INSTRUCTION MANUAL

Digital Quick-Response Thermometer
HM 1150

B+B SENSORS

Description

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Foreword

Dear customer,

We thank you for having purchased the **Digital Quick-Response Thermometer HM 1150** and we are very glad that you decided a product of **B+B Thermo-Technik GmbH**. We hope this product will fully satisfy you and will assist you effectively in your work.

This Device has been developed to be technically highly up-to date. This product has been designed in accordance with the regnant European and German national directives and rules. For a proper and effective usage of the product the customer shall observe the following Operating Instructions. In the case that against one's expectations any trouble occurs which you can not resolve yourself, please contact our service centers or our authorized dealer. We will provide you rapid and competent help to minimize the risk of long time outfalls.

The following operating Instruction is an indispensable part of this Product. It contains important advices for the starting up and further use of the device.

General Information

This Operation Manual is intended to serve as an aid in the proper setup, installation and operating of the B+B product.

All essential details of the equipment and all actions required on the part are clearly presented and explained. We thus ask that you read this manual carefully before proceeding to work with the equipment. Keep this manual available for ready reference in a convenient and conspicuous location near the equipment.

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Symbols Employed

Sign	Meaning	Notice
	**Advice**	It is necessary to read the following advices before using the product. The used symbols in the manual acts first of all as eye catcher for security risks. The symbols do not replace the security advices. The text must be read completely.
	**Necessarily to observe**	This symbol designates important advices and tips which are necessary for the success of a procedure. They have to be followed in order to get good results.

Warning Signs

Warning Signs	Meaning
	This symbol advises the user of danger for persons, material or environment. The text gives information that must be necessarily followed to avoid any risks
	Caution against hot surfaces (BGV A8, GUV-V A8/W26) and hot liquids or substances
	Caution against liquids and hot substances
	Caution against dangerous explosive substances (BGV A8, GUV-V A8/W02)
	Caution against moving maschines (W29) Caution against moving parts
	Caution against electromagnetic fields (BGV A8, GUV-V A8/W12)
	Caution against severe cold (BGV A8, GUV-V A8/W17)
	Caution against dangerous high electrical voltage (BGV A8, GUV-V A8/W08)
	Caution against dangerous explosive atmosphere (BGV A8, GUV-V A8/W21)
	Electronic waste

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Safety Instructions

Für Schäden, die durch Nichtbeachten dieser Sicherheitshinweise und der Bedienungsanleitung verursacht werden, übernimmt die **B+B Thermo-Technik GmbH** keine Haftung.

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.

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.

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.

Warning:

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

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.

Caution:

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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Intendend Use

The use of the unit in fields other than those indicated under “SAFETY INSTRUCTIONS” is not allowed for safety reasons.

This instruction manual does not at all substitute any additional instruction manual of connected accessoriy!

Disposal

This unit has been marked in accordance with the European Device 2002/96/EC on waste electrical and electronic equipment (WEEE)
At the end of its useful operating life, dispose of the unit as electrical scrap.
Please ask either **B+B Thermo-Technik GmbH** or your specialist dealer for information on your local collection point. Within the scope of application if this Directive, **B+B Thermo-Technik GmbH** is responsible for proper disposal of this unit

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1. Points to be observed during operation

a.) Make sure to apply correct operating voltage as low or damaged battery will lead to measuring inaccuracies. If **„BAT“** is shown in the display or are the measurements obviously wrong the battery has been used up and needs to be replaced.

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 device properly and to operate it in accordance with the specification listed (do not throw, knock etc.).

c.) 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 periode of time as well as subjecting device to an additional heat source as this may result in measuring inaccuracies.

d.) 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.

e.) The battery has to 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

f.) The length of the measuring sensor (GTF300) 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.

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2. 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).

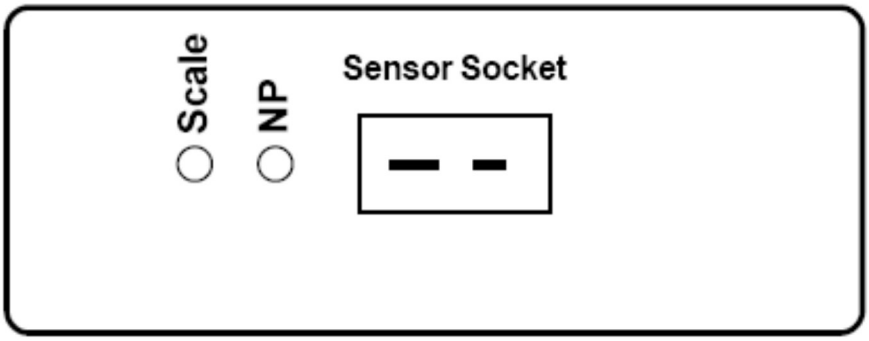
Normally sensor adjustment by means of 0° C potentiometer is sufficent. We do not recommend a scale compensation in order to maintain the specified accuracy of the device. If an accurate reference temperature is available, choose highest temperature possible to calibrate the device.

