



**USER MANUAL**

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Si-HH3

**THERMO-HYGROMETER**

# 1 - Instrument description

The Sauermann Thermo-hygrometer Si-HH3 is a relative humidity & temperature measuring instrument.

In addition to the measurement of relative humidity & temperature, the dew-point, absolute humidity, enthalpy, mixing ratio and wet bulb temperature can be calculated.

- (A) Hygrometry probe
- (B) LCD screen
- (C) On/Off & backlight button
- (D) Hold/Min/Max/Live value button



## 2 - Safety and environment

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### **About this document**

Please read this document and familiarize yourself with the product before putting it to use. Keep this document on hand so that you can refer to it when necessary. Pass this documentation on to any subsequent users of the product.



### **Avoid personal injury/damage to equipment**

- This device has been developed for relative humidity and temperature measurement and for an indoor use. Please always use the device in accordance with its intended use and within parameters described in the technical features in order not to compromise the protection ensured by the device.
- Only the accessories provided with the device or available as an option must be used.
- Never store the product together with solvents, acids or other aggressive substances.
- Only carry out maintenance and repair work that is described in the documentation. Follow the detailed steps when doing so. Use only original spare parts from Sauermann.
- If the device falls or in case of similar inconveniences, or if an irregular malfunction appears, please do not use the device and bring it back to your distributor to ensure your own safety.
- The device must not be used in ATEX zones according to applicable standards.
- Do not use the device next to explosive gases, vapor or dust.
- The device does not contain any internal part repairable by the user. Do not open the instrument.
- This device can pose a risk for wearers of pacemakers. Respect a distance of at least 10 cm (4") between the device and the wearer.
- Observe safety distances to products that can be damaged by the magnetic field (e.g. monitors, computers, credit cards).

### **Exclusions and restrictions of liability**

The application operation is under the exclusive customer or user entity responsibility, who acknowledges using this system at his/her own risks. The customer or user entity explicitly exclude Sauermann, and every other company through which the it could have been sold of any kind of responsibility or warranty regarding any direct, indirect, accidental, consecutive or non-consecutive damage that could have been subjected, for some or all, by partial or total non-respect, voluntary or involuntary, of recommendations, conditions and prerequisites indicated hereafter.

### Symbols used

For your safety and in order to avoid any damage of the device, please follow the procedure described in this user manual and read carefully the notes preceded by the following symbol:



The following symbol will also be used in this user manual, please read carefully the information notes indicated after this symbol:



Warning: possibility of electric shock



### Protecting the environment



Send back the device at the end of its life cycle to a waste collection center for electrical and electronic components (according to local regulations), or send it back to your distributor to ensure the device is properly disposed with respect to the environment.

## 3 - Standard

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by Sauermann could voice the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

## 4 - Technical specifications


Parameters	Measuring units	Accuracy*	Measuring range	Resolution
Relative humidity <sup>1</sup>	%RH	±2%RH at 25°C (5 to 95%RH)	From 0 to 100%RH	0.1%RH
Dew point**	°C <sub>Td</sub> , °F <sub>Td</sub>	-	From -40 to +60°C <sub>Td</sub> From -40 to 140°F <sub>Td</sub>	0.1°C <sub>Td</sub> / 0.1°F <sub>Td</sub>
Absolute humidity***	g/m <sup>3</sup>	-	From 0 to 600 g/m <sup>3</sup>	0.1 g/m <sup>3</sup>
Enthalpy***	kJ/kg	-	From 0 to 10000 kJ/kg	0.1 kJ/kg
Mixing ratio***	g/kg	-	From 0 to 10000 g/kg	0.1 g/kg
Wet bulb temperature**	°C <sub>Tw</sub> / °F <sub>Tw</sub>	-	From 0 to 60°C <sub>Tw</sub> From 32 to 140°F <sub>Tw</sub>	0.1°C <sub>Tw</sub> / 0.1°F <sub>Tw</sub>
Temperature	°C, °F	±0.5°C ±0.9°F	From -20 to +60°C From -4 to 140°F	0.1°C / 0.1°F

<sup>1</sup>Drift : 0.25 %RH/year typical value for operation in normal T/RH (temperature and humidity range of 5°C to 60 °C and 20 %RH to 80 %RH respectively). Maximum value is < 0.5%RH/yr. Higher drift values might occur due to contaminant environments with vaporized solvents, out-gassing tapes, adhesives, packaging materials

\*All the accuracies indicated in this technical datasheet were stated in laboratory conditions, and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.

