INSTRUCTION MANUAL

HI 95747

Copper Low Range ISM

Dear Customer,
Thank you for choosing a Hanna product. This manual will provide you with the necessary information for the correct use of the instrument. Please read it carefully before using the meter. If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com.
This instrument is in compliance with CE directives.

Preliminary examination:

Please examine this product carefully. Make sure that the instrument is not damaged. If any damage occured during shipment, please notify your Dealer.
Each HI 95747 Ion Selective Meter is supplied complete with:

- Two Sample Cuvets and Caps
- 9V Battery
- Instruction Manual

Note: save all packing material until you are sure that the instrument works correctly. Any defective item must be returned in its original packing.

For more details about spare parts and accessories see "Accessories"

Technical specifications:

Range	0.000 to 1.500 mg/L
Resolution	0.001 mg/L for *measurement* 0.01 mg/L for *calibration* and *validation*
Precision	±0.015 mg/L @ 0.750 mg/L
Typical EMC Dev.	±0.001 mg/L
Light Source	Tungsten lamp with narrow band interference filter @ 560 nm
Light Detector	Silicon Photocell
Method	Adaptation of the USEPA approved bicinchoninate method.
Environment	0 to 50°C (32 to 122°F); max 95% RH non-condensing
Battery Type	1 x 9 volt
Auto-Shut off	After 10' of non-use in measurement mode; after 1 hour of non-use in calibration mode.
Dimensions	180 x 83 x 46 mm (7.1 x 3.3 x 1.8")
Weight	290 g (10 oz.).

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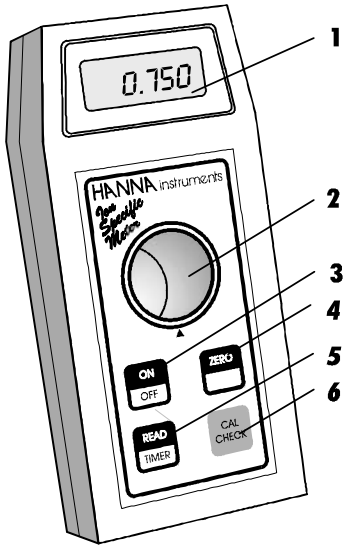
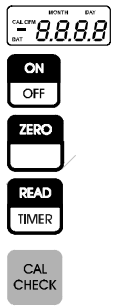
CE
This instrument is in compliance with the CE Directives

Functional description:

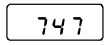


1. Liquid Crystal Display.
2. Cuvet Holder with transparent protective cup and alignment indicator.
3. ON/OFF key: to turn the meter on and off.
4. ZERO key: press to zero the meter prior to measurement.
5. READ/TIMER key: press for making a measurement, or hold the key for 3 seconds to start a pre-programmed countdown prior to measurement.
6. CAL CHECK key allows direct validation with the exclusive Hanna CAL CHECK™ NIST traceable standards.

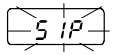


Guide to display codes:

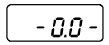
This prompt appears for 1 second each time the instrument is turned on.



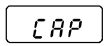
The parameter code "747" indicates that the meter is in a ready state and zeroing can be performed.



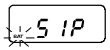
Sampling In Progress. Flashing "SIP" prompt appears each time the meter is performing a measurement.



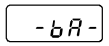
"-0.0-", the meter is in a zeroed state and measurement can be performed.



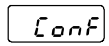
"CAP", Light over range: the cuvet is not inserted correctly and an excess ambient light is reaching the detector. If the cover is properly installed, then contact your dealer or the nearest Hanna Customer Service Center.



The blinking "BAT" indicates that the battery voltage is getting low and the battery needs to be replaced.



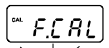
"-bA-", the battery is dead and must be replaced. Once this indication is displayed, the meter will lock up. Change the battery and restart.



"Conf", the meter has lost its configuration. Contact your dealer or the nearest Hanna Customer Service Center.

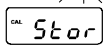
CALIBRATION MODE MESSAGES

The date of the last calibration appears on the LCD each time the *calibration mode* is entered. If calibration is performed for the first time, "F.CAL" appears.

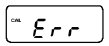


"F.CAL" indicates that the factory calibration is selected.

The flashing digits indicate that:
1. the month can be set
2. the day can be set



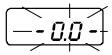
"Stor", appears for 1 second at the end of the calibration procedure, to indicate that the calibration data has been stored.



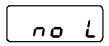
"Error", the concentration of the calibration solution used is not correct. Repeat the calibration procedure with the right standard solution, and verify it is not expired.
If the calibration procedure fails again, contact your dealer or the nearest Hanna Customer Service Center.

