



Operating Manual

Temperature Handheld Instrument

SL-Pt eco



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1 Proper use (application areas)



Detailed information on the application area can be found in the Chapter 2 “Product Specification”. The operating safety of the device is ensured only with proper use and observation of the information given in the operating instructions.

For safety and guarantee reasons, work above and beyond that described in the operating instructions may only be carried out by personnel authorised by the manufacturer. Unauthorised conversions or modifications are expressly prohibited.

In the event of improper use, this device can pose dangers, depending on the application.

1.1 General safety instructions

These operating instructions must be kept where they are immediately available to specialist personnel at all times.

All procedures described in these operating instructions must be carried out only by trained personnel authorised by the operator, while wearing the corresponding protective clothing.

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1.2 Use

The device is measuring temperature in °C or °F.

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, ...).

1.3 Safety signs and symbols

Warnings are labeled 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.


1.4 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. 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 instrument and the connected devices.



This device must not be run with a defective or damaged power supply unit.
Danger to life due to electrical shock!

4.  **DANGER** 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.  **DANGER** 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.

1.5 Product liability and guarantee

Liability disclaimer:

The content of the operating instructions has been checked for compliance with the device described. Deviations cannot however be excluded, so that we offer no guarantee of full compliance. The information in these instructions is checked regularly, and necessary corrections incorporated into the following editions. We reserve the right to make technical amendments. All claims are also subject to the valid "General delivery conditions for products and services of the electronics industry".



GHM Messtechnik cannot check or repair devices without the specified, fully completed form (please refer to 12, Returns).

2 Product Specification

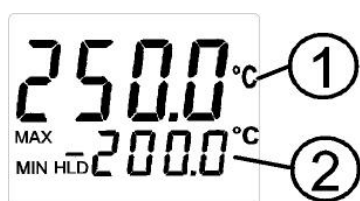
2.1 Scope of supply

The scope of supply includes:

- SL-Pt eco with 2 AAA batteries
- Operation manual

3 Display and Control Elements

3.1 Display elements



1: Main display

Display of the current temperature

2: Secondary display

On demand: Display of MIN , Max or hold-value, with MIN/MAX/HLD-symbols

3.2 Control elements

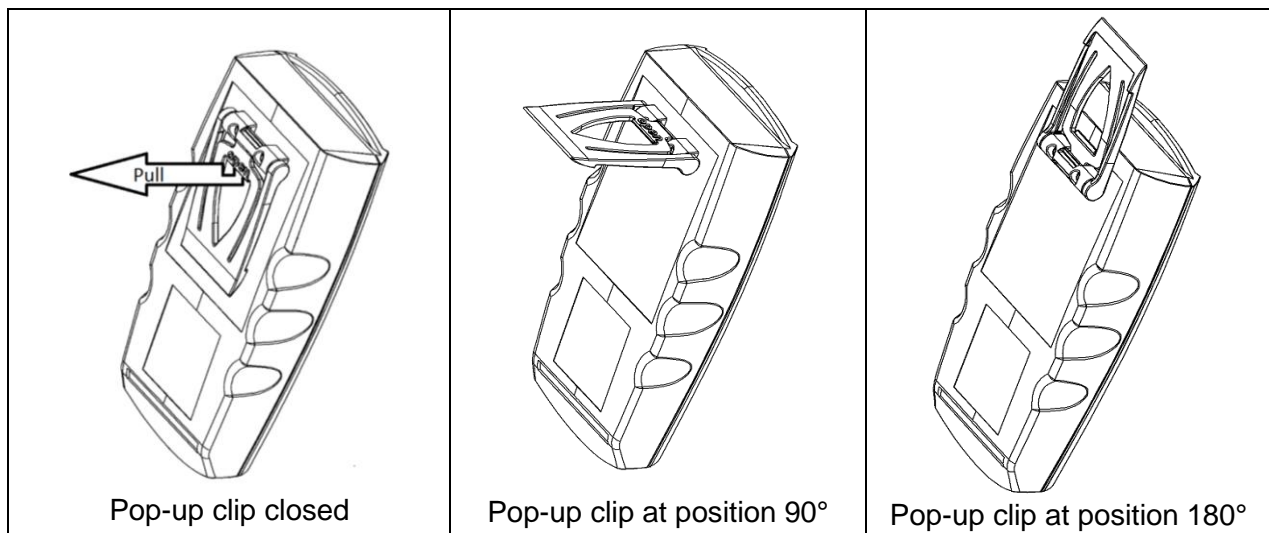


Key 1:	on/off key
Key 2:	max/min press shortly: minimum value press again: maximum value press again: return to standard display press for 2 sec.: reset minimum and maximum values
Key 3:	hold: (auto hold deactivated) press shortly: The measuring current value is 'frozen' (hold-function), 'HLD' is displayed hold: (auto hold activated) press shortly: Restart "catching" of stable value

3.3 Pop-up clip

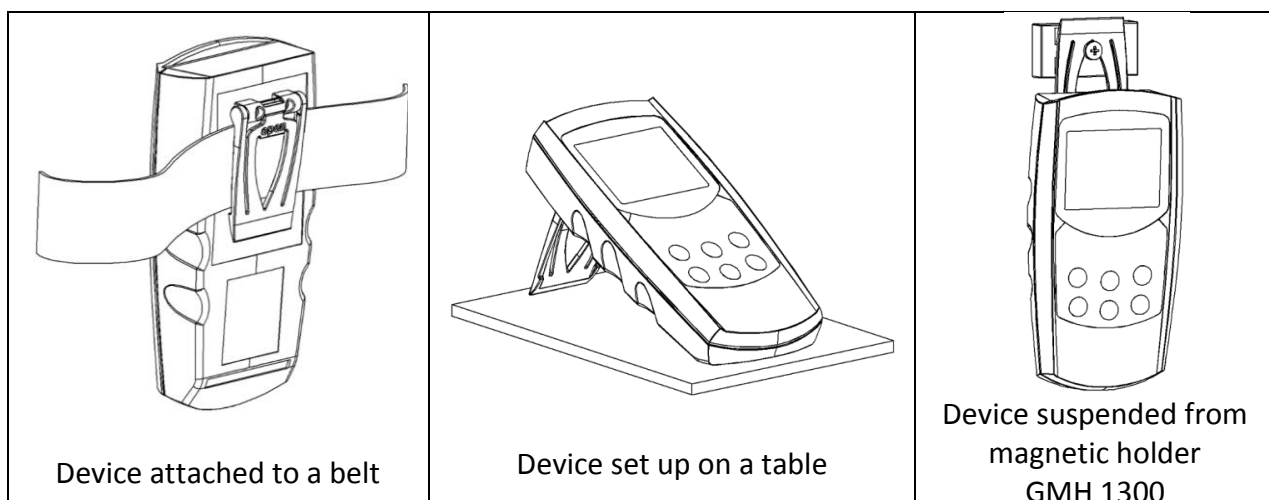
Handling:

- Pull at label "open" in order to swing open the pop-up clip.
- Pull at label "open" again to swing open the pop-up clip further.





Function:

- The device with a closed pop-up clip can be plainly laid onto a table or attached to a belt, etc.
- The device with pop-up clip at position 90° can be set up on a table, etc.
- The device with pop-up clip at position 180° can be suspended from a screw or the magnetic holder GMH 1300.



4 Start of Operation

Switch the device on with the key . After segment test  the device displays some information to its configuration:

- OFFS* if there is a offset adjustment (p.r.t. chapter 7)
 - SCRL* if there is a slope adjustment (p.r.t. chapter 7)
 - P.off* if the automatic-off-function is activated (p.r.t chapter 6)
- The device is ready for measuring afterwards.

5 Basics

Probe Precision/Device Precision

The device has a very good system accuracy (please refer to technical data). This is due to the calibration of the probe acc. To the connected instrument plus the use of precise measurement electronics and premium Pt1000 sensor elements

Heat loss caused by probe construction:





Especially when measuring temperatures which deviate very much from the ambient temperature, measuring errors often occur if the heat loss caused by the probe is not considered. When measuring fluids therefore the probe should be emerged sufficiently deep (at least 5 times of diameter, i.e. >15 mm) and be stirred continuously. When measuring gases the probe should also emerge as deep as possible in the gas to be measured (e.g. when measuring in channel/pipes) and the gas should flow around the probe at sufficient flow.



