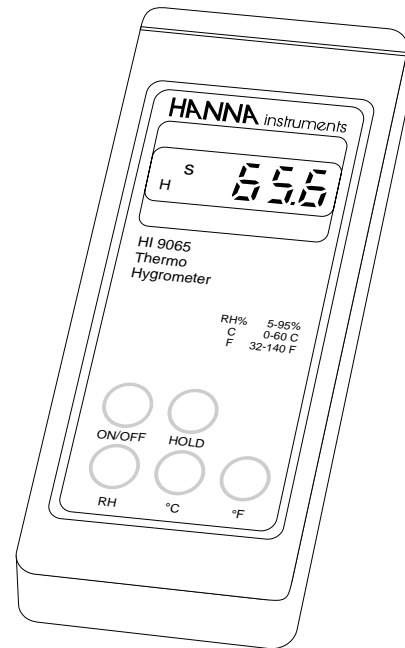


Instruction Manual

HI 9064 - HI 9065 HI 9160

Portable Water-Resistant Hygrometers



 **HANNA**
instruments
<http://www.hannainst.com>


These Instruments are in
Compliance with the CE Directives

Dear Customer,
 Thank you for choosing a Hanna Instruments Product.
 Please read this instruction manual carefully before using the instrument.
 This manual will provide you with all the necessary information for the correct use of the instrument, as well as a precise idea of its versatility in a wide range of applications.
 These instruments are in compliance with **CE** directives EN 50081-1 and 50082-1.

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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 to us in the original packing with the supplied accessories.

GENERAL DESCRIPTION

The HI9064 portable hygrometer measures Relative Humidity. The HI9065 portable thermo-hygrometer measures Temperature and Relative Humidity. The HI9160 is a portable relative humidity meter designed for the food industry, enclosed in an easy to clean casing.

The instruments are housed in a rugged, water-resistant casing for maximum protection against effect of humidity and condensation.

The RH probe contains both the sensor and the electronic circuitry necessary to amplify the RH readings. Another electronic circuit converts the signals sent by the probe into a digital readout in % Relative Humidity.

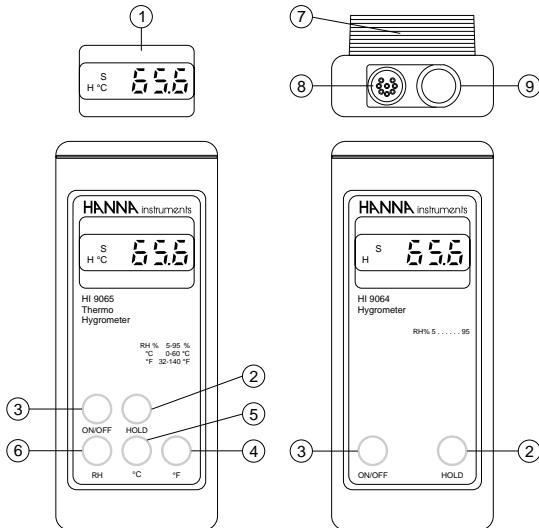
Note: The RH probe sensor must never come into contact with water or other liquids.

HI9064 comes supplied with: HI70608/2 RH probe, 4 ea. 1.5V AA batteries and a rugged carrying case.

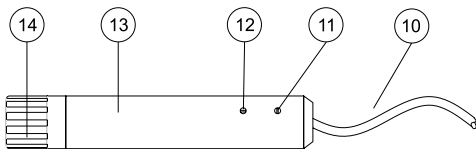
HI9065 comes supplied with: HI70605/2 RH probe, 4 ea. 1.5V AA batteries and a rugged carrying case.

HI9160 comes supplied with: HI70608/2 RH probe, 4 ea. 1.5V AA batteries and a soft carrying case.

