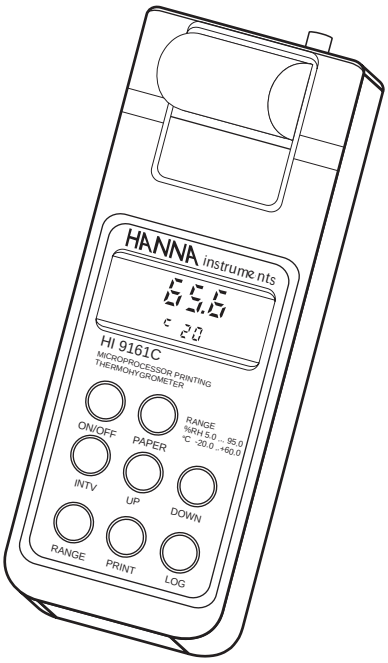
Instruction Manual

HI 9161 • HI 91610

Printing and Logging Thermo-Hygrometers



HANNA® instruments

www.hannainst.com

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 the necessary information for the correct use of the instrument, as well as a precise idea of its versatility.

If you need additional technical information, do not hesitate to e-mail us at **tech@hannainst.com**.

These instruments are in compliance with the CE directives.

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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 instructions.

The probes are warranted for a period of six months.

This warranty is limited to repair or replacement free of charge. Damages due to accidents, 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 shipment costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

PRELIMINARY EXAMINATION

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

Each meter is supplied complete with:

- **HI 70604/2** RH probe with 2 m cable
- **HI 762L/2** temperature probe with 2 m cable
- 5 paper rolls
- Batteries (4 x 1.5V AA)
- Instruction manual
- Rugged carrying case

Note: Save all packing material until you are sure that the instrument functions correctly. Any defective item must be returned in their original packaging together with the supplied accessories.

GENERAL DESCRIPTION

HI 9161 and **HI 91610** are advanced portable, printing, thermo-hygrometers.

These unique, lightweight meters give instant printouts of sample number, date and time of recording, printing interval, relative humidity and temperature at user-selectable intervals.

Both RH and temperature are measured with 0.1 resolution.

HI 91610 combines the high accuracy and portability of **HI 9161** with extensive printing and logging features and an infrared RS232 data transfer system.

In addition to supplying the user with RH and temperature at the touch of a button, it also provides datalogging facilities that store information for transfer to a PC or for retrieval and/or printing at a later date.

Sophisticated software allocates up to 8000 readings to maximize available space, regardless of what the logging interval is.

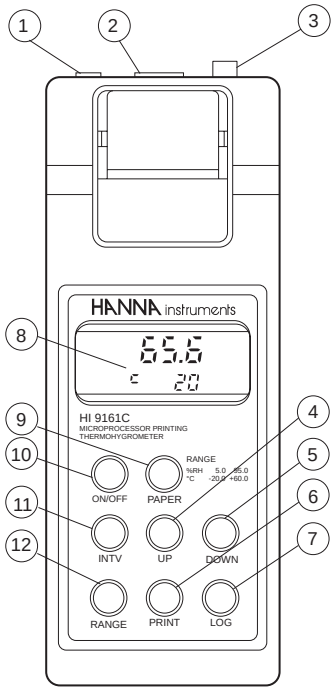
The **HI 9200** infrared transmitter is also available as an optional accessory.

HI 70604/5, RH probe with a 5 m (16.5') cable is also available for special applications.

Both models are available in two versions, for °C or °F readings:

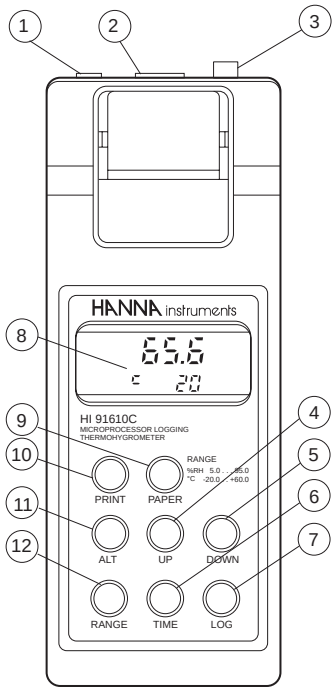
- **HI 9161C** and **HI 91610C** are thermo-hygrometers with temperature readings in Celsius
- **HI 9161F** and **HI 91610F** are thermo-hygrometers with temperature readings in Fahrenheit.

