INSTRUCTION MANUAL

HI97107

Disinfectants
Multiparameter Photometer

Hanna Instruments Inc., 584 Park East Drive, Woonsocket, RI 02895 USA
www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Instruments® product.

Please read this instruction manual carefully before using this instrument as it provides the necessary information for correct use of this instrument, and a precise idea of its versatility.

If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com.
Visit www.hannainst.com for more information about Hanna Instruments and our products.

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1. PRELIMINARY EXAMINATION

Remove the instrument and accessories from the packaging and examine it carefully. For further assistance, please contact your local Hanna Instruments® office or email us at tech@hannainst.com.

Each HI97107 is delivered in a cardboard box and is supplied with:

- Sample cuvette with cap (2 pcs.)
- Plastic stopper (2 pcs.)
- 1.5V AA Alkaline battery (3 pcs.)
- Battery safety insert
- Quick reference guide with instructions for manual download and instrument quality certificate

Each HI97107C is delivered in a rugged carrying case and is supplied with:

- Sample cuvette with cap (2 pcs.)
- Plastic stopper (2 pcs.)
- Chlorine reagent kit » Reagent A, 30 mL dropper (1 pc.)
  Reagent B, 30 mL dropper (1 pc.)
  Reagent C, 20 mL dropper (1 pc.)
- pH Reagent, 30 mL dropper (1 pc.)
- Bromine reagent (for 25 tests)
- Ozone reagent (for 25 tests)
- Glycine powder (for 25 tests)
- UHR Chlorine reagent kit » Reagent A (for 25 tests)
  Reagent B (for 25 tests)
- Chlorine Dioxide (Rapid) reagent kit » Reagent A, 30 mL dropper (1 pc.)
  Reagent B (for 25 tests)
- Hydrogen Peroxide reagent, 30 mL dropper (1 pc.)
- Cloth for wiping cuvettes
- Scissors
- 1.5V AA Alkaline battery (3 pcs.)
- Battery safety insert
- Quick reference guide with instructions for manual download and instrument quality certificate

***Note**: Save all packing material until you are sure that the instrument works correctly. Any damaged or defective item must be returned in its original packing material with the supplied accessories.*

2. SAFETY MEASURES

- The chemicals contained in the reagent kits may be hazardous if improperly handled.
- Read the Safety Data Sheets (SDS) before performing tests.
- Safety equipment: Wear suitable eye protection and clothing when required, and follow instructions carefully.
- Reagent spills: If a reagent spill occurs, wipe up immediately and rinse with plenty of water. If reagent contacts skin, rinse the affected area thoroughly with water. Avoid breathing released vapors.
- Waste disposal: For proper disposal of reagent kits and reacted samples, contact a licensed waste disposal provider.

Coin-cell Battery Safety

The coin-cell battery is replaceable by a professional service center only.

⚠ WARNING

- **INGESTION HAZARD:** This product contains a button cell or coin battery.
- **DEATH** or serious injury can occur if digested.
- A swallowed button cell or coin battery can cause **Internal Chemical Burns** in as little as **2 hours**.
- **KEEP** new and used batteries **OUT OF REACH OF CHILDREN.**
- **Seek immediate medical attention** if a battery is suspected to be swallowed or inserted inside any part of the body.

- Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children.
  Do NOT dispose of batteries in household trash or incinerate.
- Even used batteries may cause severe injury or death.
- Call a local poison control center for treatment information.
- Coin-cell battery type CR2032
- Nominal voltage 3.0 V
- Non-rechargeable batteries are not to be recharged.
- Do not force discharge, recharge, disassemble, heat above 85 °C (185 °F) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.
- Ensure the batteries are installed correctly according to polarity (+ and −).
- Do not mix old and new batteries, different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.
- Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations.
- Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.

