H53.0.02.6C-14

GREISINGER

EN

Hygro-/Thermometer

Operating Manual

GFTH 200

CE

Made in Germany

WEEE-Reg.-No. DE93889386

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Contents

1 General Note

Read this document carefully and get used to the operation of the device before you use it. Keep this document within reach near the device for consulting in case of doubt.

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 device from dirt.

Quick-response measurement of atmospheric humidity, temperature and dew point temperature (resp. wet bulb temperature) in EDP rooms, museums, churches, administrative and residential buildings, storage rooms, green houses, pools, production rooms, for cooling technology and air conditioning as well as for building engineers and for the evaluation of damage to buildings etc..

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".
   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. 

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. 

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.

3 Product Specification

3.1 Scope of supply

The scope of supply includes:

- Device GFTH 200, incl. 9V battery block
- Operation manual

3.2 Operation and maintenance advice

- **Battery operation:**
  If „BAT„ appears in the left hand corner of the display, the battery is used up and needs to be replaced. However, the instrument can still be operated for a short period of time. If „bAt“ is displayed in large letters the battery is finally used up and has to be replaced. Measuring is no more possible.

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 and sensor carefully. Use only in accordance with above specification. (Do not throw, hit against etc.). Protect plug and socket from soiling.
- The humidity and temperature sensors are located in the protruding sensor head. Make sure that the openings are not soiled. In case of soiling do not try to remove the dirt. Improper use may damage the sensors. Prevent any mechanical impact on the device as this may also lead to a destruction of the sensors (supporting material glass or ceramics)!

The sensor area is ESD-sensitive. Never touch or hold the sensor head!

- In order to guarantee accurate measurements the device has to be adjusted to ambient temperature.
  If necessary wait for the temperature of the device to adjust to the ambient temperature.
  If this is not possible, please proceed as follows:
  Move device around while holding it at an arm's length (fanning), to speed up the exchange of air and the temperature adjustment process. As soon as the display value is steady, readings can be made. This procedure shall be used for temperature and for humidity measurements. When the value is steady, You can press ‘Hold‘ and stop the moving around for easy read out of measuring value.
- If you hold the device during measurements your body heat as well as your breath will change the temperature and the humidity. In order to minimise these factors, hold the device at an as great as possible distance from the sensor. Also try to prevent your breath coming into contact with the sensor. For optimum measuring results put down device and read display from a certain distance as soon as a constant measuring value is displayed.
  Always take into account that any humidity measurements in an open space cannot be made to an accuracy of more than 0.1% due to factors such as movement in the air, temperature changes etc.
- A user-calibration at the users site is not possible. To ensure highest accuracies it should be returned to the manufacturer every 12 months (when used in clean air) for checking or, if necessary: recalibration.
  If desired a calibration certificate can be made (acc. ISO 9000 ff). Price upon request.
- Probe tube and case are not 100% proof. If there are pressure differences between probe tube and case, there may be made wrong measurings.
  For measurings in channels with over/under pressure or strong air flow we recommend our GMH3330 or GMH3350 with humidity probe TFS0100 or TFS0100E.

4 Notes For Device Functions

4.1 Choice of Measuring Unit

The measuring unit can be chosen by means of the slide switch at the right side oft he instrument.

Temp ⇒ slide switch up:	The instrument shows the current temperature or referring min/max/hold values
% RH ⇒ slide switch in the middle:	The instrument shows the current humidity or min/max/hold values
Td ⇒ slide switch down:	the instrument shows the dewpoint temperature or referring min/max/hold values

For option GFTH200 / FK the unit wetbulb temperature “Wb“ instead of dewpoint temperature “Td” is integrated:

Wb ⇒ slide switch down:	The instrument shows the wetbulb temperature or referring min/max/hold values

4.2 Min-/Max-Value Memory

watch MIN-value (Lo):	press key ‘Mode’ shortly once	display changes between ‘Lo‘ and MIN value of the chosen unit
watch MAX-value (Hi):	press key ‘Mode’ shortly once again	display changes between ‘Hi‘ and MAX value of the chosen unit
restore current value:	press key ‘Mode’ shortly once again	current value of the chosen unit is displayed
clear MIN-/MAX-value memory:	press key ‘Mode‘ for 2 sec.	MIN and MAX values will be cleared. The display shows shortly: ‘CLr’.

Please consider: If the measuring mode ‘fast‘ is not chosen, the instrument changes automatically from MIN/MAX display to the current value display after 20 seconds.