FUNCTIONAL DESCRIPTION HI 9161



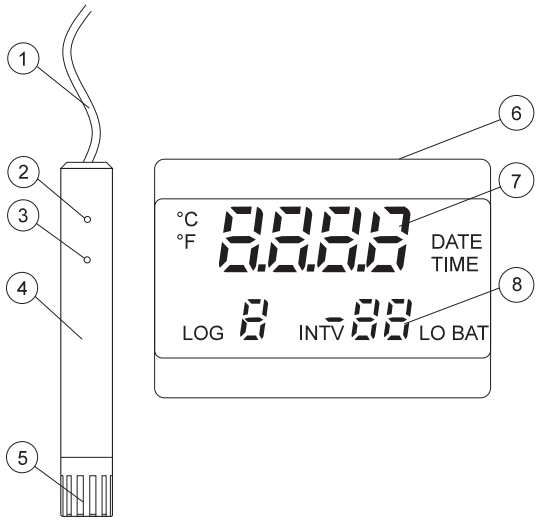
1. Power supply socket
2. RH probe socket
3. Temperature probe socket
4. **UP** key, to set time, date and logging interval
5. **DOWN** key, to set time, date and logging interval
6. **PRINT** key, to print current time, RH and temperature
7. **LOG** key, to start recording mode
8. LCD (Liquid Crystal Display)
9. **PAPER** key, to advance paper
10. **ON/OFF** key, to switch the meter ON and OFF, or to quit recording mode
11. **INTV** key, to set time, date and printing interval (press INTV + RANGE simultaneously)
12. **RANGE** key, to display RH or temperature

FUNCTIONAL DESCRIPTION HI 91610



1. Power supply socket
2. RH probe socket
3. Temperature probe socket
4. **UP** key, to scan data or set time, date and logging interval
5. **DOWN** key, to scan data or set time, date & logging interval
6. **TIME** key, to display current time and printing interval, or to set, date, time & printing interval (with **ALT**)
7. **LOG** key, to start/stop logging (with **ALT**)
8. LCD (Liquid Crystal Display)
9. **PAPER** key, to advance paper, or disable printing (with **ALT**)
10. **PRINT** key, to print on-demand
11. **ALT** key, to activate key alternate functions (press **ALT** first, then press a second key while holding **ALT**)
12. **RANGE** key, to turn the meter ON and to display RH or temperature reading

FUNCTIONAL DESCRIPTION DISPLAY AND RH PROBE



1. Probe shielded cable
2. Low RH calibration trimmer
3. High RH calibration trimmer
4. Polypropylene probe body
5. Perforated sensor cover
6. LCD (Liquid Crystal Display)
7. Primary display
8. Secondary display

SPECIFICATIONS

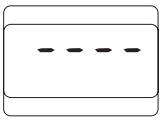
	HI 9161C HI 91610C	HI 9161F HI 91610F
Range	5.0 to 95.0% RH -20.0 to 60.0°C	-4.0 to 140.0°F
Resolution	0.1% RH 0.1°C	0.1°F
Precision	±2% RH ±0.4°C	±1°F
Typical EMC Deviation	±3% RH ±0.2°C	±0.4°F
Probes (included)	**HI 70604/2** RH probe with 2 m (6.6') cable **HI 762L/2** temperature probe with 2 m (6.6') cable	
Power Supply	4 x 1.5V AA alkaline batteries / approx. 500 hours of use (with 60 minutes printing interval); or 12 Vdc input	
Auto-off	After 5 minutes of non-use	
Printer	Low-power impact type belt, 14 characters per line using 38 mm plain paper (**HI 710034**)	
Printing Interval	Selectable at 1, 2, 5, 10, 15, 30, 60, 120, 180 minutes	
Environment	0 to 50°C (32 to 122°F); RH max 98% non-condensing	
Dimensions	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
Weight	550 g (1.2 lb.)	

INITIAL PREPARATION

Each meter is supplied complete with four 1.5V AA batteries. Unscrew and remove the back cover, unwrap the batteries and install them while paying attention to their polarity (see "Battery Replacement" section for details).

Connect the RH probe to the DIN socket on the top of the meter and fasten the threaded ring tightly. Connect the temperature probe to the appropriate connector. The temperature probe can be used independently to take temperature measurements, or in conjunction with the RH probe.

If no probe is connected, "----" will appear on the LCD.



To switch the **HI 9161** on, press ON/OFF.

To switch the **HI 91610** on, press RANGE.

To save battery life, the display is automatically switched off after 5 minutes of non-use. However, when in recording/logging mode, the meter will continue to monitor RH and temperature.

To reactivate the display, press RANGE.

OPERATIONAL GUIDE

RELATIVE HUMIDITY MEASUREMENTS

Operations with the **HI 9161** and **HI 91610** are very simple.

- For accurate measurements, the RH sensor 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 any other liquid**. If this happens, or if condensation causes drops to form on the surface of the humidity sensor, the instrument must be turned off until moisture has completely evaporated. To accelerate the evaporation process, expose the humidity sensor to a current of air.

For any problem in taking measurements, please contact your dealer or the nearest HANNA Customer Service Center.

TEMPERATURE MEASUREMENTS

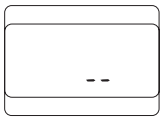
The **HI 762L/2** temperature probe supplied with theinstrument is a liquid/general purpose probe with 2 m (6.6') cable.

Simply plug the probe into the socket located on the top of the meter.

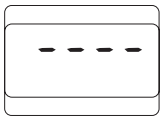
If continuous monitoring of temperature is needed, keep the probe attached to the meter at all times.

To view either the RH% or temperature reading on the display, press RANGE. The reading will appear without decimal digit when shown on the secondary display. The temperature range on the secondary display goes from 0 to 99°C (or °F).

If the temperature exceeds this range, "--" will appear indicating that the secondary display is unable to show the reading.



If no probe or test plug is connected, the meter will display and print "----" to alert the user. This could also indicate that the probe cable is damaged.