3. ABBREVIATIONS

DPD	N,N-Diethyl-p-phenylenediamine
EPA	US Environmental Protection Agency
GLP	Good Laboratory Practice
HDPE	High Density Polyethylene
LED	Light Emitting Diode
NIST	National Institute of Standards and Technology
LR	Low Range
UHR	Ultra High Range
mg/L	milligrams per liter (ppm)
mL	milliliter
°C	degree Celsius
°F	degree Fahrenheit

4. SPECIFICATIONS

Bromine

Range	0.00 to 10.00 mg/L (as Br_2)
Resolution	0.01 mg/L
Accuracy	±0.08 mg/L ±3% of reading at 25 °C (77 °F)
Method	Adaptation of Standard Methods for the Examination of Water and Wastewater, 18th Edition, DPD Method

Free and Total Chlorine LR

Range	0.00 to 5.00 mg/L (as Cl_2)
Resolution	0.01 mg/L
Accuracy	±0.03 mg/L ±3% of reading at 25 °C (77 °F)
Method	Adaptation of US EPA Method 330.5, DPD Colorimetric Method

Total Chlorine UHR

Range	0 to 500 mg/L (as Cl_2)
Resolution	1 mg/L
Accuracy	±3 mg/L ±3 % of reading at 25 °C (77 °F)
Method	Adaptation of Standard Methods for Examination of Water and Wastewater, 20th Edition, 4500-Cl

Chlorine Dioxide (Rapid)

Range	0.00 to 2.00 mg/L (as ClO_2)
Resolution	0.01 mg/L
Accuracy	±0.10 mg/L ±5% of reading at 25 °C (77 °F)
Method	Adaptation of Standard Methods for the Examination of Water and Wastewater, 18th Edition, 4500 ClO_2 D

Hydrogen Peroxide

Range	0 to 500 mg/L H_2O_2
Resolution	1 mg/L
Accuracy	±5 mg/L ±3 % of reading at 25 °C (77 °F)
Method	Adaptation of DIN 38409-15, German Standard Methods for the Examination of Water and Wastewater

Ozone

Range	0.00 to 2.00 mg/L (as O_3)
Resolution	0.01 mg/L
Accuracy	±0.02 mg/L ±3 % of reading at 25 °C (77 °F)
Method	DPD Colorimetric Method

pH

Range	6.5 to 8.5 pH
Resolution	0.1 pH
Accuracy	±0.1 pH of reading at 25 °C (77 °F)
Method	Adaptation of the Phenol Red Method

Measurement System

Light source	Light Emitting Diode
Bandpass filter	525 nm
Bandpass filter bandwidth	8 nm
Bandpass filter wavelength accuracy	±1.0 nm
Light detector	Silicon photocell
Cuvette type	Round 24.6 mm diameter (22 mm inside)

Additional Specifications

Auto logging	50 readings
Display	128×64 pixel B/W LCD with backlight
Auto-off	After 15 minutes of inactivity (30 minutes before a READ measurement)
Battery type	1.5 V AA Alkaline (3 pcs.)
Battery life	>800 measurements (without backlight)
Environment	0 to 50 °C (32 to 122 °F); 0 to 100% RH, non-serviceable
Dimensions	142.5×102.5×50.5 mm (5.6×4.0×2.0")
Weight (with batteries)	380 g (13.4 oz.)
Case ingress protection rating	IP67, floating case

5. DESCRIPTION

5.1. GENERAL DESCRIPTION & INTENDED USE

The HI97107 is an auto-diagnostic portable photometer that benefits from Hanna's® years of experience as a manufacturer of analytical instruments. It has an advanced optical system that uses a Light Emitting Diode (LED) and a narrow band interference filter that allows for accurate and repeatable readings.

The optical system is sealed from outside dust, dirt and water. The meter uses an exclusive positive-locking system to ensure that the cuvettes are placed into the holder in the same position every time.

With the CAL Check™ functionality, users are able to validate the performance of the instrument at any time and apply a user calibration (if necessary). Hanna Instruments CAL Check cuvettes are made with NIST traceable standards.

The built-in tutorial mode guides users step-by-step through the measurement process. It includes all steps required for sample preparation, the required reagents and quantities.
The HI97107 meter measures seven important parameters in the treatment and disinfection of drinking water and wastewater.

Bromine is a powerful water disinfectant, particularly effective in hot water (treatment of pools and spas). Bromine can act as an alternative to chlorine.
The method for bromine is an adaptation of Standard Methods for the Examination of Water and Wastewater, DPD Method.

Chlorine is a widely used disinfectant, in order for it to be effective the **pH** of the water should be less than 8.0.
The method for chlorine is an adaptation of US EPA Method 330.5, DPD Colorimetric Method.
The method for pH is an adaptation of the Phenol Red Method.

Chlorine Dioxide is a powerful and selective disinfectant used in water treatment across a broad pH range.
The method for chlorine dioxide is an adaptation of Standard Methods for the Examination of Water and Wastewater, 18th Ed., 4500 ClO2 D.