FUNCTIONAL DESCRIPTION HI9064 & HI9065

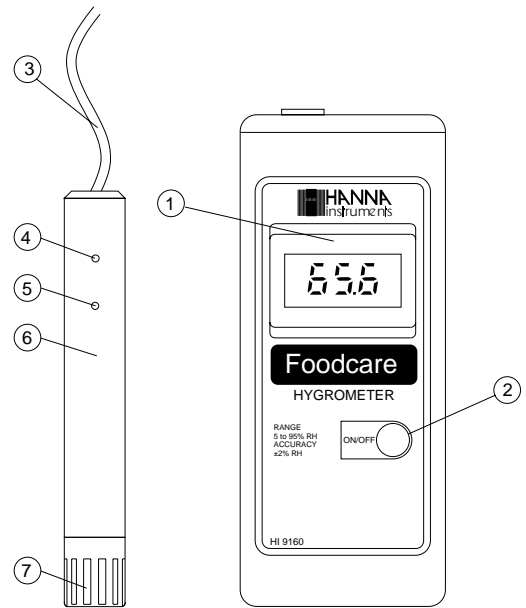


- 1) Liquid Crystal Display
- 2) HOLD Key, to freeze the displayed value
- 3) ON/OFF Key, to turn the meter on or off
- 4) °F Key, to display temperature in Fahrenheit (HI9065 only)
- 5) °C Key, to display temperature in Centigrade (HI9065 only)
- 6) RH Key, to display relative humidity measurements (HI 9065 only)
- 7) Battery Compartment
- 8) RH Probe Socket
- 9) Temperature Probe Socket with protective cap (HI9065 only) for HI765N series probes (see accessories at page 13)
- 10) Shielded Cable
- 11) Low RH Trimmer
- 12) High RH Trimmer
- 13) Polypropylene Probe Body
- 14) Perforated Protective Cap, to prevent any damage to the sensor



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FUNCTIONAL DESCRIPTION HI9160



- 1) Liquid Crystal Display
- 2) ON/OFF Key, to turn the meter on or off
- 3) Shielded Cable
- 4) Low RH Trimmer
- 5) High RH Trimmer
- 6) Polypropylene Probe Body
- 7) Perforated Protective Cover, to prevent any damage to the sensor

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SPECIFICATIONS

		HI9064 & HI9160	HI9065
Range	RH	5.0 to 95.0% RH	5.0 to 95.0% RH
	°C	--	0.0 to + 60.0 °C
	°F	--	32 to + 140 °F
Resolution	RH	0.1% RH	0.1% RH
	°C	--	0.1 °C
	°F	--	1 °F
Accuracy (@25°C/77°F)	RH	±2%	±2%
	°C	--	±0.4 °C
	°F	--	±1 °F
		for one year, excluding probe error	
Typical EMC Deviation		±3% RH	±3% RH ±2 °C / ± 4°F
Calibration	RH	Through 2 trimmers on RH probe	
Probe		HI70608/2	HI70605/2
Operating Conditions		0 to 50 °C (32 to 122°F) 100% RH	
Dimensions	Instrument	196x80x60 mm (7.7x3.1x2.4")	
	RH Probe	L:165 mm D:25 mm with 2 m cable (L:6.5" D:1" 7' cable)	
Battery		4 x 1.5V AA / 500 hours of continuous use	
Weight	Instrument	425 g (15 oz.)	
	Probe	200 g (7 oz.)	

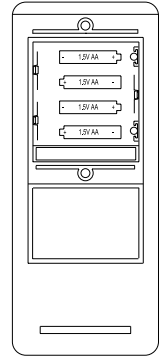
OPERATIONAL GUIDE

INSTRUMENT PREPARATION

Each meter is supplied complete with 4 each 1.5V AA batteries. Remove the back cover, unwrap the batteries and install them while paying attention to their polarity.

Connect the RH probe to the 7-pin DIN socket on the top of the meter and fasten the screw tightly.

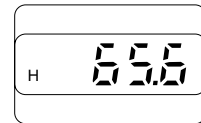
Note: HI 9065 has to be used with just one probe (RH or temperature) at a time.



HUMIDITY MEASUREMENTS

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

Press the RH key to display the RH % measurement. The symbol "H" is displayed when measuring Relative Humidity (not for HI9160).



Using these hygrometers is simple. However, the recommendations below should always be followed.

- 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 should happen, or if condensation causes drops to form on the surface of the humidity sensor, turn off the instrument and wait until they have evaporated completely.

In order to accelerate the evaporation process, the humidity sensor could be exposed to a current of air.

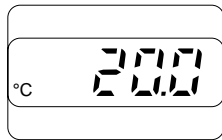
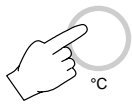
TEMPERATURE MEASUREMENTS (FOR HI9065 ONLY)

Connect the HI 765N temperature probe into the socket placed on the top of the meter (refer to #9 in the Functional Description, page 4) and the unit will automatically display the readings from the temperature probe.