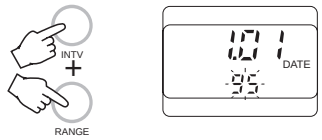


HANNA offers a wide range of temperature probes to meet all application requirements. HANNA **HI 762** probe series use highly sensitive thermistor sensors to provide great accuracy and fast response (see "Accessories" section for a complete list).

SETTING DATE, TIME & PRINTING INTERVAL WITH HI 9161

When the instrument is turned on, the display shows the TIME.

Press the INTV and RANGE keys simultaneously. The display will then show the date previously memorized with the year blinking (shown as the last 2 digits of the year, e.g. 95=1995).



Use the UP and DOWN keys to select the year.

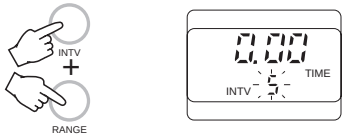
When the correct year is selected, press the RANGE key once and the month will start blinking.

Select the correct month by pressing the UP or DOWN keys.

Press RANGE and the day will start blinking.

Use the UP or DOWN keys to select the correct day. The day will still blink.

Press the INTV and RANGE keys simultaneously. The display will show the time/printing interval setting. The printing interval on the secondary LCD will blink.



Any interval can be selected from among 1, 2, 5, 10, 15, 30, 60, 120 and 180 minutes by using the UP and DOWN keys.

Once the desired interval is selected, press RANGE once to memorize it. The hour will start blinking.

To select the hour, press the UP or the DOWN keys (24 hour clock).

To memorize the hour press RANGE once again. The minutes will start blinking.

Likewise, use UP and DOWN to set the minutes.

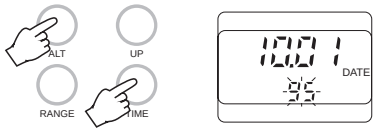
Press the INTV and RANGE keys simultaneously to exit this mode and memorize the minute setting.

The time, date and printing interval are now stored in the memory even when the meter or display are switched off.

Note: Each time the batteries are replaced, the settings will need to be re-entered. This can be avoided by applying an external voltage to the unit before replacing the batteries.

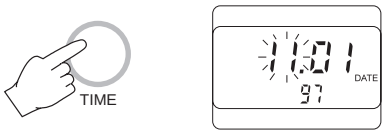
SETTING DATE, TIME & PRINTING/LOGGING INTERVAL WITH HI 91610

Press the ALT and TIME keys simultaneously. The display will show the previously memorized date with the year blinking on the secondary display (as the last two digits of the year, e.g. 95 = 1995).



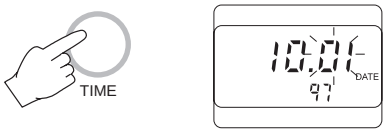
Use the UP or DOWN keys to select the correct year.

When the year is selected, press the TIME key once to memorize it. The month will start blinking.



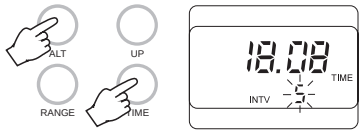
Select the month by using the UP or the DOWN keys.

Press TIME. The day will start blinking.



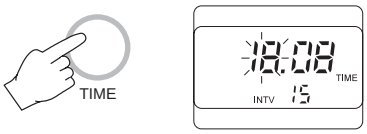
Use UP or DOWN to select the correct day.

Press the ALT and TIME keys simultaneously and the display will show the previously memorized time with the printing interval blinking on the secondary LCD.



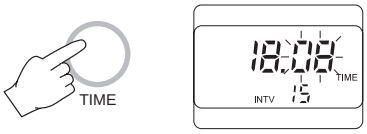
Any interval can be selected from among 1, 2, 5, 10, 15, 30, 60, 120 or 180 minutes by using the UP and DOWN keys.

Store the selected interval by pressing TIME once more. The hour will blink.



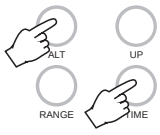
To select the hour, press the UP or DOWN keys (24 hour clock).

To store the hour press the TIME key again and the minutes will blink.



Use the UP or DOWN keys to select the correct minutes.

Press the ALT and TIME keys together to exit this mode and memorize the minute setting.



The time, date and printing interval are now stored in the memory even when the meter or display are switched off.

Note: Each time the batteries are replaced, the settings will need to be re-entered. This can be avoided by applying an external voltage to the unit before replacing the batteries.

VIEWING RH%, TEMPERATURE, TIME, DATE & PRINTING INTERVAL WITH HI 9161

When the instrument is turned on, the display enters the TIME mode.

To view RH% on the primary display, press the RANGE key.

To view temperature on the primary display with decimal point, press the RANGE key.

If "----" is displayed, no probe is connected or the probe cable is broken.

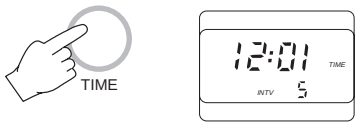
Note: the RH% value is displayed without any symbol on the primary display and with a "H" on the secondary LCD. The temperature value is always displayed together with the "°C" or "°F" symbol.

To view the current time and printing interval, press the INTV and RANGE keys simultaneously.