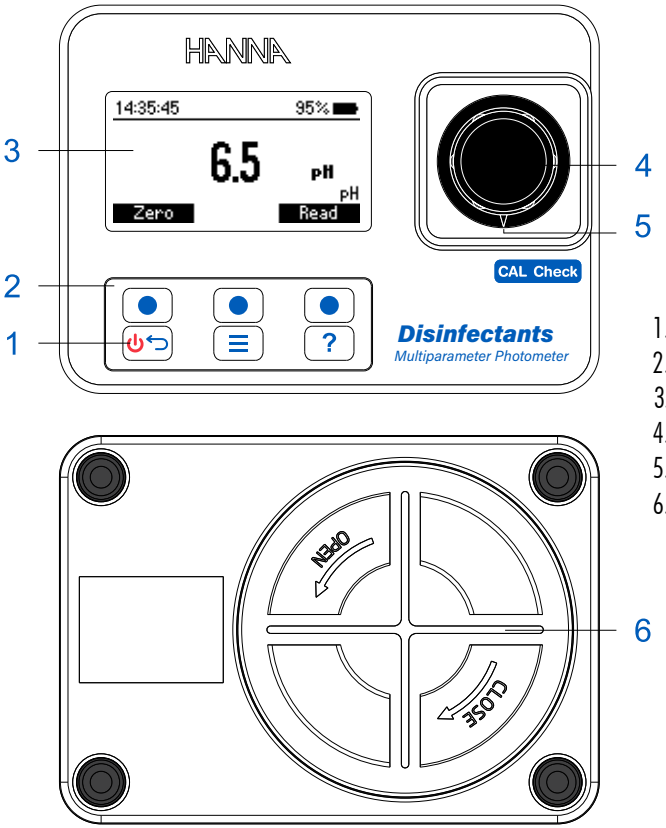
Hydrogen Peroxide is an environmentally friendly, broad spectrum disinfectant.
The method for hydrogen peroxide is an adaptation of German Standard Methods for the Examination of Water and Wastewater DIN 38409-15.

Ozone is a widely used disinfectant in the treatment of drinking water, wastewater and swimming pools.
The method for ozone is the DPD Colorimetric Method.

The HI97107 photometer is a compact and versatile meter suitable for field or bench measurements, featuring a:

- Sophisticated optical system
- Meter validation using certified CAL Check cuvettes
- Tutorial mode guides the user step-by-step
- Auto logging
- Waterproof IP67, floating case

5.2. FUNCTIONAL DESCRIPTION



1. ON/OFF power button
2. Keypad
3. Liquid Crystal Display (LCD)
4. Cuvette holder
5. Indexing mark
6. Battery cover

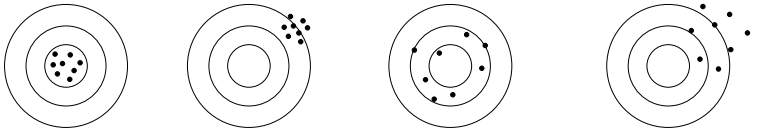
Keypad Description

The keypad contains 3 direct keys and 3 functional keys with the following functions:

- Press the functional key to perform the function displayed above it on the LCD.
- Press and hold to power off/on. Press briefly to return to the previous screen.
- Press to access the menu screen.
- Press to display the context-sensitive help menu.

5.3. PRECISION & ACCURACY

Precision is how closely repeated measurements are to one another. Precision is usually expressed as standard deviation (SD).
Accuracy is defined as the closeness of a test result to the true value and is method specific.
Although good precision suggests good accuracy, precise results can be inaccurate. The figure explains these definitions.



5.4. PRINCIPLE OF OPERATION

Absorption of light is a typical phenomenon of interaction between electromagnetic radiation and matter. When a light beam crosses a substance, some of the radiation may be absorbed by atoms, molecules or crystal lattices. Photometric chemical analysis is based on specific chemical reactions between a sample and reagent to produce a light-absorbing compound.
If pure absorption occurs, the fraction of light absorbed depends both on the optical path length through the matter and on the physical-chemical characteristics of the substance according to the Lambert-Beer Law. If all other factors are constant, the concentration "c" can be calculated form the absorbance of the substance.

$$-\log I/I_o = \varepsilon_\lambda \, c \, d$$
or
$$A = \varepsilon_\lambda \, c \, d$$