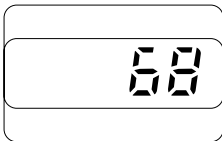
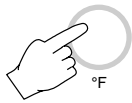
For special applications, you can choose in a wide range of separate temperature probes (see Accessories at page 13).

Note: HI 9065 has to be used with just one probe (RH or temperature) at a time.

By pressing the °C key "°C" is displayed with temperature value in degrees Centigrade.



The same reading in degrees Fahrenheit it would read if you press the °F key.



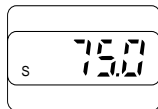
If you experience any problems in taking measurements, please contact your dealer or the nearest Hanna Instruments Customer Service Department.

HOLD FUNCTION (HI 9064 AND HI 9065 ONLY):

The reading HOLD function is activated by the HOLD key. The measured value is frozen on the display when this function key is pressed. "S" is displayed indicating that the reading is stored.



By pressing the same key again, the meter resumes its operational mode.



LCD DISPLAY CODES (HI 9064 AND HI 9065 ONLY):

°C indicates Temperature readings in degrees Centigrade (HI9065 only)

H to indicate Relative Humidity readings

S to indicate that reading has been stored

CALIBRATION

All Hanna hygrometers have been precalibrated at the factory.

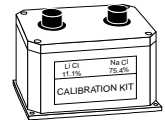
Hanna Instruments uses state-of-the-art thermal humidity chambers for this purpose.

It is generally recommended to have all hygrometers recalibrated at least once a year.

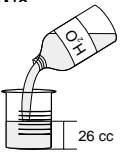


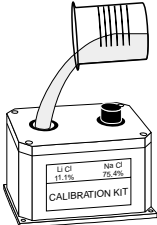
For an accurate annual recalibration, contact your nearest Hanna Service Center.

You can also check the status of your hygrometer and perform a quick RH recalibration (with an accuracy of $\pm 5\%$) by using the Hanna mini-calibration chamber HI7101.

The kit is 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.

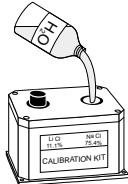


PREPARING THE CALIBRATION SOLUTION

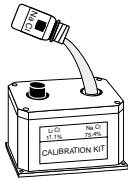
- Pour approximately 26 cc of distilled water into a glass container. 
- Immerse this container into a bath of ice and water and shake briefly.
- Slowly add the contents of a HI7111 bottle containing LiCl into the glass container while continuing to shake. 
- When the salts have dissolved completely, add all the content of the second bottle of HI7111. 
- Allow the solution to cool, and pour it into the chamber marked "RH11.1%", 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 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 HI7121 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.



CALIBRATION PROCEDURE:

- 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.

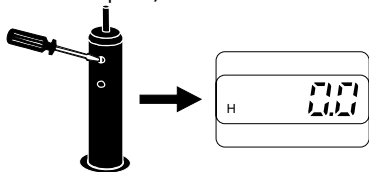
- Press the ON/OFF key to switch the instrument on.



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



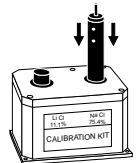
- Turn the low humidity trimmer (see Functional Description) until a value of 0.0% is seen on the readout (reading between 0.0% and 1.0% RH is also acceptable).



Note: the central trimmer is related to the temperature calibration and you will find it on HI 9065 probe only.

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

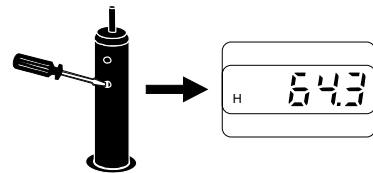
- Remove the cap from the "RH75.4%" chamber containing the NaCl solution and insert the probe.



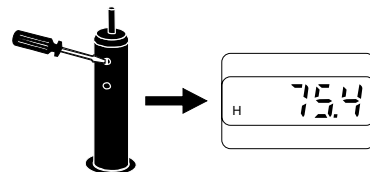
- Wait for the measurement to stabilize (approximately 4 hours)



- 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 display shows 75.4%.



- Now, the humidity calibration is complete.

Spare saturation salts are also available:

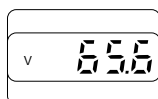
HI7111/P (LiCl) for low range humidity, and HI7121/P (NaCl) for high range humidity.

