



## 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 cuvette is wiped clean prior to insertion in the cuvette holder. Replacement of scratched cuvettes is strongly recommended.

## Validation and Calibration procedures

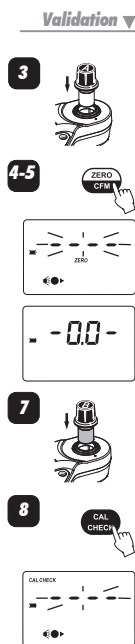
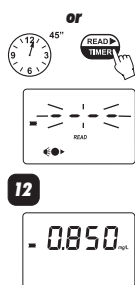
**Warning:** Do not validate or calibrate the instrument with standard solutions other than the Hanna CAL CHECK™ Standards, otherwise erroneous results will be obtained.

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

**Use the Hanna CAL CHECK™ cuvettes (see "Accessories") to validate or calibrate instruments.**

## VALIDATION

1. Turn the meter on by pressing ON/OFF.
2. When the beeper sounds briefly and the LCD displays dashes, the meter is ready.
3. Place the CAL CHECK™ Standard HI 96747-11 Cuvette A into the cuvette holder and ensure that the notch on the cap is positioned securely into the groove.
4. Press ZERO/CFM and the lamp, cuvette and detector icons will appear on the display, depending on the measurement phase.
5. After a few seconds, the display will show "-0.0-". The meter is now zeroed and ready for validation.
6. Remove the cuvette.
7. Place the CAL CHECK™ Standard HI 96747-11 Cuvette B into the cuvette holder and ensure that the notch on the cap is positioned securely into the groove.
8. Press CAL CHECK key and the lamp, cuvette and detector icons together with "CAL CHECK" will appear on the display, depending on the measurement phase.
9. At the end of the measurement 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 cuvettes



are free of fingerprints, oil or dirt and repeat validation. If results are still found out of specifications then recalibrate the instrument.

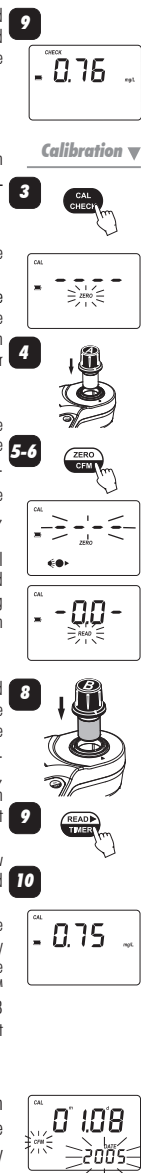
## CALIBRATION

**Note:** It is possible to interrupt the calibration procedure at any time by pressing CAL CHECK or ON/OFF keys.

1. Turn the meter on by pressing ON/OFF.
2. When the beeper sounds briefly and the LCD displays dashes, the meter is ready.
3. Press and hold CAL CHECK for three seconds to enter calibration mode. The display will show "CAL" during calibration procedure. The blinking "ZERO" asks for instrument zeroing.
4. Place the CAL CHECK™ Standard HI 96747-11 Cuvette A into the cuvette holder and ensure that the notch on the cap is positioned securely into the groove.
5. Press ZERO/CFM and the lamp, cuvette and detector icons will appear on the display, depending on the measurement phase.
6. After a few seconds the display will show "-0.0-". The meter is now zeroed and ready for calibration. The blinking "READ" asks for reading calibration standard.
7. Remove the cuvette.
8. Place the CAL CHECK™ Standard HI 96747-11 Cuvette B into the cuvette holder and ensure that the notch on the cap is positioned securely into the groove.
9. Press READ/TIMER and the lamp, cuvette and detector icons will appear on the display, depending on the measurement phase.
10. After measurement the instrument will show for three seconds the Cal Check Standard value.

**Note:** If the display shows "STD HIGH", the standard value was too high. If the display shows "STD LOW", the standard value was too low. Verify that both CAL CHECK™ Standards HI 96747-11 Cuvettes, A and B are free from fingerprints or dirt and that they are inserted correctly.

Then the date of the last calibration (e.g.: "01.08.2005") appears on the display, or "01.01.2005" if the factory calibration was selected before. In both cases the year number is blinking, ready for date input.