I_o	=	intensity of incident light beam
I	=	intensity of light beam after absorption
ε_λ	=	molar extinction coefficient at wavelength λ
c	=	molar concentration of the substance
d	=	optical path through the substance

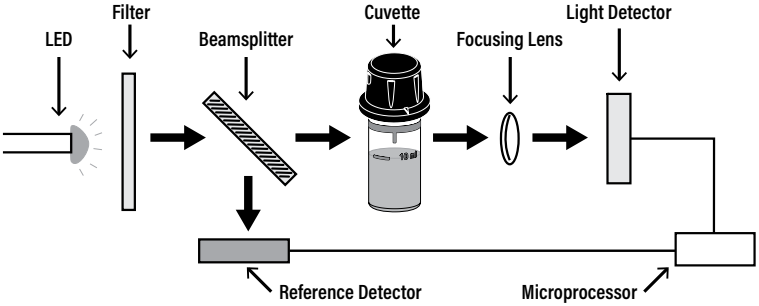
5.5. OPTICAL SYSTEM

The **internal reference system (reference detector)** of the HI97107 photometer compensates for any drifts due to power fluctuations or ambient temperature changes, providing a stable source of light for your blank (zero) measurement and sample measurement.

LED light sources offer superior performance compared to tungsten lamps. LEDs have a much higher luminous efficiency, providing more light while using less power. They also produce little heat, which could otherwise affect electronic stability. LEDs are available in a wide array of wavelengths, whereas tungsten lamps have poor blue/violet light output.

Improved **optical filters** ensure greater wavelength accuracy and allow a brighter, stronger signal to be received. The end result is higher measurement stability and less wavelength error.

A **focusing lens** collects all of the light that exits the cuvette, eliminating errors from cuvette imperfections and scratches, eliminating the need to index the cuvette.



Instrument Block Diagram

6. GENERAL OPERATIONS

6.1. METER VALIDATION: CAL CHECK™

Validation of the photometer involves verifying the concentration of the certified CAL Check standards. The CAL Check screen guides the user step-by-step through the validation process.

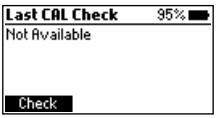
WARNING: *Do not use any solutions or standards other than the Hanna Instruments® CAL Check Standards. For accurate validation, please perform these at room temperature, 18 to 25 °C (64.5 to 77.0 °F).*

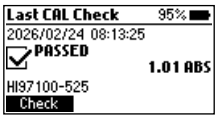
***Note**: Protect the CAL Check cuvettes from direct sunlight by keeping them in the original packing. Store between 5 and 30 °C (41 to 86 °F), do not freeze.*

To perform a CAL Check:

1. Press the ☰ key to enter menu.
2. Use the functional keys to select *CAL Check* and press **Select**.

"Not Available" message or the date, time, and status of the last CAL Check will be displayed on the screen.



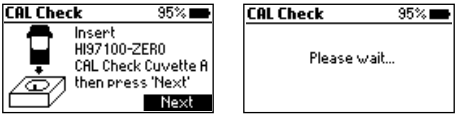


***Note**: CAL Check is for the 525 nm bandpass filter. Since all methods use this bandpass filter, they all use the same CAL Check standards.*

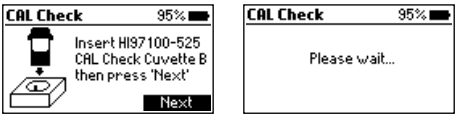
3. Press **Check** to start a new CAL Check™.
   Press the ⏻ key at any time to abort the validation process.
4. Use the functional keys to enter the certificate value of the calibration standard found on the CAL Check Standard Certificate.
5. Press **Next** to continue.

***Note**: This value will be saved in the instrument for future validation.*

6. Insert the HI97100-ZERO CAL Check Cuvette A then press **Next** to continue.
   "Please wait..." message will be displayed during the measurement.

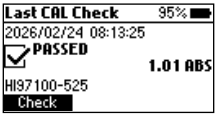


7. Insert the HI97100-525 CAL Check Cuvette B then press **Next** to continue.
   "Please wait..." message will be displayed during the measurement.