ERROR MESSAGES

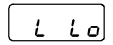
<u>On zero reading</u>



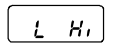
Blinking "-0.0-" indicates that the zeroing procedure failed due to a low signal-to-noise ratio. In this case press ZERO again.



"no L", the instrument cannot adjust the light level. Please check that the sample does not contain any debris.

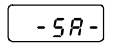


"L Lo", there is not enough light to perform a measurement. Please check the preparation of the zero cuvet.

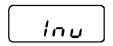


"L Hi", there is too much light to perform a measurement. Please check the preparation of the zero cuvet.

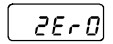
<u>On sample reading</u>



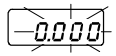
"-SA-", there is too much light for the sample measurement. Please check if the right sample cuvet is inserted.



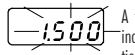
"Inv", the sample and the zero cuvet are inverted.



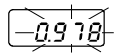
"ZEr0", a zero reading was not taken. Follow the instruction in the measurement procedure for zeroing the meter.



Under range. A blinking "0.000" indicates that the sample absorbs less light than the zero reference. Check the procedure and make sure you use the same cuvet for reference (zero) and measurement.

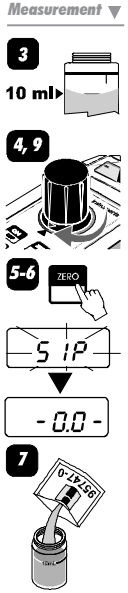


A flashing value of the maximum concentration indicates an over range condition. The concentration of the sample is beyond the programmed range: dilute the sample and re-run the test.



A flashing value lower than the maximum concentration indicates a low signal-to-noise ratio condition. In this case accuracy of the result is not guaranteed. Repeat the measurement procedure.

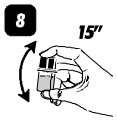
Measurement procedure:



1• Turn the meter on by pressing ON/OFF.
2• When the LCD displays "747", it is ready.
3• Fill the cuvet with 10 mL of unreacted sample, up to the mark, and replace the cap.
4• Place the cuvet into the holder and ensure that the notch on the cap is positioned securely into the groove.
5• Press ZERO and "SIP" will blink on the display.
6• After a few seconds the display will show "-0.0-". The meter is now zeroed and ready for measurement.
7• Remove the cuvet and add the content of one packet of HI 95747-0 Copper Low Range reagent.
8• Replace the cap and shake gently for 15 seconds.
9• Replace the cuvet into the holder and ensure that the notch on the cap is positioned securely into the groove.
10• Hold READ/TIMER for three seconds. The display will show the countdown prior to measurement.
Alternatively, wait for 45 seconds and just press READ/TIMER.

In both cases "SIP" will blink during measurement.

11• The instrument directly displays concentration in mg/L of copper on the Liquid Crystal Display.



INTERFERENCES

- Cyanide
- Silver
- For strongly buffered alkaline or acidic samples, pH should be adjusted between 6 and 8 before addition of reagent.
- To avoid interferences due to fingerprints, oil or dirt it is very important that the cuvet is wiped clean prior to insertion in the cuvet holder.

  Replacement of scratched cuvets is strongly recommended.

Validation and Calibration procedures

Warning: do not validate or calibrate the instrument with standard solutions other than the Hanna CAL CHECK™ Standards, otherwise erroneous results will be obtained.

For accurate validation and calibration results, please perform tests at room temperature (18 to 25°C; 64.5 to 77.0°F).

Use the optional CAL CHECK™ cuvets (see "Accessories") to validate or calibrate instruments.

VALIDATION

Validation ▼

1• Turn the meter on by pressing ON/OFF.

2• When the LCD displays "747", it is ready.

3• Place the CAL CHECK™ Standard Cuvet A into the holder and ensure that the notch on the cap is positioned securely into the groove.

4• Press ZERO and "SIP" will blink on the display.

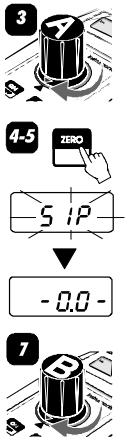
5• After a few seconds the display will show "-0.0-". The meter is now zeroed and ready for validation.

6• Remove the cuvet.

7• Place the CAL CHECK™ Standard HI 95747-11 Cuvet B into the holder and ensure that the notch on the cap is positioned securely into the groove.

8• Press CAL CHECK key and "SIP" will blink during measurement.

9• Wait for a few seconds and the display will show the validation standard value.



The reading should be within specifications as reported on the CAL CHECK™ Standard Certificate. If the value is found out of specifications, please check that the cuvets are free of fingerprints, oil or dirt and repeat validation. If results are still found out of specifications then recalibrate the instrument.

CALIBRATION

Note: It is possible to interrupt the calibration procedure at any time by pressing ON/OFF.