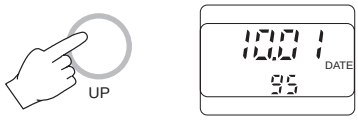
To view the date, press the UP or DOWN keys.

VIEWING RH%, TEMPERATURE, TIME, DATE & PRINTING INTERVAL WITH HI 91610

To view the time press the TIME key. This also displays the printing/logging interval.

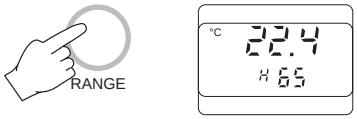


To view the date, press the UP key when the LCD is displaying time.

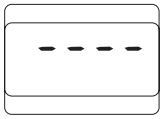


To view RH% on the primary display press RANGE.

To view temperature on the primary display when in RH% mode, press RANGE again.



If "----" is displayed, no probe is connected or the probe cable is broken.

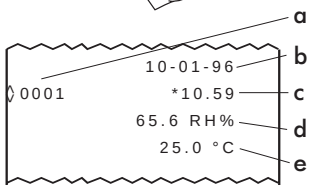


Note: The RH% value is displayed without any symbol on the primary display. The temperature value is always displayed together with the "°C" or "°F" symbol.

PRINTING/RECORDING WITH HI 9161

To print the measured values press PRINT. Each printout provides the following information:

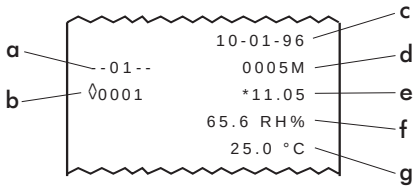
a – Current sample number
b – Date (DD-MM-YY)
c – Time (HH.MM)
d – RH% value
e – Temperature value



RECORDING AT AN INTERVAL

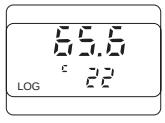
Set the appropriate logging interval, the press LOG to enter the recording mode. The log number and the recording interval will appear for a few seconds on the secondary display to indicate the operational mode.

The meter will print the current measurements and with the indicated printing interval thereafter until the ON/OFF key is pressed.
The printout provides the following information:



a – Curernt log number
b – Current sample number in that particular log
c – Date (DD-MM-YY)
d – Printing interval in minutes
e – Time (HH.MM)
f – RH% value
g – Temperature value

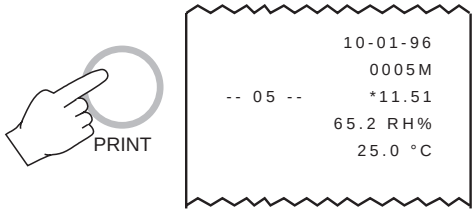
When the meter is in recording mode, LOG is displayed on the secondary LCD with the RH% value on the primary LCD.



Press the RANGE key to read the temperature on the primary display.

If no key is pressed, after approximately 5 minutes, the meter goes in standby mode to save the battery life.

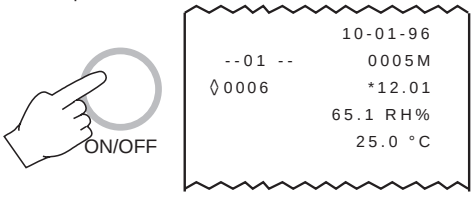
Note: If PRINT is pressed while still in recording mode, a printout is produced without affecting the running number.



Printing during recording

TO STOP RECORDING

To exit the recording mode, press ON/OFF. The instrument will make one final exit printout.



The running log number can be reset by simply removing the batteries.

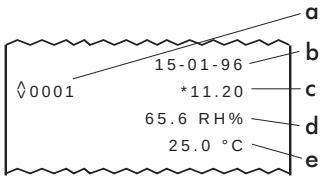
PRINTING/LOGGING WITH HI 91610

To print the values shown on the display, press PRINT.

This function can be activated in normal operation mode as well as during logging (and scanning) modes.

When in the measurement mode, each printout provides the following information:

a – Running sample number
b – Date (DD-MM-YY)
c – Time (HH.MM)
d – RH% value
e – Temperature value



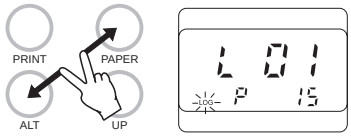
LOGGING MODE WITHOUT PRINTING

This function is particularly useful when measurements have to be taken continuously even in the absence of an operator over a long period of time. In this mode data will be stored directly into memory.

Set the appropriate logging interval.

Press the ALT and LOG keys simultaneously to enter the logging mode. The current log number and remaining page numbers will appear for a few seconds on the display to indicate the correct operational mode. The printer will print a complete set of data and the "LOG" symbol will appear on the secondary LCD.

Press the ALT and PAPER keys at the same time and the "LOG" symbol on display will start to blink.



If no key is pressed, after approximately 5 minutes the display will switch itself off but the logging function remains active.

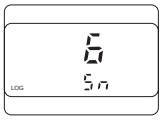
To reactivate the display press the TIME key.

Notes:

- Once in the logging mode, the interval cannot be changed. Exit the logging mode (press ALT and LOG together) and then set the new interval.
- If the PRINT key is pressed while in logging mode, a printout is produced without affecting the running sample number.