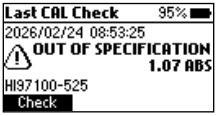


***Note**: HI97100-ZERO and HI97100-525 are included in the HI97107-11 CAL Check standards for Disinfectants Multiparameter Photometer – cuvette kit. Please see Accessories for ordering codes.*

8. When the CAL Check is complete, the display will show one of the following messages and the value obtained during the measurement:
   - **"PASSED"**: measured value is within the accuracy specification



   - **"OUT OF SPECIFICATION"**: measured value is outside of the tolerance window

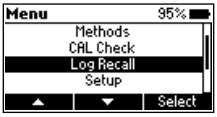


   A. Check the certified value, expiration date, and clean the outside of the cuvette.
   B. Repeat the CAL Check procedure.
   C. If this error continues, contact your nearest Hanna Instruments® customer service center.

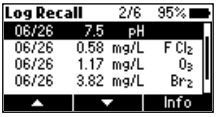
6.2. LOGGING DATA & LOG RECALL

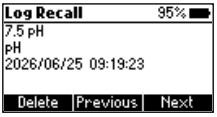
The instrument features a data autolog function to help users keep track of all measurements. Every time a measurement is made the data is automatically saved. The data log can hold 50 individual measurements. When the data log is full (50 data points) the meter will rewrite the oldest data point.
Viewing and deleting the data is possible using the **Log Recall** menu.

- Press the ☰ key to enter the menu.
- Use the functional keys to select *Log Recall* and press **Select**.

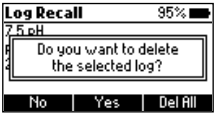


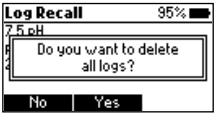
- Use the functional keys to highlight a log.
  Press **Info** to view additional information about the log.
  From this screen **Next** and **Previous** can be used to view other logs.





- Press **Delete** to erase logged data.
  After pressing **Delete** a prompt on display is asking for confirmation.





- Press **No** or the ⏻ key to return to the previous screen.
- Press **Yes** to delete selected log.
- Press **Del All** to erase all the logged data.
  If **Del All** is pressed, follow the prompt to confirm.
- Press **Yes** to delete all logged data, **No** or the ⏻ key to return to the log recall.

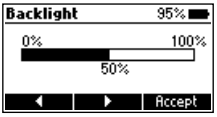
6.3. GENERAL SETUP

- Press the ☰ key to enter the menu.
- Use the functional keys to select *Setup* and press **Select**.
- Use the functional keys to highlight desired option.

Backlight

Option: 0 to 100 %

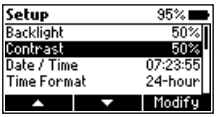
- Press **Modify** to access the backlight intensity.
- Use the functional keys to increase or decrease the value.
- Press **Accept** to confirm or the ⏻ key to return to the *Setup* menu without saving the new value.

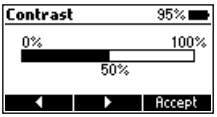


Contrast

Option: 0 to 100 %

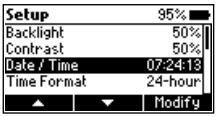
- Press **Modify** to change the display's contrast.
- Use the functional keys to increase or decrease the value.
- Press **Accept** to confirm the value or the ⏻ key to return to the *Setup* menu without saving the new value.





Date & Time

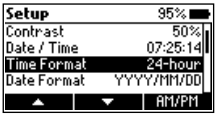
- Press **Modify** to change the date and time.
- Press the functional keys to highlight the value to be modified (year, month, day, hour, minute or second). Press **Edit** to modify the highlighted value. Use the functional keys to change the value.
- Press **Accept** to confirm or the ⏻ key to return to the previous screen.



Time Format

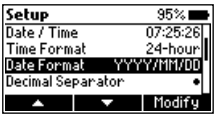
Option: AM/PM or 24-hour

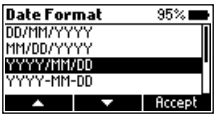
Press the functional key to select the desired time format.



Date Format

- Press **Modify** to change the date format.
- Use the functional keys to select the desired format.
- Press **Accept** to confirm or the ⏻↩ key to return to the *Setup* menu without saving the new format.

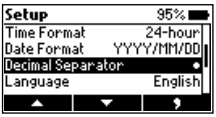




Decimal Separator

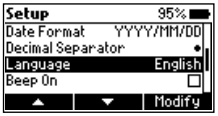
Option: Comma (,) or Period (.)