"BEPS" & BATTERY REPLACEMENT

HI9064, HI9065 and HI9160 are supplied with the advanced "BEPS" Battery Error Preventive System technology that detects a low power condition in the battery and prevents erroneous measurements being taken due to low voltage.

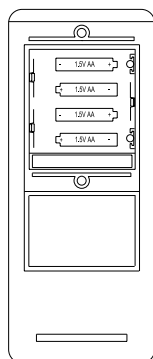
For HI 9064 and HI 9065, upon depletion of the power in the batteries up to a prefixed threshold, the LCD automatically switches off.

For HI9160, when the batteries are low "V" is displayed on the LCD to warn the user. This is to inform the user that the display will be shut-off after about 5 hours of use.



Battery replacement must only take place in a non hazardous area using the battery types specified in this instruction manual (see page 13).

In order to replace rundown batteries, simply remove the two screws on the rear cover of the instrument and replace the four 1.5V AA batteries with new ones, paying attention to the correct polarity.



ACCESSORIES

- HI70605/2 Detachable interchangeable TFPC RH probe with 2 m (6.6') cable and perforated cap (for HI 9065 only)
- HI70605/5 Detachable interchangeable TFPC RH probe with 5 m (16.5') cable and perforated cap (for HI 9065 only)
- HI70607/2 Detachable interchangeable TFPC RH probe with 2 m (6.6') cable and sintered cap (for HI 9065 only)
- HI70607/5 Detachable interchangeable TFPC RH probe with 5 m (16.5') cable and sintered cap (for HI 9065 only)
- HI70608/2 Detachable interchangeable TFPC RH probe with 2 m (6.6') cable (for HI 9064 and HI 9160 only)
- HI70608/5 Detachable interchangeable TFPC RH probe with 5 m (16.5') cable (for HI 9064 and HI 9160 only)
- HI7101 Calibration chambers for probes with perforated cap, complete with O-ring and precalibrated saturated salts
- HI7111/P Spare saturation salts 6 x 15 g bottles of LiCl for low range humidity calibration
- HI7121/P Spare saturation salts 6 x 33 g bottles of NaCl for high range humidity calibration
- HI 710031 Hard carrying case
- HI 721308 1.5V AA size alkaline battery (10 pcs)
- MANRHWR2 Instruction manual

FOR HI9065 ONLY

Interchangeable precalibrated temperature probes:

- HI765AN Air Temperature Probe
- HI765FN Surface Temperature Probe
- HI765LN Liquid Temperature Probe
- HI765PN Penetration Temperature Probe

WARRANTY

All Hanna Instruments meters are guaranteed for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. The probes are guaranteed for a period of six months. This warranty is limited to repair or replacement free of charge.

Damage due to accident, misuse, tampering or lack of prescribed maintenance are not covered.



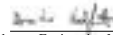
If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization number from the Customer Service department and then send it with shipping costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

To validate your warranty, fill out and return the enclosed warranty card within 14 days from the date of purchase.

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

CE DECLARATION OF CONFORMITY

	
 DECLARATION OF CONFORMITY	
We Hanna Instruments Srl V.le delle industrie 12 35010 Ronchi di Villafranca (PD) ITALY	
herewith certify that the hygrometers HI 9064 HI 9065 HI 9160	
have been tested and found to be in compliance with the following regulations:	
IEC 801-2 IEC 801-3 EN 55022	Electrostatic Discharge RF Radiated Radiated, Class B
Date of Issue: <u>30-11-1995</u>	 D. Volpato - Engineering Manager 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.

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

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

To avoid damages or burns, do not perform any measurement in microwave ovens. In particular cases HI 9064, HI 9065 and HI 9160 could turn off. In these cases they can be turned on by pressing the ON/OFF key.

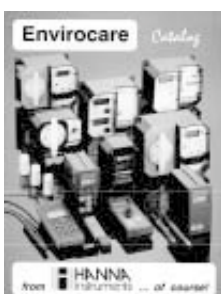
HANNA LITERATURE



LAB RECORDING



WATER ANALYSIS HANDBOOK



ENVIROCARE



GENERAL CATALOG

PRINTED IN ITALY

These and many others catalogs, handbooks and leaflets are available from Hanna. To receive your free copy, contact your dealer or the nearest Hanna Customer Service Center.

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