4.3 Hold-Function

By shortly pressing the ‘Hold‘ key the currently measured values are ‘frozen‘ for all three units,
The display changes between ‘Hld‘ and the ‘frozen‘ value. The other units ‘frozen‘ values can be displayed by setting of the slide switch.
Pressing the key ‘Hold‘ once again resets the display to the current value.

Please note: Measuring keeps on running in the background, the MIN/MAX values are updated continuously.

Please consider: If the measuring mode ‘fast‘ is not chosen, the instrument changes automatically from Hold display to the current value display after 20 seconds.

4.4 External Temperature Probe

The instrument can be connected to an external temperature probe with a 3.5mm audio plug.
If a probe is connected, the temperature of the probe is displayed automatically instead of the internally integrated sensor. For the calculation of the dewpoint (or wetbulb) temperature the internal sensor is still being used.

The allowable temperature range of the external probe is -25.0 ... 70.0 °C.

4.5 Offset and Scale Adjustment

The offset and scale adjustment is mainly intended to be used to compensate errors of the external temperature probes. The internal temperature and humidity measuring can be adjusted too.

The display value is given by the following formula:

unit = °C or %RH: ***Display = (measured value - offset) * (1 + scale adjustment / 100)***

unit = °F: ***Display = (measured value - 32°F - offset) * (1 + scale adjustment / 100) + 32°F***

The offset and scale adjustments can be entered for following units and are stored independently from each other:

- *external temperature: offset unit = temperature, the external probe has to be plugged in before calling the adjustment menu.*
- *internal temperature: offset unit = temperature,* ***no*** *external probe must be plugged in before calling the adjustment menu.*
- *humidity: offset unit = %RH*

The scale adjustment unit is % of the measured value
At dewpoint and wetbulb temperature the offset and scale adjustment is not possible!

To adjust a measuring offset and scale proceed like follows:

1. Switch off the instrument.
2. Choose the desired measuring unit
   (dewpoint temperature „Td“ or wetbulb temperature „Wb“ cannot be adjusted!)
3. Press the ‘Hold‘ key while switching on the instrument.
   Keep ‘Hold‘ key pressed until ‘OFS‘ appears in the display (about 3 seconds).
4. Press ‘Mode‘ or ‘Hold‘ key, the currently selected offset adjustment of the chosen unit appears.
5. Choose the desired value by pressing ‘Mode‘ or ‘Hold‘ key. (max. input range: ±5.0°C or ±15.0 % RH)
6. Enter by pressing On/Off-key.
7. SCL appears in the display
8. Press ‘Mode‘ or ‘Hold‘ key, the currently selected scale adjustment of the chosen unit appears
9. Choose the desired value by pressing ‘Mode‘ or ‘Hold‘ key. (max. input range: ±5.00%)
   The input is displayed in %.

   Example*: scale adjustment is 4.00 => scale is increased by 4.00% ⇒ Scale = 104%*
   At a measured value of 50.0 (without offset correction) the instrument would show 52.0
10. Store the values by pressing ‘On/Off‘ key.

Please note: If during the changing of the offset adjust no key is pressed within 20 seconds, the input will be aborted. Eventually made changes won’t be stored!

5 Configuration of Device

To configure the instrument proceed like follows:

1. Switch off the instrument.
2. Press the ‘Mode‘ key while switching on the instrument.
   Keep ‘Mode‘ key pressed until ‘rAt‘ (=rate) appears in the display (about 3 seconds).

5.1 Measuring Rate

The measuring rate determines how often the display of the measured values is actualized. Fast measuring rates ensure a fast response of the display to changing measuring values, but have higher power consumptions than slow rates. (see also: Specification)

3. The display shows ‘rAt‘ (=measuring **rat**e)
4. Press ‘Mode‘ or ‘Hold‘ key, the currently selected rate will be displayed.
5. Enter the desired rate by pressing ‘Mode‘ or ‘Hold‘ key.

   Possible input:
   FSt: fast - one measuring per second
   2...60: one measuring each 2..60 seconds
6. Confirm the value by pressing ‘On/Off‘ key.

5.1 Auto Power Off Time

The auto power off time is entered in minutes. If no key is pressed during a measuring, the instrument switches itself off automatically after the entered period of time.

7. The display shows ‘P.oF‘ (=**P**ower **Off**)
8. Press ‘Mode‘ or ‘Hold‘ key, the currently selected power off time will be displayed (off, 1..120min)
9. Enter the desired time by pressing ‘Mode‘ or ‘Hold‘ key.
   Possible input:
   off: The auto power off function is deactivated (permanent operation)
   1...120: auto power off time in minutes.
10. Confirm the value by pressing ‘On/Off‘ key.