Allowable Temperature Range Of Probes

Both cable and handle are capable of -200 to +250 °C!

6 Configuration of the Device

Follow these instructions to configure the functions of the device:

- Switch the device off.
- Switch the device on and press key  **during the segment test**, until the display shows the first parameter “Unit”
- Set parameter with  = up or  = down.
- Jump to the next parameter by pressing .

Parameter	Value	Information
button 	buttons 	
Unit	Display unit <i>factory setting: °C</i>	
	°C	Measuring value displayed in °Celsius
	°F	Measuring value displayed in °Fahrenheit
Auto HLD	Auto Hold-Function <i>factory setting: off</i>	
	on	Auto Hold activated: automatic holding of the measured value, as soon as it is stabilized.
	off	Auto Hold deactivated: Value is frozen on keypress (hold)
P.off	Auto Power-Off (turn-off delay) <i>factory setting: 20 min.</i>	
	1 ... 120	Auto Power-Off (turn-off delay) in minutes. If no key is pressed for the time adjusted here, the device is automatically switched off (adjustable 1 ... 120 min)
	off	Auto power-off is deactivated (continuous operation)

init	Restore factory settings	
	no	Parameters are not changed to factory settings.
	YES	ATTENTION: All parameter are changed to factory settings.

Press  again to store changed settings, the device restarts (segment test).

NOTE: If there is no key pressed within the menu mode within 2 minutes, the configuration will be cancelled, the entered settings are lost!





7 Adjustment



The instrument can be adjusted, assuming that: Reliable references are available, such as ice-water regulated precision water baths or similar.

$$\text{Displayed value } ^\circ\text{C} = (\text{measured value } ^\circ\text{C} - \text{OFFS}) * (1 + \text{slope correction} / 100)$$

$$\text{Displayed value } ^\circ\text{F} = (\text{measured value } ^\circ\text{F} - 32 ^\circ\text{F} - \text{OFFS}) * (1 + \text{slope correction} / 100)$$

Follow these instructions to adjust the device:

- Switch the device off.
- Switch the device on and press key  **during the segment test**, until the first parameter "OFFS" is displayed.
- Set parameter with  = up or  = down
- Jump to the next parameter by pressing .

Parameter	Value	Information
button 	buttons 	
OFFS	OFFSET correction <i>factory setting: oFF = 0.0°C</i>	
	oFF	No offset correction
	-25 ... 25 °C or -45...45 °F	Value of offset correction
SCAL	Slope correction <i>factory setting: oFF= 0%</i>	
	oFF	No slope correction
	-5.00 ... 5.00	Value of slope correction in %

Press  again to store changed settings, the device restarts (segment test).

NOTE: If there is no key pressed within the menu mode within 2 minutes, the configuration will be cancelled, the entered settings are lost!

8 Accuracy Inspection: Adjustment /Update Service

You can send the device to the manufacture or retailer for adjustment and inspection. Moreover the manufacturer can do the latest software update. This ensures that future improvements are provided to owners of older devices in a cost-saving way. You can display the current software version if you do not release the on/off button after you switched the device on, but hold it for more than 5 seconds. (i.e. "r. 1.0")


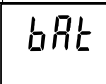
9 Replacing Batteries

Before changing batteries, please read the following instruction and follow it step by step. Not following the instruction may cause harm to the instrument or the protection against ingress of water and dust may be lost!

Avoid unnecessary opening of the instrument!

1. Open the 3 Phillips screws at the backside of the instrument.
2. Lay down the still closed instrument, so that the display side points upwards.
The lower half of the housing incl. The electronics should be kept lying down during battery change.
This avoids loss of the sealing rings of the screw holes.
3. Lift upper half of housing. Keep an eye on the three function keys, to be sure not to damage them.
4. Change carefully the two batteries (Type: AAA).
5. Check: Are the 3 sealing rings placed in the housing?
Is the circumference seal of the upper half sound and clean?
6. Close the housing, taking care that it is positioned correctly, otherwise the sealing may be damaged. Afterwards press the two halves together, lay the instrument with display pointing downwards and screw it together again
Take care to screw only until you feel increasing resistance, higher screwing force does not result in higher water protection!

