

Operating Manual for Digital Precision Thermometer

GMH 175



Specification:

| | |
|------------------------------|---|
| Range: | -70.0 to +199.9°C ($\pm 199.9^\circ\text{C}$) |
| Resolution: | 0.1°C |
| Accuracy: | device: $\pm 0.1^\circ\text{C} \pm 1$ digit (within range of -70 ... +199.9°C, other range p.r.t. correction table at next page) probe: depending on connected sensor |
| Sensor: | Pt1000 sensor, 2-wire, connection via 3.5mm \varnothing jack connector |
| Display: | approx. 13mm high, 3½ digit LCD |
| Nominal temperature: | 25°C (accuracy specified at this temperature) |
| Working temperature: | -30 to +45°C (ambient temperature for device) |
| Atmospheric humidity: | 0 to 80 %RH (not condensing) |
| Storage temperature: | -30 to +70°C |
| Power supply: | 9V-battery type IEC 6F22 (included) as well as additional d.c. connector (internal pin \varnothing 1.9mm) for external 10-12V direct voltage supply. (suitable power supply: GNG10/3000) |
| Battery service time: | approx. 200 operating hours |
| Low battery warning: | "BAT" displayed automatically in case of low battery |
| Dimensions of case: | approx. 142 x 71 x 26 mm (H x W x D), Impact-resistant ABS plastic housing, Front side IP65, integrated pop-up clip for table top or suspended use. |
| Weight: | approx. 160g (cpl. device with 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 (89/336/EWG). Additional error: <1% |

Points to be observed during operation

a.) In case of low battery voltage "BAT" is displayed; make sure to exchange battery immediately as too low an operation voltage may lead to incorrect measuring results. To exchange battery, please proceed as follows:

- push battery cover located at the back side of the device unit downwards.
- take out battery and replace by a new one
- close battery cover

We recommend to take out battery if device will not be operated for some time or if the device will be stored about 50°C.

Please note: If the battery voltage falls even lower the voltage may not be sufficient for "BAT" to be displayed so that there will be no "BAT" indication although the battery has been used up. We recommend to make it a rule to always check the battery if the values indicated seem to be completely out of range.

b.) Make sure to maintain unit properly and to operate it in accordance with the specification listed (do not throw, knock etc.).

c.) Mains operation:

When using a power supply unit please note that operating voltage has to be 10 to 12 V DC. Do not apply overvoltage!! Cheap 12V-power supply units often have excessive no-load voltage. We, therefore, recommend using regulated voltage power supply units. Trouble-free operation is guaranteed by our power supply GNG10/3000.

Prior to connecting the plug power supply unit with the mains supply make sure that the operating voltage stated at the power supply unit is identical to the mains voltage.

Disposal instruction:

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.

Safety Advices:

This device has been designed, assembled and tested in accordance with the safety regulations for electronic measurement devices.

However, its trouble-free operation and reliability cannot be guaranteed unless the standard safety measures and special safety advices 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. Moving the device from a cold to a warm environment may lead to malfunctions due to condensation. In such a case we recommend waiting to allow unit temperature to adjust to the ambient temperature before re-starting.
3. If device is to be connected to other devices the circuitry has to be designed most carefully. Internal connection in third party units (e.g. connection GND and earth) may result in not-permissible voltages impairing or destroying the device or another device connected.

Warning: If device is operated with a defective mains power supply (short circuit from mains voltage to output voltage) this may result in hazardous voltages at the device (e.g. sensor socket).

4. If there is any 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 done 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

5. **Warning:** Do not use these 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.

Recalibration

The measuring device will be calibrated before leaving our works. A recalibration is, therefore, not necessary .

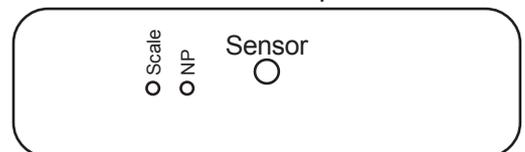
If you want to calibrate the device for an existing sensor, please proceed as follows (calibrate 0°C before scale as otherwise correct adjustment cannot be guaranteed):

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 spoonhandle. Wait for stable value to be displayed, then turn zero point potentiometer (NP, Potentiometer next to cable outlet) by means of a screw driver till display shows "0.00".

Calibration point scale : Set display to a reference temperature value (e.g. clinical thermometer) using the extreme left potentiometer on the front side of the device (Scale).

Please note that boiling water should not be used as a temperature reference as the boiling temperature is dependent on the atmospheric pressure.

View of front plate



Correction table: (typ. value)

| temperature | display | temperature | display | temperature | display | temperature | display |
|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
| -200 | -201.9 | -165 | -165.9 | -130 | -130.3 | -95 | -95.1 |
| -195 | -196.7 | -160 | -160.8 | -125 | -125.3 | -90 | -90.0 |
| -190 | -191.6 | -155 | -155.7 | -120 | -120.2 | -85 | -85.0 |
| -185 | -186.4 | -150 | -150.6 | -115 | -115.2 | -80 | -80.0 |
| -180 | -181.2 | -145 | -145.5 | -110 | -110.1 | -75 | -75.0 |
| -175 | -176.1 | -140 | -140.4 | -105 | -105.1 | -70 | -70.0 |
| -170 | -171.0 | -135 | -135.4 | -100 | -100.1 | | |

Accessories: Suitable plug-in temperature probes: (-70.0 ... +199.9°C, DIN Class B - Probes interchangeable without recalibration!)

GTF 175 immersion probe for liquids and aggressive gases

GES 175 insertion probe for soft media

GOF 175 surface probe for any solid surface

GLF 175 air/gas probe for clean media