on/off unit	**on/off:**	
	press longer:	switch off instrument
Key mode	**mode:**	
	press shortly:	display of the MIN/MAX values
	Press longer:	invoke the configuration menu (*see chapter 4*)
Key hold	**hold:**	
	press shortly:	‘Freeze’ the current measuring value (‘HLD’ displayed)

3.3 Switching on

The device is switched-on by shortly pushing the button on/off unit.

After segment test  the device shortly displays information on its configuration:

P_oF if auto-off function is activated (see chapter *4*). If this function is deactivated the device is in continuous operating mode.
After that the device is ready for measuring.

3.4 Running measurements

a) Please pay attention that no dirt gets into the vents. If this has already taken place, please do not try to remove it. Improper treatment can damage the sensors. Additionally the device should be saved from mechanical agitation, because this can also damage the sensors (carrier material glass and ceramic)!

Attention: In the sensor area the instrument is ESD-sensitive. Never touch or hold sensor head!

b) For fast measurements of ambient air: Hold device by the outstretched arm and sway back and forth (to fan) to accelerate the air exchange and the temperature matching. As soon as the measured value is quite stable, it can be read off. It may make sense to press the hold key to “freeze” all values and therefore read them off easily.

c) If the device is held in the hand during the measurement, both temperature and humidity are altered by the body heat. To minimize this influences the device should be held as far away from the sensor as possible and a direct contact with the exhaled air should be avoided. Most accurate measurements are achieved, if the device is set down and the measured value (as soon as it is stable) is read at adequate distance.

3.5 Display of min-/max- value memory

For all measuring values the lowest and highest measured value since the switch-on of the device will be stored.

Display MIN value (Lo):	press mode ▲ shortly	display **switching** between **'Lo'** and **MIN value**
Display MAX value (Hi):	press mode ▲ again	display **switching** between **'Hi'** and **MAX value**
Return to current value:	press mode ▲ again	current measured value is displayed
Delete MIN/MAX value:	press mode ▲ for 2s	MIN and MAX values are deleted. **'CLr' (Clear)** is displayed shortly

After switching-off and turning-on again all min-/max- values will be deleted.

3.6 Hold – function

When the key hold ▼ key is pressed, the current measured values will be **'frozen'** (display symbol: HLD). As soon as the key hold ▼ is pressed again, the device measures again the normal way.

3.7 System messages

Er. 1	measuring range has been exceeded, measuring value too high
Er. 2	meas. value has fallen below permissible range, measuring value too low
Er. 7	system error - the device has detected a system fault (defective or far outside allowable ambient temperature range)
BAT 27.8 °C	If **"BAT"** is displayed at the left side of display, the battery is weak, measuring can be continued for a short period.
bAt	The battery is used up and needs to be replaced. Measuring is no more possible.

4 Configuration of the device

To configure the device functions proceed as follows:

- Switch off the device.
- Press mode ▲ and keep button pressed. Switch on device (press on/off unit shortly).
  Release mode ▲ not before the first parameter "*P_oF*" is displayed.
- Adjust current parameter with "up" mode ▲ or "down" hold ▼.
- Switch to the next parameter with button on/off unit.

Parameter on/off unit	Value mode ▲ hold ▼	Description
P_oF	**Auto power-off delay** *ex works: 20 min.*	
	1 ... 120	**Auto power-off delay** in minutes. Device will be automatically switched off as soon as this time has elapsed if no key is pressed. (possible values: 1..120 min)
	oFF	The auto power off function is deactivated (continuous operation).
Unit	**Temperature unit** *ex works: °C*	
	° C / °F	Temperature in °C / in °F
Init	**Restore factory defaults**	
	no / YES	Abort / restore factory defaults

Pressing on/off unit after adjusting the last parameter will save the settings and restart the device (segment test).

Please note: *If no key is pressed for more than 2 minutes the configuration will be aborted. All changes will be discarded!*

5 Offset- (Zero point) and Slope Adjustment

The temperature measuring value can be readjusted by the following settings.
However, please consider that the integrated sensors are very precise and readjustment is very rarely needed. Erroneous settings of the parameters will probably cause by far higher errors than e.g. caused by sensor drift in the course of time.
If you do not have access to suitable measuring references you may consider the notes on our calibration service in chapter 6.
The corresponding display value is calculated via the following formula:

Unit = °C: *displayed value = (meas. value – offset) * (1 + slope adjustment/100)*

Unit = °F: *displayed value = (meas. value – 32°F – offset) * (1 + slope adjustment /100) + 32°F*

To configure the offset and slope adjustment proceed as follows:

- Switch off the device.
- Press hold ▼ and keep button pressed. Switch on device (press on/off unit ↵ shortly).

  Release hold ▼ not before the first parameter **‘OFS.t’** is displayed.
- Adjust current parameter with “up” mode ▲ or “down” hold ▼.
- Switch to the next parameter with button on/off unit ↵.

Parameter on/off unit ↵	Value mode ▲ hold ▼	Description
OFS.t	**Offset of temperature measurement [T]** *ex works: oFF*	
	-5.0…+5.0°C **-9.0…+9.0°F**	Set in 0.1 steps
	oFF	Value is 0.0
SCL.t	**Slope of temperature measurement [T]** *ex works: oFF*	
	-5.00…+5.00	Set in 0.01% steps
	oFF	Value is 0.00%

Pressing on/off unit ↵ after adjusting the last parameter will save the settings and restart the device (segment test).

Please note: *If no key is pressed for more than 2 minutes the configuration will be aborted. All changes will be discarded!*

6 Accuracy Check / Adjustment Service

You can send the device to the manufacturer for adjustment and inspection.
Calibration certificate - DKD certificate - official certifications:
If the measuring instrument is supposed to receive a calibration certificate, it has to be sent to the manufacturer (declare test points, e.g. 0°C; 23°C; 40°C).
The basic settings can be only checked and – if necessary – corrected by the manufacturer.
A calibration protocol is enclosed to the device ex works. This documents the precision reached by the production process.

7 Reshipment and Disposal

7.1 Reshipment

⚠ GEFAHR

All devices returned to the manufacturer have to be free of any residual of measuring media and/or 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.

7.2 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.

8 Specification

Measuring range	-25.0°C – 70°C or -13.0 – 158.0°F
Resolution	0.1°C or 0.1°F
Response time	T90 = 10 sec.
Accuracy: (±1 digit, at nominal temperature)	± 0.5% of meas. value ±0.1°C (PT1000 1/3 DIN B)
Display	approx. 11 mm high, 4½-digit LCD-display
Operation elements	3 keys for ON/OFF, min-/max-value display, hold
Operating conditions	-25 to 70°C; 0 to 80% RH (non condensing)
Additional functions	min/max/hold
Power supply Current consumption	9V battery type IEC 6F22 (included in delivery) approx. 50 µA
Change battery indicator	automatically if battery exhausted “bAt”
Auto-off function	Device will be automatically switched off if no key is pressed/no interface communication takes place for the time of the power-off delay. The power-off delay can be set to values between 1and 120 min.; it can be completely deactivated.
Offset and scale	digital offset and slope adjustment of all measurements
Housing	break-proof ABS-housing: approx. 106 x 67 x 30 mm (H x W x D), sensor head protruding vertically, length 35 mm, ø 14 mm, overall length 141 mm
Weight	approx. 130g incl. battery
EMC	The device corresponds to the essential protection ratings established in the Regulations of the Council for the Approximation of Legislation for the member countries regarding electromagnetic compatibility (2004/108/EG). Additional fault: <1%