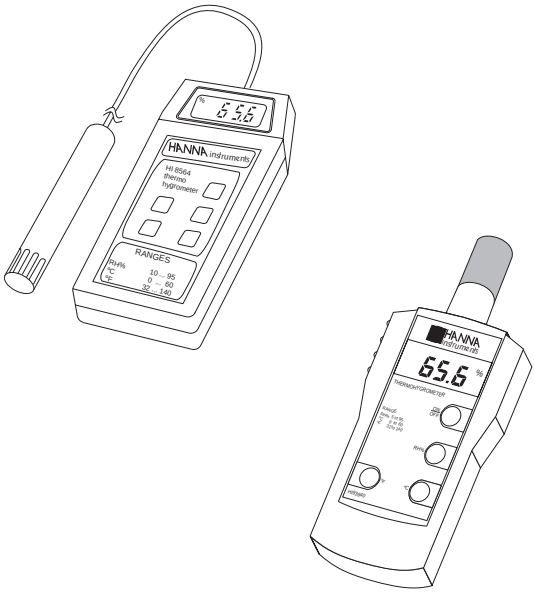
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Instruction Manual

HI 8564 and HI 93640

Portable Thermo-Hygrometers



HANNA® instruments
Manufacturers since 1978

Dear Customer,
Thank you for choosing a HANNA product.
Please read this instruction manual carefully before using the instrument.
For additional technical information, do not hesitate to e-mail us at **tech@hannainst.com**
These instruments are in compliance with the CE directives.

WARRANTY

All Hanna Instruments **meters are warranted for two years** against defects in workmanship and materials when used for their intended purpose and maintained according to the instructions. **Probes are warranted for 6 months**. Damages due to accidents, misuse, tampering or lack of prescribed maintenance are not covered. This warranty is limited to repair or replacement free of charge. If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. If the repair is not covered by the warranty, you will be notified of the charge for repair or replacement. If the instrument is to be returned to Hanna Instruments, obtain a Return Goods Authorization from the Customer Service Department first and then send it with shipment cost prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

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PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it to make sure that no damage has occurred during shipping. If there is any damage, notify your Dealer.

Note: Save all packing material until you are sure that the instrument functions correctly. All defective items must be returned in the original packing with the supplied accessories.

GENERAL DESCRIPTION

HI 8564 and **HI 93640** portable thermo-hygrometers provide reading with high precision in a very short time for both RH (Relative Humidity) and temperature.

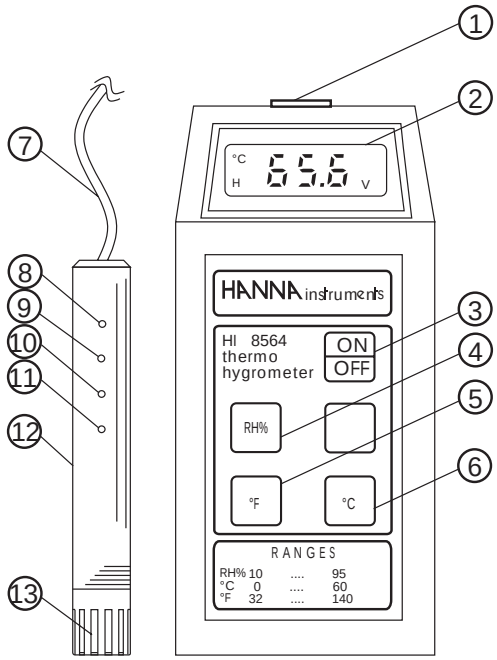
HI 93640 is a compact, portable and versatile instrument to monitor relative humidity anywhere. The built-in thin-film capacitance sensor assures accurate measurements from 5 to 95% RH with a resolution of 0.1%.

Note: The RH probe sensor must never come into contact with water or other liquids.

HI 8564 is supplied complete with **HI 70601/2** RH probe, 9V battery and instructions.

HI 93640 is supplied complete with probe sintered cap, 9V battery and instructions.