SAMPLE NUMBER

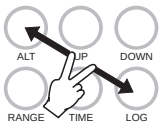
During logging it is possible to know the running sample number. Press the LOG key twice and the display will show the running number in the current log together with sample number symbol "Sn".

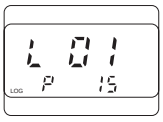


LOGGING MODE WITH PRINTING

This function is useful in a variety of applications from unsupervised monitoring to satisfying regulatory requirements. In addition to the printouts, the measurements are also stored into the memory.

Press the ALT and LOG key simultaneously to enter the logging mode. The current log number and the remaining page number will be displayed for a few seconds to indicate the correct operational mode.



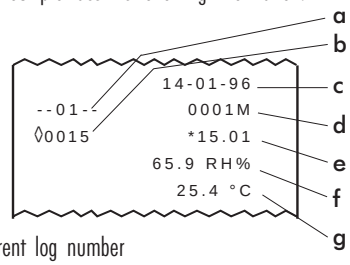


The printer will print a complete set of data and the "LOG" symbol will appear on the secondary LCD.

If no key is pressed, the display turns off after about 5 minutes and comes back on only to print at the next logging interval. During printing, the display shows the time, preselected interval and "LOG" symbol.

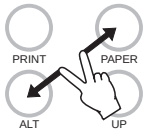
To reactivate the display press the TIME key.

Each printout provides the following information:



a – Current log number
b – Current sample number (in that particular log)
c – Date (DD-MM-YY)
d – Printing interval in minutes
e – Time (HH.MM)
f – RH% value
g – Temperature value

It is always possible to switch from the logging with printing function to logging without printouts. Press ALT and PAPER at the same time and the "LOG" symbol will start blinking to indicate that the data is now stored into memory but no longer printed.

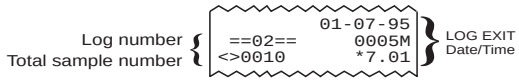


Notes:

- It is recommended to use an external power supply during logging with printing mode, especially if many printouts are required.
- Before proceeding with logging/printing, make sure there is enough paper for your measurements. There is no warning if the machine runs out of paper. If this happens, data will continue to be stored into memory, and it is always possible to print them at a later time.
- It is possible to insert a new paper roll during logging session (see "Printer Maintenance" section for details).
- Once in logging mode, the interval cannot be changed. Exit the logging mode (by pressing the ALT and the LOG keys together) and set a new interval.
- If the PRINT key is pressed while in logging mode, a printout is produced without affecting the running sample number.

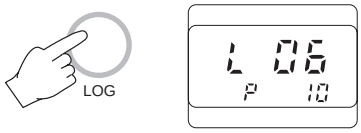
TO STOP LOGGING

Press the ALT and LOG keys simultaneously. This will also generate an exit status printout.

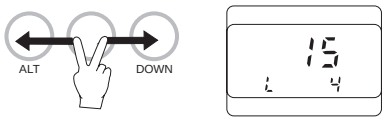


TO SCAN STORED DATA ON DISPLAY

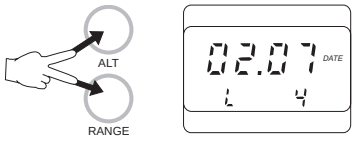
Press the LOG key. The log number and remaining page number will appear on display.



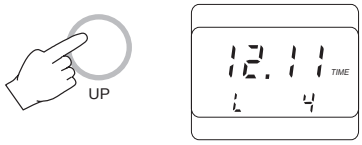
While pressing the ALT key, press the DOWN key until the log number to scan appears on the secondary display. The primary display will show the number of samples in that particular log.



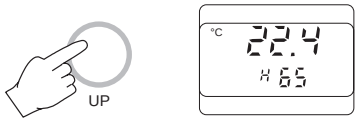
Press the ALT and RANGE keys simultaneously and the LCD will show the logging starting date.



Press UP and the time of the most recent sample will be displayed.



Press UP and the temperature will be displayed on the primary LCD.



Press UP and the RH% value will be displayed on the primary LCD.

Continue pressing UP will display one by one all the memorized data of the same log in the above sequence, i.e. time, temperature, RH% value.

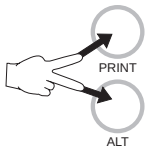
Press DOWN key to revert back to sampling time and scan the samples.

To exit from the recall mode, press the LOG key.

Note: This mode will not alter data already present in the memory.

PRINTING STORED DATA

Once a log number is selected, all or part of that logged section can be printed by pressing the ALT and PRINT keys. The printout will contain all logged samples in that section beginning with the selected sample number without altering the memory content.



Note: It is always possible to print only the displayed sample by pressing the PRINT key only.

For example if 10 samples are stored in the logging section, use the DOWN key to display sample #5.

At this point, sample #5 can be printed pressing the PRINT key, while samples #5, 6, 7, 8, 9 and 10 are printed if pressing ALT and PRINT keys simultaneously.

To stop the printer at any time, press ALT and PAPER together.

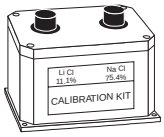
Note: Before proceeding with printing, make sure there is enough paper for the data to be printed. If the paper runs out, the meter will not advise the operator and the printouts could be lost. If this happens, stop the printer by pressing ALT and PAPER keys simultaneously. Data will be kept in memory. Insert a new paper roll (see "Printer Maintenance" section for details), and repeat the above instructions starting from the last printed sample number.

