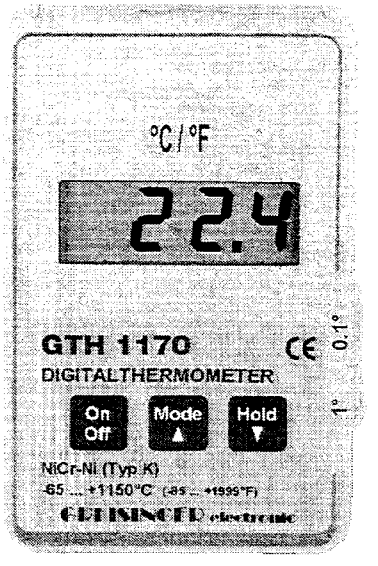
Operating Manual For Digital Quick Response Thermometer

GTH 1170

CE

Specification

Measuring range:	-65.0 ..+199.9°C,	resolution 0.1°C	resp.	-85.0 ... +199.9°F,	resolution 0.1°F
	-65 .. +1150°C,	resolution 1°C	resp.	-85 ... +1999°F,	resolution 1°F
Precision: (±1 Digit)	-65.0°C ..+199.9°C:	±0.05% of meas. value ±0.2% full scale			
(at nominal temperature = 25°C)	-65°C ... +1150°C:	±0.1% of meas. value ±0.2% full scale			



Temperature drift:	0.01%/K
Point of comparison:	±0.3 °C
Probe connection:	standard flat-pin plug suitable for all NiCr-Ni (type K) probes
Offset- and Scale:	digital offset and scale adjustment via menu setting
Measuring frequency:	3 measurings per second
Display:	approx. 13 mm high, 3½-digit LCD
Operation elements:	3 keys for ON/OFF, min-/max-value display, hold Slide switch for selection of display resolution
Min-/Max-value memory:	Min and max measured value is stored
Hold key:	the current measuring will be „frozen"
Operating conditions:	-25 to 50°C; 0 to 80 %RH (non-condensing)
Storage temperature:	-25 to 70°C
Power supply:	9V battery type JEC 6F22 (in scope of supply)
Power consumption:	approx. 150µA
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).
Housing:	impact resistant ABS-housing: approx.106 x 67 x 30 mm (HxWxD)
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 (89/336/EWG). Additional fault: <1%

⚠ Safety instructions:

This device has been designed and tested in accordance to 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 it.

1. Trouble-free operation and reliability of the device can only be guaranteed if it 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 result 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 device is to be connected to other devices the circuitry has to be designed most carefully. Internal connection in third party devices (e.g. connection GND and earth) may result in not-permissible voltages impairing or destroying the device or another device connected.
3. 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

   In case of doubt, please return device to manufacturer for repair or maintenance.
4. **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.

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In General: Measuring Temperature With Thermocouples

- Temperature differences between the instrument and the probe connector may produce measuring errors. Therefore wait after connecting or touching the connector until the temperatures have adjusted. (can take up to 15 mins.)
- The device is suitable to measure large temperature ranges. But consider the allowable range of Your probe!
- When measuring air temperature the probe has to be dry. Otherwise the cold due to the evaporation causes to low measurings.

Choice Of The Display Resolution

By means of the slide switch aside the device the current resolution of the display can be chosen.

1° -> Switch upwards:	Display with 1°C or 1°F resolution
0.1° -> Switch downwards:	Display with 0.1°C or 0.1°F resolution. When exceeding the displayable range (>199.9°) the display automatically changes to 1° resolution

MIN-/MAX Value Memory

watch MIN value (Lo):	press key 'Mode' shortly once	display changes between 'Lo' and MIN value
watch MAX value (Hi):	press key 'Mode' shortly once again	display changes between 'Hi' and MAX value
restore current value:	press key 'Mode' shortly once again	current value is displayed
clear MIN-/MAX- value:	press key 'Mode' for 2 seconds	MIN and MAX value are cleared. The display shows shortly 'CLr'.

Hold – Function

By shortly pressing the 'Hold' key the currently measured value is 'frozen',
The display changes between 'Hld' and the 'frozen' value
Pressing the key 'Hold' shortly 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.

Offset and Scale Adjustment

The offset and scale adjustment is mainly intended to be used to compensate errors of the external temperature probes.
The display value is given by following formula:

unit = °C: ***Display = (measured value - offset) * (1 + scale adjustment [%])***

unit = °F: ***Display = (measured value - 32°F - offset) * (1 + scale adjustment [%]) + 32°F***

To adjust a measuring offset and scale proceed like follows:

1. Switch off the instrument.
2. Press the 'Hold' key while switching on the instrument.
   Keep 'Hold' key pressed until 'OFS' appears in the display (about 3 seconds).
3. Press 'Mode' or 'Hold' key, the currently selected offset adjustment appears.
4. Choose the desired value by pressing 'Mode' or 'Hold' key. (max. input range: ±5.0°C or ±9.0°F)
5. Enter by pressing On/Off-key: SCL appears in the display
6. Press 'Mode' or 'Hold' key, the currently selected scale adjustment appears
7. 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 100.0 (without offset correction) the instrument would show 104.0
8. 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!

Configuration Of The Instrument:

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 'PoF' appears (about 3 seconds).

I.) 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.

3. Press 'Mode' or 'Hold' key, the currently selected power off time will be displayed (off, 1..120min)
4. 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.

5. Confirm the value by pressing 'On/Off' key, 'Uni' appears in the display

II.) Display Unit: *Choice of the temperature display unit: °C or °F – valid for all temperature displays.*

6. The display shows 'Uni' (=**Unit**)
7. Press 'Mode' or 'Hold' key, the currently selected unit will be displayed (°C or °F)
8. Enter the desired unit by pressing 'Mode' or 'Hold' key.
9. Confirm the value by pressing 'On/Off' key. The vales 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!

System Messages:

Er. 1	= measuring range has been exceeded
Er. 2	= meas. values have fallen below perm. range
Er. 7	= System fault - the device has detected a system fault (defective or far outside allowable ambient temperature range)
---	= No temperture probe connected or probe defective

If the symbol **"BAT"** is displayed at the left side of display, the battery is weak, measuring can be continued for a certain time.
If "bAt" is displayed in the main display the battery is used up and needs to be replaced. Measuring is no more possible.