\*\*Calculated values / \*\*\*Calculated values, only available on the app

## 5 - General features

Measuring element	Hygrometry: capacitive sensor Temperature: NTC
Display	Integrated 2-line LCD 7 segment monochrome display with backlight
Housing	ABS-PC and TPE, IP20
Keypad	1 ON/OFF & Backlight button 1 Hold/Min/Max/Live & value button
Standards & Directives	2011/65/EU RoHS II (EU)2015/863; 2012/19/EU WEEE; 2014/53/EU RED
Power supply	3 alkaline batteries LR03 AAA 1.5 V
Supply voltage	4.5 V 
Consumption	135 mW
Battery life	250 hours* (without backlight and without wireless communication)
Wireless communication	Range frequency from 2402 MHz to 2480 MHz with a transmit power of 0 dBm. Range up to 15 m (98 ft), depending on smartphone radio strength. Minimum required versions: Android 5.0, iOS 12.4, BLE 4.0
Ambiance	Air and neutral gas
Operating conditions**	From -10 to +60°C (14 to 140°F) In non condensing conditions Altitude: from 0 to 2000 m (6561')
Storage temperature	From -20 to +70°C (-4 to 158°F)***
Auto shut-off	10 minutes (can be deactivated)
Weight (with batteries)	200 g (7 oz)

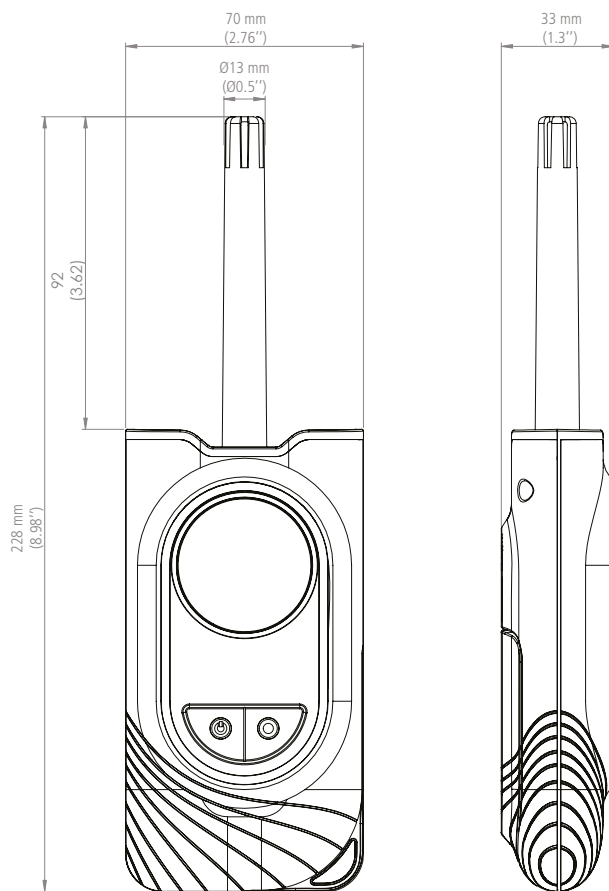
\*Battery life given at 20°C (68°F) with alkaline batteries.