FUNCTIONAL DESCRIPTION OF HI 8564



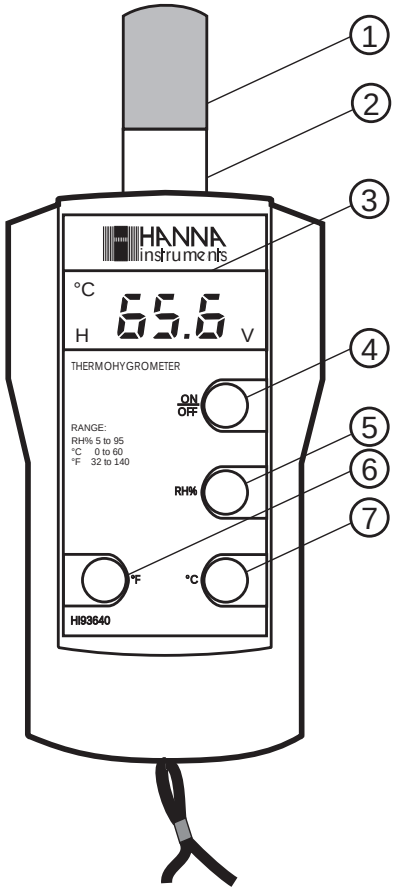
1) DIN socket for RH/temperature probe
2) LCD (Liquid Crystal Display)
3) **ON/OFF** key, to turn the meter on or off
4) **RH%** key, to display RH measurements
5) **°F** key, to display temperature in °F
6) **°C** key, to display temperature in °C
7) Probe shielded cable
8) Low RH trimmer
9) Low temperature trimmer
10) High RH trimmer
11) High temperature trimmer
12) Probe body in polypropylene
13) Protective cap (to prevent damage to sensor)

Display Symbols:
°C to indicate temperature readings in °C
H to indicate RH readings
V to indicate that battery needs to be replaced

SPECIFICATIONS OF HI 8564

Range	10.0 to 95.0% RH 0.0 to 60.0°C / 32 to 140°F
Resolution	0.1% RH 0.1°C / 1°F
Accuracy	±2% RH ±0.4°C / ±1°F (for 1 year, excluding probe error)
Typical EMC Deviation	2% RH / ±0.5°C / ±1°F
RH Calibration	Manual, 2 point, through trimmers on RH probe
RH Probe (included) **HI 70601/2**	with built-in temperature sensor and 2 m cable
Environment	0 to 50°C (32 to 122°F); RH max 98% non-condensing
Battery Type / Life	1 x 9V / approx. 100 hours of use
Dimensions	185 x 82 x 45 mm (7.3 x 3.2 x 1.8")
Weight	275 g (9.7 oz.)

FUNCTIONAL DESCRIPTION OF HI 93640



1) Detachable sintered cap
2) Built-in RH/temperature probe
3) LCD (Liquid Crystal Display)
4) **ON/OFF** key, to turn the meter on or off
5) **RH%** key, to display RH measurements
6) **°F** key, to display temperature in °F
7) **°C** key, to display temperature in °C

Display Symbols:
°C to indicate temperature readings in °C
H to indicate RH readings
V to indicate that battery needs to be replaced

SPECIFICATIONS OF HI 93640

Range	5.0 to 95.0% RH 0.0 to 60.0°C / 32 to 140°C
Resolution	0.1% RH 0.1°C / 1°F
Accuracy	±2% RH ±0.4°C / ±1°F (for 1 year excluding probe error)
Typical EMC Deviation	±3% RH / ±0.4°C / ±0.8°F
Environment	0 to 50°C (32 to 122°F); RH max 98% non-condensing
Battery Type / Life	1 x 9V / approx. 100 hours of use
Dimensions	190 x 80 x 38 mm (7.5 x 3.1 x 1.5")
Weight	200 g (7.1 oz.)

OPERATIONAL GUIDE

INITIAL PREPARATION

Each meter is supplied complete with a 9V battery. Slide off the battery compartment cover on the back of the meter (see "Battery Replacement" section), unwrap the battery and install it.

To prepare **HI 8564** for use, connect the RH probe to the DIN socket on the top of the meter.

Turn the meter on by pressing the ON/OFF button.

RELATIVE HUMIDITY MEASUREMENTS

- The end of the humidity detector should be exposed to a current of air moving at 0.5 m (20") per second or more.
- In the absence of air movement, the response can be accelerated by moving the probe.
- **The probe sensor must never come into contact with water or other liquids**.

  If this happens, or if condensation causes drops to form on the surface of the humidity sensor, turn the instrument off and wait until the liquid has evaporated completely. In order to accelerate the evaporation process, expose the humidity sensor to a current of air.