Warning: do not validate or calibrate the instrument with standard solutions other than the Hanna CAL CHECK™ Standards, otherwise erroneous results will be obtained.

For accurate validation and calibration results, please perform tests at room temperature (18 to 25°C; 64.5 to 77.0°F).

Calibration ▼

1• Turn the meter on by pressing ON/OFF.

2• When the LCD displays "747", it is ready.

3• Enter the **calibration mode** by holding CAL CHECK key for three seconds.

4• The date of the last calibration appears (e.g.: month "01", day "08"). "F.CAL" means that the factory calibration is selected.

Note: at this point it is possible to reset the instrument to restore FACTORY CALIBRATION

5• Place the CAL CHECK™ Standard Cuvet A into the holder and ensure that the notch on the cap is positioned securely into the groove.

6• Press ZERO and "SIP" will blink on the display.

7• After a few seconds the display will show "-0.0-". The meter is now zeroed and ready for calibration.

8• Remove the cuvet.

9• Place the CAL CHECK™ Standard HI 95747-11 Cuvet B into the holder and ensure that the notch on the cap is positioned securely into the groove.

10• Press READ/TIMER and "SIP" will blink on the display.

11• The instrument will show for three seconds the CAL CHECK™ standard value.

Then the date of last calibration (e.g.: "01.08") appears on the display, or "01.01" if the factory calibration was selected. In both cases the number of the month is blinking, ready for date input.

Note: if display will show "ERR" the calibration procedure failed. Verify that the right CAL CHECK™ Standard Cuvet B is inserted, that both A and B cuvets are free from fingerprints or dirt and that they are inserted correctly.

12• Keep READ/TIMER pressed to scroll to the desired month number (01-12).

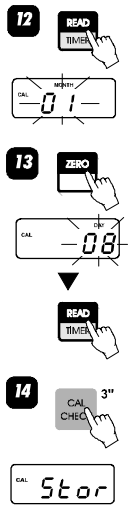
13• When the correct month has been set, press ZERO to confirm. Now the display will show the day number blinking.

Keep READ/TIMER pressed to scroll to the desired day number (01-31).

Note: it is possible to change from *day* to *month* and vice versa by pressing ZERO.

14• When both the day and month have been selected, hold CAL CHECK key for three seconds to store date and calibration values. The instrument will show for one second "Stor", to confirm that the new calibration data has been accepted.

15• The instrument will return automatically to the measurement mode by displaying the parameter code ("747") on the LCD.



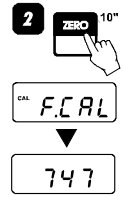
Factory calibration reset

It is possible to restore factory calibration:

Factory Calibration Reset ▼

1• Enter the *calibration mode* by holding CAL CHECK key for three seconds.

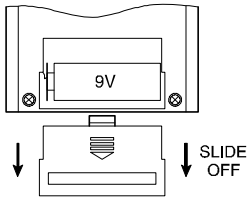
2• Hold ZERO for 10 seconds. The display will show for 2 seconds "F.CAL" and the parameter code "747" appears. The factory calibration is automatically restored and the instrument is ready for measurement.



Battery replacement

Battery replacement must only take place in a non-hazardous environment. Simply slide off the battery cover on the back of the meter.

Detach the battery from the terminals and attach a fresh 9V battery while paying attention to the correct polarity. Insert the battery and replace the cover.



Accessories:

REAGENT SETS

HI 95747-01	Reagents for 100 Copper LR tests
HI 95747-03	Reagents for 300 Copper LR tests

OTHER ACCESSORIES

HI 95747-11	CAL CHECK™ kit for Calibration & Validation of Copper Low Range (1 set)
HI 710009	Blue rubber boot
HI 710010	Orange rubber boot
HI 721310	9V battery (10 pcs)
HI 731318	Tissue for wiping cuvets (4 pcs)
HI 731331	Glass cuvets (4 pcs)
HI 731335	Caps for cuvets (4 pcs)
HI 93703-50	Cuvets cleaning solution (230 mL).

Warranty

HI 95747 is warranted for two years against defects in workmanship and materials when used for its intended purpose and maintained according to the instructions.

This warranty is limited to repair or replacement free of charge.

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

If service is required, contact your dealer. 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.

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

Recommendations for Users

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

Operation of these instruments may cause unacceptable interferences to other electronic equipments, this requiring the operator to take all necessary steps to correct interferences.

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

To avoid damages or burns, do not put the instrument in microwave oven. For yours and the instrument safety do not use or store the instrument in hazardous environments.

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

For additional information, contact your dealer or the nearest

Hanna Customer Service Center.
To find the Hanna Office in your area, visit our web site

www.hannainst.com

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