11. Press GLP/▲ to edit the desired year (2000-2099). If the key is kept pressed, the year number is automatically increased.
  12. When the correct year has been set, press ZERO/CFM or READ/TIMER to confirm. Now the display will show the month blinking.
  13. Press GLP/▲ to edit the desired month (01-12). If the key is kept pressed, the month number is automatically increased.
  14. When the correct month has been set, press ZERO/CFM or READ/TIMER to confirm. Now the display will show the day blinking.
  15. Press GLP/▲ to edit the desired day (01-31). If the key is kept pressed, the day number is automatically increased.
- Note:** It is possible to change the editing from day to year and to month by pressing READ/TIMER.
16. Press ZERO/CFM to save the calibration date.
  17. The instrument displays "Stor" for one second and the calibration is saved.
  18. The instrument will return automatically to measurement mode by displaying dashes on the LCD.

## GLP

In the GLP mode, the last calibration date can be consulted and the factory calibration can be restored.

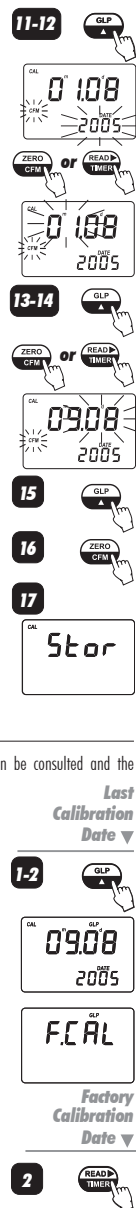
## LAST CALIBRATION DATE

1. Press GLP/▲ to enter GLP mode. The calibration month and day will appear on the main display and the year on the secondary display.
2. If no calibration was performed, the factory calibration message, "F.CAL" will appear on the main display and the instrument returns to measurement mode after three seconds.

## FACTORY CALIBRATION RESTORE

It is possible to delete the calibration and restore factory calibration.

1. Press GLP/▲ to enter GLP mode.



2. Press READ/TIMER to enter in the factory calibration restore screen. The instrument asks for confirmation of user calibration delete.
3. Press ZERO/CFM to restore the factory calibration or press GLP/▲ again to abort factory calibration restore.
4. The instrument briefly notifies "done" when restores factory calibration and returns to measurement mode.

## Battery management

To save battery, the instrument shuts down after 10 minutes of non-use in measurement mode and after 1 hour of non-use in calibration mode.

If a valid measurement was displayed before auto shut off, the value is displayed when the instrument is switched on. The blinking "ZERO" means that a new zero has to be performed.

One fresh battery lasts for around 750 measurements, depending on the light level.

The remaining battery capacity is evaluated at the instrument startup and after each measurement.

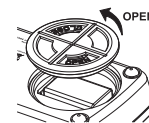
The instrument displays a battery indicator with three levels as follows:

- 3 lines for 100 % capacity
- 2 lines for 66 % capacity
- 1 line for 33 % capacity
- Battery icon blinking if the capacity is under 10 %.

If the battery is empty and accurate measurements can't be taken anymore, the instrument shows "dead batt" and turns off.

To restart the instrument, the battery must be replaced with a fresh one.

- To replace the instrument's battery, follow the steps:
- Turn the instrument off by pressing ON/OFF.
  - Turn the instrument upside down and remove the battery cover by turning it counterclockwise.



- Extract the battery from its location and replace it with a fresh one.
- Insert back the battery cover and turn it clockwise to close.

## Accessories

### REAGENT SET

- |             |                        |
|-------------|------------------------|
| HI 95747-01 | Reagents for 100 tests |
| HI 95747-03 | Reagents for 300 tests |

### OTHER ACCESSORIES

- |             |                                      |
|-------------|--------------------------------------|
| HI 96747-11 | CAL CHECK™ Standard Cuvettes (1 set) |
| HI 721310   | 9V battery (10 pcs.)                 |
| HI 731318   | Cloth for wiping cuvettes (4 pcs.)   |
| HI 731331   | Glass cuvettes (4 pcs.)              |
| HI 731335   | Caps for cuvettes (4 pcs.)           |
| HI 93703-50 | Cuvette cleaning solution (230 ml)   |

## Warranty

HI 96747 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, thus 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.