10 Error and System Messages

<i>Err. 1</i>	Value exceeding measuring range, value too high or cable/sensor broken
<i>Err. 2</i>	Value exceeding measuring range, value too low or cable/sensor shorted
<i>Err. 7</i>	System error – the device has detected a system error (device defective or not within working temperature)
	The blinking bAt display indicates low battery voltage, device will continue to work for a short time.
	The battery is consumed and has to be changed. Measurements are no longer possible.

11 Technical Data

Measurement	Resistive temperature measuring Pt1000
Range	-200,0 °C to 250,0 °C / -200,0 °F to 482,0 °F
Resolution	0.1°C / 0.1 °F
Accuracy	-20.0 ... 100.0 °C: +/-0.1°C +/-1 digits -70.0 ... 200.0(250.0) °C: +/-0,1 % of measured value +/-2 digits
T90	< 10s in water
Display	Two 4 ½ digits LCD's (12.4 mm high and 7 mm high) for temperature, min./ max values, hold function, etc. as well as additional pointing arrows.
Hold function	Press button to freeze current value. Auto hold: a stable value will automatically be captured with "HLD"
Probe:	Stainless steel tube d = 3 mm, l = 100 mm Teflon handle 90 mm incl. Stainless steel bending protection (max. 250°C), 1 m Teflon cable (max. 250°C)
Working temperature	-25 to 50 °C
Storage temperature	-25 to 70 °C
Power supply	2x AAA Alkaline cells (included)
Power consumption	< 0.25 mA (battery life time: more than 4000 hours for alkaline battery)
battery state display	"bAt" displayed if battery used, warning: "bAt" in secondary display

Auto off-function	Device will be automatically switched off if not operated for longer time (adjustable from 1..120 min)
Housing	impact-resistant ABS plastic housing
Protection rate	IP65 (splash water resistant) and IP67 (waterproof: short time 1 meter)
Dimension	Approx. 154 x 81 x 31 mm (H x W x D)
Weight	Approx. 190 g 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 error: < 1% FS

12 Returns



Legal regulations for the protection of the environment and our personnel require that returned devices which have come into contact with fluid can be handled without risk to personnel and the environment.



If you send a device back to us for checking and repair, we must request that you pay strict attention to the following requirements:

The returns form can be downloaded from our homepage www.ghm-messtechnik.de under: "Download/Forms".

The repair can be carried out quickly and without further questions if:

1. A completed form is available for every device.
2. The device has been cleaned and returned in packaging which prevents any damage to the device.
3. The completed form and any possible safety data sheet on the measurement medium are attached to the outside of the packaging.

13 Disposal



The device components and packaging must be separated by materials for disposal. The legal regulations and guidelines applicable at the relevant time must be observed. The device must not be disposed of as general waste. If a device is to be disposed of, send it back to us direct with the completed Returns form specified under Point 1.5, and we will then take care of proper disposal.

14 Imprint

GHM Messtechnik GmbH, 93128 Regenstauf, Hans-Sachs-Str. 26
 Managing Director: Günther Oehler
 Place of fulfilment and jurisdiction: Regenstauf

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15EC – Declaration of Conformity



EC - Declaration of Conformity

For the following identified products

SL-Pt eco

will certified herewith, that 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) and the low voltage directives (2006/95/EG).

The conformity to EMC are verified under observance of following standards:

EN 61326-1 : 2006 (addendum A, class B)

This declaration is responsible for the distributor

GHM Messtechnik GmbH

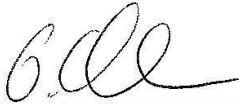
Hans-Sachs-Straße 26
D - 93128 Regenstauf

released by

Oehler, Günther
Managing Director

Regenstauf
place

17.01.2012
date


signature

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