CALIBRATION

All HANNA thermo-hygrometers have been precalibrated at the factory. HANNA instruments® uses state-of-the-art thermally-isolated humidity chambers for this purpose.

It is generally recommended to have all thermo-hygrometers recalibrated at least once a year. For an accurate annual recalibration, contact your dealer or the nearest HANNA Customer Service Center.

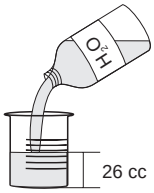
You can also check the calibration status of your thermo-hygrometer and perform a quick RH calibration (with an accuracy of ±5%) by using the HANNA **HI 7101** calibration chamber.



The kit includes two thermally-isolated chambers, each one equipped with a cap and three bottles containing the appropriate precalibrated saturated salts to produce a known RH value.

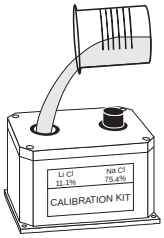
PREPARING THE CALIBRATION SOLUTIONS

- Pour approximately 26 cc of distilled water into a glass container.
- Immerse this container into a bath of ice and water.

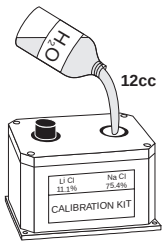


- Slowly add the contents of a **HI 7111** bottle (LiCl salts) into the glass container while stirring gently.
- When the salts have dissolved completely, add all the content of the second bottle of **HI 7111**.

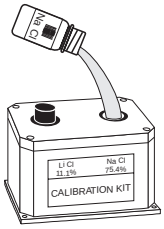
- Allow the solution to cool, and pour it into the chamber marked "RH11.1%", making sure that no residue remains on the walls of the glass container.



- 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%".



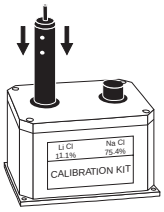
- Add all the content of the **HI 7121** bottle (NaCl salts) while continuously shaking the container to avoid the formation of lumps. Seal this container well when not in use.



The calibration kit needs 4 hours for proper stabilization.

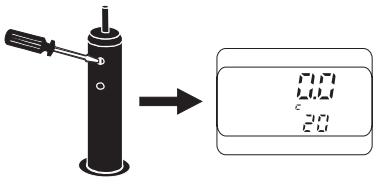
CALIBRATION PROCEDURE

- Bring the calibration kit to a temperature of approximately 20°C (68°F) and keep it in an area minimum temperature variations.
- Remove the cap from the "RH 11.1%" chamber and insert the probe, while paying attention that it does not touch the liquid.
- Remove the adhesive sticker that covers the calibration trimmer access holes.
- Wait for the measurement to stabilize (this takes approximately 4 hours).

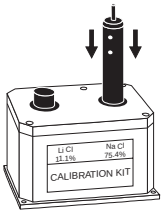


- Press the ON/OFF (**HI 9161**) or RANGE (**HI 91610**) key to switch the meter on.
- Press the RANGE key to display the RH% reading on the primary LCD.

- Adjust the low humidity trimmer to read 0.0% (readings between 0.0 and 1.0% RH are acceptable).

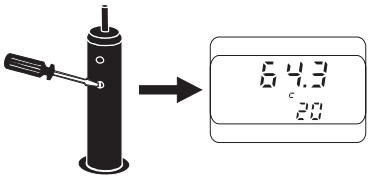


- Remove the probe and tightly seal the chamber containing the LiCl solution.
- Remove the cap from the "RH75.4%" chamber and insert the probe, ensuring that it does not touch the liquid.

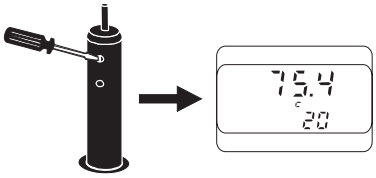


- Wait for the measurement to stabilize (approximately 4 hours)

- Adjust the high humidity trimmer to read 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%.

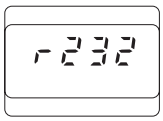


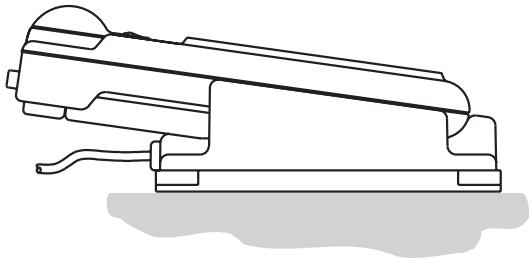
- The relative humidity calibration is now complete.

DATA TRANSFER TO PC (HI 91610 only)

Set the **HI 91610** to TIME mode and place it on a **HI 9200** infrared transmitter (ensuring that the infrared LEDs of meter and interface match). The logged data can be downloaded to your PC through a serial port.

During data transfer the instrument displays "r 232".





Using the **HI 9200** infrared transmitter, all recorded data can be fed to your PC for easy reproduction, storage or further elaboration with the HANNA **HI 92000** Windows® compatible application software.

HI 92000 allows you to use the most common spread sheet programs (e.g. Excel©, Lotus 1-2-3©) and offers a variety of features with an on-line help routine.