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 stirr water with a spoonhandle. 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“.

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.)

View of frontplate



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3. Correctiontable: (typ. value)

tempe-rature	display	tempe-rature	display	tempe-rature	display	tempe-rature	display	tempe-rature	display	tempe-rature	display
-50	-46	160	160	370	369	580	587	790	802	1000	1007
-40	-37	170	169	380	379	590	597	800	812	1010	1016
-30	-28	180	179	390	390	600	607	810	822	1020	1026
-20	-19	190	189	400	400	610	618	820	832	1030	1035
-10	-10	200	198	410	410	620	628	830	842	1040	1045
0	0	210	208	420	421	630	639	840	852	1050	1054
10	10	220	218	430	431	640	649	850	862	1060	1063
20	20	230	228	440	441	650	659	860	871	1070	1073
30	29	240	238	450	452	660	670	870	881	1080	1082
40	39	250	248	460	462	670	680	880	891	1090	1091
50	49	260	258	470	472	680	690	890	901	1100	1100
60	59	270	268	480	483	690	700	900	911	1110	1110
70	70	280	278	490	493	700	711	910	920	1120	1119
80	80	290	288	500	504	710	721	920	930	1130	1128
90	90	300	298	510	514	720	731	930	940	1140	1137
100	100	310	308	520	524	730	741	940	949	1150	1146
110	110	320	318	530	535	740	751	950	959	1160	1155
120	120	330	328	540	545	750	762	960	969	1170	1164
130	130	340	339	550	556	760	772	970	978	1180	1173
140	140	350	349	560	566	770	782	980	988		
150	150	360	359	570	576	780	792	990	997		

4. Specification

Range:	-50 to +1150°C
Resolution:	1°C
Accuracy:	<1% ±1 digit from -20 to +550°C and 920 to 1150°C, <1,5% ±1 digit from 550 to 920°C. 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 of supply!)
Display:	approx. 13 mm high, 3½ digit LCD
Nominal temperature:	25°C (accuracy specified at this temperature)
Working temperature: **Atmospheric humidity:**	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. 0 to 80 % r.F. (not condensing)
Power supply:	9V-battery type IEC 6F22 (included) as well as additional d.c. connector (internal pin Ø 1.9mm) for external 10-12V direct voltage supply. (suitable power supply: GNG10/3000)
Battery life time:	approx. 700 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)
EMV:	The device corresponds to the essential protection ratings established in the Regulations of the Council for the Approximation of Legislation for the member coutries regarding electromagnetic compatibility (89/336/EWG). Additional error: <1%

5. Scope of Delivery

Articlename	Articelnumber	Description
Digital Quick-Response Thermometer HM 1150	0560 1150	1 x Digital Quick-Response Thermometer HM 1150 with Operating Instruction on CD-R
Digital Quick-Response Thermometer HM 1150 Set	0560 1150-01	1 x Digital Quick-Response Thermometer HM 1150 SET incl. 1 x Type K Probe with 130 mm nominal length and 3 mm diameter in a transportation case

Digital Quick-Response Thermometer
HM 1150

Digital Quick-Response Thermometer
HM 1150 SET

6. Optional Order Information

Articlename	Articelnumber	Description
Immersion Probe type K for extreme use	**0600 1205**	Diameter 6 mm, nominal length 300 mm, Stainless steel B+B exklusive handhold, cabel length 1000 mm with helix cable, Miniatureplug yellow, Measuringtip swagged diameter=3,0x15 mm, Measuring range -50...+850°C
Penetration Probe type K	**0600 1105**	Diameter 4 mm Stainless steel, handhold 15x90 mm PTFE, cabel length 1000 mm, FEP 0,22 qmm, Miniatureplug yellow, Measuring range -50...+260°C

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General Questions

If you still have questions concerning this product of B+B Thermo-Technik GmbH, please do not hesitate to contact us at:

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We wish you a successful measuring!

Your Temperature-Partner
B+B Thermo-Technik GmbH

All technical information's in this document are proved by us with high accuracy and shall inform you about all application possibilities. This information's are not confirmed by us and need to be proved by every user in regard to his intended use of the equipment. All foreign trade mark rights need to be considered.

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