For HI 93640 only: for a faster response, remove the sintered cap. Whenever the probe is to be used in a dusty or smoky environment, the cap must be kept on at all times.

TEMPERATURE MEASUREMENTS

Simply press the °C or °F keys to display the temperature reading.

When measuring temperature in degrees Centigrade, "°C" is displayed.

For any problem in taking measurements, please contact the nearest HANNA Customer Service Department.

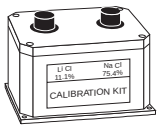
CALIBRATION

All HANNA hygrometers have been precalibrated at the factory.
HANNA instruments® uses state-of-the-art thermal humidity chambers for this purpose.
It is generally recommended to have all hygrometers recalibrated at least once a year.

For an accurate annual recalibration, contact your nearest Hanna Service Center.

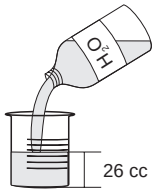
You can also check the status of your **HI 8564** and perform a quick recalibration (with an accuracy of ±5%) by using the Hanna mini-calibration chambers **HI 7101**.

The kits are composed of two thermally isolated chambers, each one equipped with a threaded cap and three bottles containing the appropriate precalibrated saturated salts to produce a known RH value.



Preparing the Calibration Solutions (HI 8564 only)

- Pour approximately 26 cc of distilled water into a glass container.



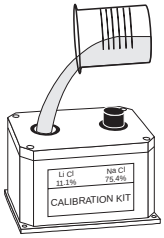
- Immerse this container into a bath of ice and water and shake briefly.
- Slowly add the contents of a **HI 7111** bottle containing LiCl into the glass container while continuing to shake.



- When the salt has dissolved completely, add all the content of the second bottle of **HI 7111**.

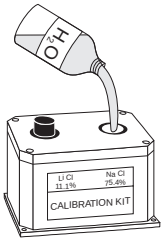


- Allow the solution obtained to cool, and then pour it into the chamber marked "RH 11.1%", making sure that no residue remains on the walls of the glass container.

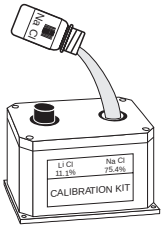


- Seal the chamber well when not in use, as the LiCl solution is extremely hygroscopic and tends to capture the humidity present in the air causing the solution to expand in volume and to overflow from the container.

- Pour approximately 12 cc of distilled water into the other chamber marked "RH 75.4%".



- Add all the content of the **HI 7121** bottle containing NaCl while continuously shaking the container to avoid the formation of lumps. Seal this container well when not in use.

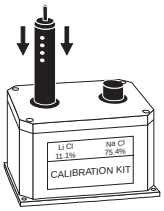


The calibration kit needs 4 hours for stabilization.



RH Calibration Procedure (HI 8564 only)

- Bring the calibration kit to a temperature of approximately 20°C.
- Remove the cap from the "RH 11.1%" chamber containing the LiCl solution and insert the probe paying attention not to tip it into the liquid.



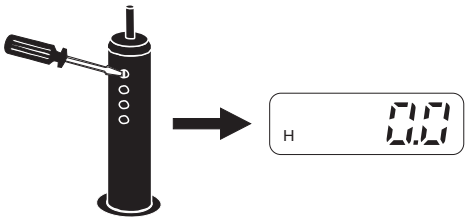
- Remove the adhesive sticker which covers the calibration trimmer access holes.
- Press the ON/OFF key to switch the instrument on.



- Wait for the measurement to stabilize (this takes about 4 hours).

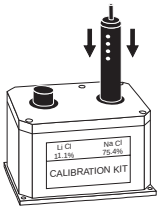


- Turn the low humidity trimmer (see Functional Description) until a value of 0.0% is seen on the readout (reading between 0.0% and 1.0% RH is also acceptable).



- Remove the probe and tightly seal the chamber containing the LiCl solution.

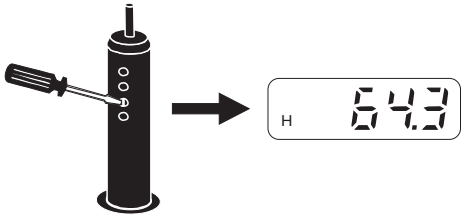
- Remove the cap from the "RH 75.4%" chamber containing the NaCl solution and insert the probe.