5.2 Display Unit

Choice of the temperature display unit: °C or °F – valid for all temperature displays.

11. The display shows ‘Uni‘ (=**Uni**t)
12. Press ‘Mode‘ or ‘Hold‘ key, the currently selected unit will be displayed (°C or °F)
13. Enter the desired unit by pressing ‘Mode‘ or ‘Hold‘ key.
14. Confirm the value by pressing ‘On/Off‘ key.

5.3 Altitude (only for wetbulb temperature displaying instruments GFTH200 / FK)

Choice of the altitude (above sea level). The input unit is kilometres above sea level.

15. The display shows ‘ALt‘
16. Press ‘Mode‘ or ‘Hold‘ key, the currently selected altitude will be displayed.
17. Enter the desired altitude by pressing ‘Mode‘ or ‘Hold‘ key.
    Possible input: -1.00 ... 9.00 km
18. Confirm the value by pressing ‘On/Off‘ key.
19. The values will be stored, the instrument will restart (segment test).

Please note: If during the configuration no key is pressed within 20 seconds, the configuration will be aborted. Eventually made changes won’t be stored!

6 System Messages

In case of measuring range overruns, etc. according error messages are displayed:
Er. 1 = measuring range has been exceeded
Er. 2 = meas. values have fallen below perm. range
Er. 3 = display range overrun
Er. 4 = display range underrun
Er. 7 = System fault - the device has detected a system fault
--- = value could not be calculated: at least one of the referring values of the calculation has an error

7 Reshipment and Disposal

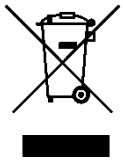
7.1 Reshipment

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.

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:	temperature:	-25,0 ... +70,0°C resp. -13,0 ... +158,0°F
	humidity:	0,0 ... 100,0 %RH (recommended range for application: 11 ... 90 %RH)
	dew point temperature:	-40,0 ... +70,0 °C resp. -40,0 ... +158,0°F (GFTH200 – standard)
	wet bulb temperature:	-27,0 ... +70,0 °C resp. -16,6 ... +158,0°F (only for option: GFTH200 / FK)
Resolution:	temperature:	0,1°C or 0,1°F (selectable)
	humidity:	0,1 %RH
	dew point temperature:	0,1°C or 0,1°F
	wet bulb temperature:	0,1°C or 0,1°F
Accuracy: (±1 digit) nominal temperature = 25°C)	temperature (internal):	± 0,5% of m. v. ± 0,1°C (same as Pt1000 1/3 DIN) (at
	temperature (external):	± 0,1°C (device) ± probe accuracy
	humidity:	± 2,5% RH (range: 11 ... 90 %RH)
Measuring probe:	temperature:	Pt1000
	humidity:	capacitive polymer humidity sensor
Response time:	T90 = 10 sec.	

Terminal for external probe: for connection on any Pt1000 probe with 3.5 mm mono plug.
(measuring range: -25.0 ... +70.0°C)

Offset- and scale: digital offset and scale adjustment

Display: approx. 13 mm high, 3½-digit LCD-display

Operation elements: 3 keys for ON/OFF, min-/max-value display, hold
Slide switch for selection of measuring range

Nominal temperature: 25°C

Operating conditions: electronics: -25 ... 70 °C; 0 ... 80 % RH (non-condensing)
sensors: -25 ... 70 °C; 0 ... 100 %RH.

Power supply: 9V battery type JEC 6F22 (in scope of supply)

Power consumption: (for standard type)
approx. 100µA at 1 measuring / s (mode FAST)
approx. 55µA at 1 measuring / 2s
approx. 20µA at 1 measuring / 10s
approx. 9µA at 1 measuring / 60s

Low battery warning: "BAT" automatically displayed if battery is low

Auto off function: when the Auto Off Function is activated, the device switches automatically off, if keypad is not attended for a longer time (selectable 1 ...120min).

Min-/Max-value memory: Min and max measured values are stored for all 3 measuring ranges.

Hold key: the current measuring will be „frozen“ (for all 3 ranges).

Housing: impact resistant ABS-housing: approx.106 x 67 x 30 mm (HxWxD), in addition, sensor head protruding vertically, length 35 mm, diameter 14 mm, overall length 141 mm.

Weight: approx. 135g 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%