\*\*The sensor shows best performance when operated within recommended normal temperature and humidity range of 5°C-60 °C and 20 %RH -80 %RH, respectively. Long-term exposure to conditions outside normal range, especially at high humidity, may temporarily offset the RH signal (e.g. +3%RH after 60h kept at >80%RH). After returning into the normal temperature and humidity range the sensor will slowly comes back to calibration state by itself.

\*\*\*If the instrument is stored outside the operating temperature (for example in a van, a warehouse, etc.), please wait for 10 minutes in its operating temperature before starting and using it.

## 6 - Dimensions

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# 7 - Operating instructions

## Insert the batteries

- Unscrew the batteries compartment cover at the back of the device and remove the cover.
- Put the 3 alkaline AAA LR03 1.5V batteries supplied with the instrument.
- Carefully respect the polarity.
- To close the batteries compartment, push the batteries cover back on, starting with the upper part.
- Screw the batteries compartment cover.

## Turn on the instrument

- Place the device in the required location to measure ambient temperature & hygrometry.
- Press & hold the ON/OFF key.
- The device displays the temperature and relative humidity measurements.

## Select the unit

- With the device turned on.
- Press and hold simultaneously ON/OFF & HOLD keys to switch to the required measurement unit : °F, °C.
- Selecting °F also displays °F<sub>Td</sub> & °F<sub>Tw</sub>
- Selecting °C also displays °C<sub>Td</sub> & °C<sub>Tw</sub>

## Activate/deactivate the wireless communication

- With the device turned on.
- Press simultaneously ON/OFF & HOLD keys to activate or deactivate the wireless communication.
- When activated, the wireless communication icon flashes on the

## Key operation

KEY	SHORT PRESS	LONG PRESS (3 seconds)
ON/OFF	Backlight ON/OFF	Device ON/OFF
HOLD	Hold / Min / Max / Live value	Dew-point / Wet bulb / %RH & Temperature
ON/OFF and HOLD	Wireless communication ON/OFF	°C / °F

instrument screen.

- The icon becomes fixed when the instrument is paired to a tablet or smartphone.

## Activate/deactivate the Backlight

- With the device turned on.
- Press ON/OFF key to activate or deactivate the backlight.

## Activate/deactivate the Auto shut-off

- The device has an automatic shut-off set to 10 minutes.
- When the device starts, all the segments are displayed. During this time, press & hold the ON/OFF key to enter the "Power down menu".
- Press HOLD to activate/deactivate the auto shut-off.
- Press & hold ON/OFF key to exit the "Power down menu".

## Display Hold/Min/Max/Live values

- With the device turned on and measured values are displayed.
- Press HOLD key to successively:
  - Freeze the display of measurement values
  - Display the minimum measured values
  - Display the maximum measured values
  - Restore the live display

## Switch between measurements

- With the device turned on and measured values are displayed.
- Press & hold the HOLD key to successively display dew-point, wet bulb, %RH & temperature measurement values.

## 8 - Maintenance

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### Change batteries

- With the device turned off.
- Unscrew the battery compartment at the back of the device and remove the cover.
- Remove used batteries and insert new batteries (3 alkaline batteries AAA LR03 1.5 V) respecting the polarity.
- To close the battery compartment, push the battery cover back on starting with the upper part.
- Screw the battery compartment cover.

### Clean the instrument

- Clean the housing with a damp cloth (soap suds) if it gets dirty.
- Do not use aggressive cleaning agents or solvents.

## 9 - Warranty

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Instruments have 2-year guarantee for any manufacturing defect.

## 10 - Mobile App

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The **Si-HVACR Measurement MobileApp** allows to view and record measurements in real-time.

Main features:

- Easily view different parameters
- Browse saved measurements history and data graphs (average, min & max values, etc.)
- Create reports (PDF, CSV or XML format) and add up to four (4) photos

Download the **Si-HVACR Measurement MobileApp**



Download the **MobileApp user manual**





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BE CAREFUL! Material damages can happen, so please apply the precautionary measures indicated.



Once returned, required waste collection will be assured in the respect of the environment in accordance to guidelines relating to WEEE.