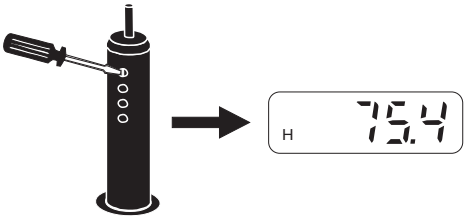
- Wait for the measurement to stabilize (approximately 4 hours)



- Turn the high humidity trimmer until the readout on the display is 64.3%.



- Wait for 1 hour and readjust if necessary.
- Leaving the probe in the "RH 75.4%" chamber, adjust the low humidity trimmer until the value of 75.4% is read.



- Now, the humidity calibration is complete.

Spare saturation salts are also available: HI 7111/P (LiCl) for low range humidity, and HI 7121/P (NaCl) for high range humidity.

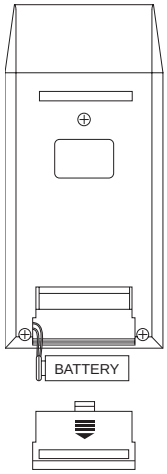
BATTERY REPLACEMENT

Battery replacement must only take place in a safe area and using the battery type specified in this instruction manual.

FOR HI 8564

When the battery becomes weak, the "**V**" symbol is displayed on the LCD to warn the user.

In order to replace the battery, simply slide off the cover and replace the 9V battery with a new one.

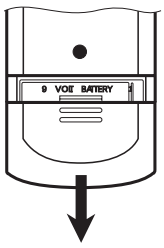


FOR HI 93640

When the battery becomes weak, the "**V**" symbol is displayed on the LCD to warn the user.

HI 93640 is provided with the advanced BEPS (Battery Error Preventing System) technology, that turns the meter off when a low power condition is detected. It is recommended to replace the 9V battery with a new one.

When the battery need to be replaced, simply slide off the battery cover and install a new 9V battery.



ACCESSORIES

HI 70601/2	RH probe for **HI 8564** with built-in temperature sensor and 2 m (6.6') cable
HI 70601/5	RH probe for **HI 8564** with built-in temperature sensor and 5 m (16.5') cable
HI 710001	Soft carrying case for **HI 8564**
HI 710007	Blue shockproof rubber boot for **HI 93640**
HI 710008	Orange shockproof rubber boot for **HI 93640**
HI 710009	Blue shockproof rubber boot for **HI 8564**
HI 710010	Orange shockproof rubber boot for **HI 8564**
HI 710011	Probe sintered cap for **HI 93640**
HI 710031	Rugged carrying case
HI 7101	RH calibration chamber for **HI 8564**
HI 7102	RH calibration chamber for **HI 93640**
HI 7111/P	Spare saturation LiCl salts for low humidity calibration (15 g, 6 pcs)
HI 7121/P	Spare saturation NaCl salts for high range humidity calibration (33 g, 6 pcs)

Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

CE DECLARATION OF CONFORMITY

HANNA instruments

CE

DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
via E.Fermi, 10
35030 Sarmeola di Rubano - PD
ITALY

herewith certify that the thermo-hygrometers

HI 8564 **HI 93640**

have been tested and found to be in compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC according to the following applicable normatives:

EN 50082-1: Electromagnetic Compatibility - Generic Immunity Standard
IEC 801-2 Electrostatic Discharge
IEC 801-3 RF Radiated

EN 50081-1: Electromagnetic Compatibility - Generic Emission Standard
EN 55022 Radiated, Class B

EN61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use

Date of Issue: 18-10-1998

P. Cesa - Technical Director
On behalf of
Hanna Instruments S.r.l.

Recommendations for Users

Before using these products, make sure that they are entirely suitable for the environment in which they are used.

Operation of these instruments in residential area could cause unacceptable interferences to radio and TV equipments, requiring the operator to take all necessary steps to correct interferences.

In HI 8564 the trimmers are sensitive to electrostatic discharge. It is recommended to use an antistatic screwdriver during calibration.

Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance.

To avoid electrical shock, do not use these instruments when voltages at the measurement surface exceed 24 Vac or 60 Vdc.

To avoid damages or burns, do not perform any measurement in microwave ovens.

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