To install **HI 92000**, you need a 3.5" drive and a couple of minutes to follow the short instructions conveniently printed on the disk label.

SELF-DIAGNOSTIC FUNCTIONS

HI 9161 and **HI 91610** are factory programmed to automatically diagnose a fault and inform the user by displaying an error code on the LCD.

Error codes are:

PEr0, PEr1, PEr2 = Short circuit on the system, the meter should be returned for repair. Contact your dealer.

PEr3 = Printer mechanism fault. Contact your dealer.

PEr4 = Printer clutch jammed - reset the printer (see page 31).

PEr9 = Printer jammed - reset the printer (see page 31).

MEMORY ORGANIZATION (HI 91610 only)

Capacity: 8000 sample data, divided into 16 pages.

Capacity per page: up to 500 data.

Each time a new logging mode is entered, the meter automatically goes to the next available page. Once all 16 pages are used up, the meter will overwrite the first lot.

During logging, the meter automatically returns to the oldest page in the memory and if it contains data, it will overwrite it. In this case the first log will not correspond to the oldest set of data.

It is recommended to periodically "clean" the memory. Save data into a PC if you need to keep a record and then remove the batteries for about 1 minute. Remember to reset time and date, once the batteries have been reinserted.

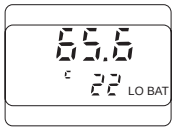
ATTENTION

If batteries need to be replaced and data is not to be lost, power the meter through a 12 Vdc adapter before proceeding with battery replacement.

Once batteries have been changed, the external power supply can be disconnect without losing the previously memorized data.

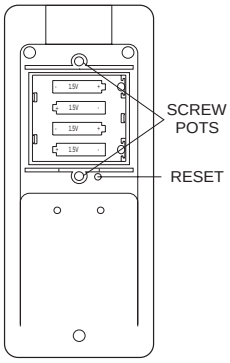
BATTERY REPLACEMENT

When the batteries become weak, the "LO BAT" indication is displayed to warn the user.



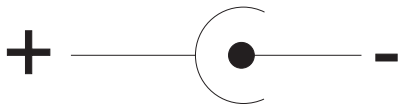
Battery replacement must only take place in a safe area and using using four 1.5V AA alkaline batteries.

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



A 12 Vdc power source can also be used to power the unit.

Note: The instrument uses the following configuration.



It is recommended to use the HANNA **HI 710005** or **HI 710006** voltage adapters with the proper polarity configuration.

HI 9161 and **HI 91610** can also be powered through other 12 Vdc adapters. Always check the correct polarity of the adapter before connecting it to the meter.

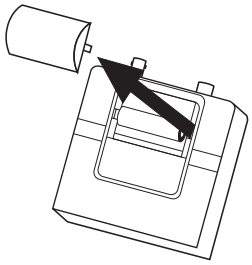
PRINTER MAINTENANCE

CHANGING THE INK CARTRIDGE

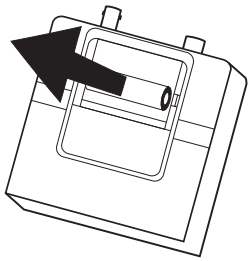
When printouts become faint, it might be necessary to change the ink cartridge. Contact your dealer or the nearest HANNA Office for technical service.

INSERTING PAPER ROLL

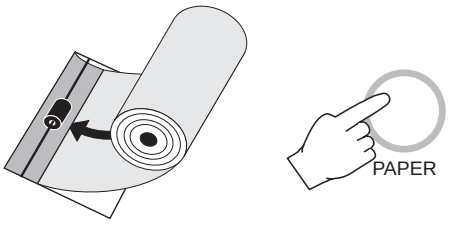
HI 9161 and **HI 91610** use plain 38 mm wide paper rolls. To insert a new roll gently pull out the printer cover.



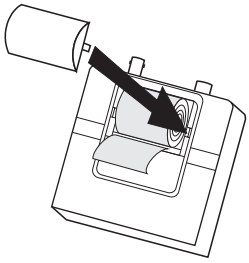
Take out the used paper cylinder.



Insert the paper edge in the printer slot and feed the paper through by pressing the PAPER key.



Allow about 5 cm (2") of paper to exit from the printer and then replace the cover.



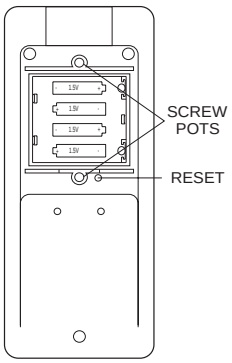
TO RESET THE PRINTER

Take off the battery compartment cover by removing the screws on the back of the meter.

Using a sharp pencil press the black reset button. This will reset the printing mechanism.

Before replacing the battery cover, investigate likely cause of the printer jam (e.g. the paper might be caught under the cover preventing the paper from advancing).

Replace the battery cover and tighten the screws.



ACCESSORIES

RH PROBES

HANNA Relative Humidity probes use a high-tech TFPC (Thin-Film Polymer Capacitance) humidity sensor, that provides rapid response and high accuracy. The probes are precalibrated at the factory. Several different versions are available for all application needs.

HI 70604/2 RH probe with 2 m (6.6') cable
HI 70604/5 RH probe with 5 m (16.5') cable
HI 70606/2 RH probe with sintered cap and 2 m (6.6') cable
HI 70606/5 RH probe with sintered cap and 5 m (16.5') cable

TEMPERATURE PROBES

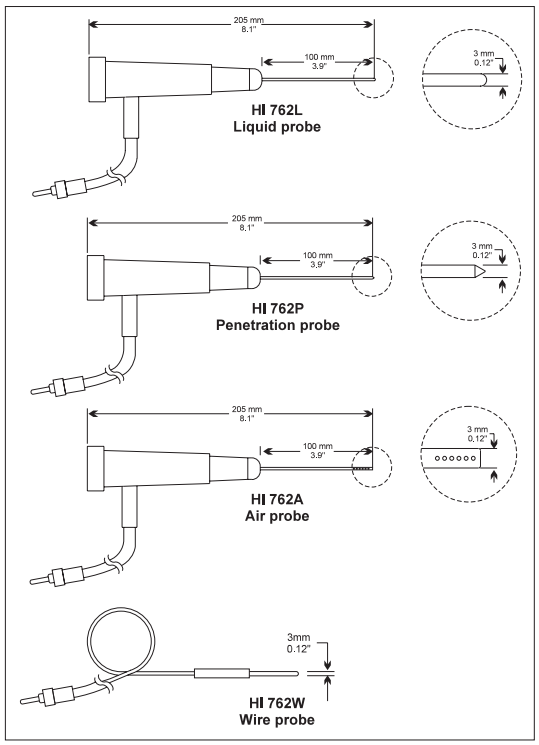
These probes use highly sensitive thermistor sensors which provide great accuracy and fast response, superior to conventional probes.

All HANNA temperature probes are supplied precalibrated from the factory, ready to be used with your meter.

Models with different handle colors are available to avoid cross contamination during testing.

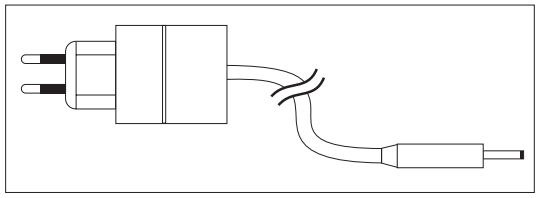
HI 762A Air probe with 1 m (3.3') cable and white handle
HI 762A/10 Air probe with 10 m (33') cable and white handle
HI 762BL Liquid probe with 1 m (3.3') cable & black handle
HI 762BL/10 Liquid probe with 10 m (33') cable & black handle
HI 762L Liquid probe with 1 m (3.3') cable & white handle
HI 762L/10 Liquid probe with 10 m (33') cable & white handle
HI 762PBL Penetration probe, 1 m (3.3') cable & blue handle
HI 762PBL/10 Penetration probe, 10 m (33') cable & blue handle
HI 762PG Penetration probe, 1 m (3.3') cable & green handle
HI 762PG/10 Penetration probe, 10 m (33') cable & green handle
HI 762PR Penetration probe, 1 m (3.3') cable and red handle
HI 762PR/10 Penetration probe, 10 m (33') cable and red handle
HI 762PW Penetration probe, 1 m (3.3') cable & white handle
HI 762PW/10 Penetration probe, 10 m (33') cable & white handle
HI 762W Wire probe, without handle (hard-to-reach places) with 1 m (3.3') cable
HI 762W/10 Wire probe, without handle (hard-to-reach places) with 10 m (33') cable

HANNA INSTRUMENTS TEMPERATURE PROBES



OTHER ACCESSORIES

HI 710005 115 Vac / 12 Vdc power adapter, US plug
HI 71006 230 Vac / 12 Vdc power adapter, European plug



HI 9200 Infrared transmitter
HI 92000 Windows® compatible software
HI 710034 Paper roll (10 pcs)
HI 710035 Ink cartridge
HI 721317 Rugged carrying case

Windows® is a registered Trademark of "Microsoft Co."

HI 7101	RH calibration chamber
HI 7102	RH calibration chamber for probes with sintered cap
HI 7111/P	Spare saturation LiCl salts for low humidity calibration (15 g, 6 pcs)
HI 7121/P	Spare saturation NaCl salts for high humidity calibration (33 g, 6 pcs)

CALIBRATION TEST KEYS

HANNA test keys provide a quick and easy way to test the meter's accuracy by simply plug the key to the probe socket on the meter.
If the reading differs by more than ±0.4°C (±0.8°F) from the test key value, the unit is due for recalibration.
Choose the proper test key according to your application needs.

HI 762-18C	Calibration test key,at -18.0°C
HI 762000C	Calibration test key, at 0.0°C
HI 762070C	Calibration test key, at 70.0°C
HI 762-004F	Calibration test key, at -0.4°F
HI 762032F	Calibration test key, at 32.0°F
HI 762158F	Calibration test key, at 158.0°F

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 printing/logging thermohygrometers

HI 9161 **HI 91610**

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
IEC 801-4 Fast Transient

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

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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 areas could cause unacceptable interference to radio and TV equipment.

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

Unplug the instruments from power supply before replacing the fuse or making any electrical connections.

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

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