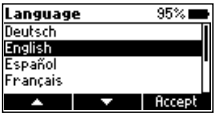
Press the functional key to select the desired decimal separator.
The decimal separator is used on the measurement screen.



Language

Press **Modify** to change the language.
Use the functional keys to select the desired language.
Press **Accept** to choose one of the languages installed.

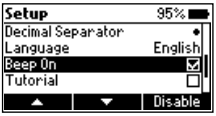




Beep On

Option: Enable or Disable

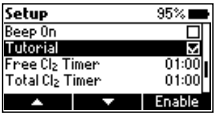
When enabled, a short beep is heard every time a key is pressed.
A long beep alert sounds when the pressed key is not active or an error is detected.
Press the functional key to enable or disable the beeper.



Tutorial

Option: Enable or Disable

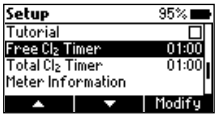
When enabled, the user will be guided step-by-step through the measurement procedure.

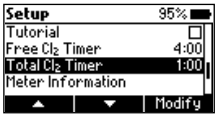


Free Chlorine Timer / Total Chlorine Timer

Option: 0:00 to **5:59** minutes

- Highlight reaction time to change.
- Press **Modify** to change the length of the timer.
- Use the arrow keys to change between minutes and seconds.
- Press **Edit**, use the arrow keys to change the time.
- Press **Accept** when done.
- Press the ⏻↩ key to return to Setup Menu.





Manufacturer recommended reaction timers

	Default time	
	Liquid (Sequential)	Liquid
Free Chlorine	1:00	1:00
Total Chlorine	1:00	2:30

The default reaction times for Free and Total Chlorine analysis are 1:00 minute, according to the sequential liquid method.

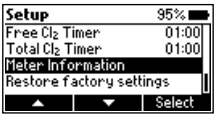
For non-sequential analyses, use the manufacturer recommended times listed in the table.

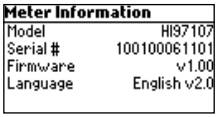
The timers can be adjusted to meet the user's Standard Operating Procedures (SOPs), which may very across testing facilities.

If tutorial mode is enabled, Free and Total Chlorine methods will use the manufacturer recommended times.

Meter Information

- Press **Select** to view the model, serial number, firmware version and selected language.
- Press the [⏻] key to return to the *Setup* menu.





Restore Factory Settings

- Press **Select** to reset to factory settings.
- Press **Accept** to confirm or **Cancel** to exit without restoring the factory settings.

6.4. REAGENTS & ACCESSORIES

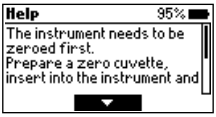
- Press the [☰] key to enter the menu.
- Use the functional keys to select *Reagents / Accessories* and press **Select** to access a list of reagents and accessories.
- To exit press the [⏻] key.

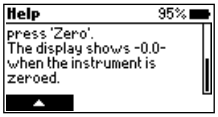
6.5. INSTRUCTION MANUAL

- Press the [☰] key to enter the menu.
- Use the functional keys to select *Instruction Manual* and press **Select** to access (and scan) the QR code or use link to download the manual.
- To exit press the [⏻] key.

6.6. CONTEXTUAL HELP

The HI97107 offers an interactive contextual help mode that assists the user at any time.
To access the help screen, press the [?] key.

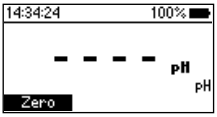




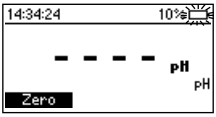
The instrument will display additional information related to the current screen. To read all the available information, scroll the text using the functional keys.
To exit help mode, press the [⏻] or the [?] key and the meter will return to the previous screen.

6.7. BATTERY MANAGEMENT

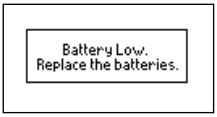
The meter will perform an auto-diagnostic test when it is powered on. During this test, the Hanna Instruments® logo will appear on the LCD. If the auto-diagnostic test was successful, the meter is ready for use.
The battery icon on the LCD will indicate the battery status:



Battery is full.



Battery is below 10%.
Replace the batteries soon.



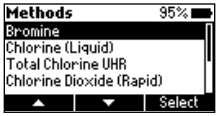
Battery is low.
Replace the batteries with new ones.

To conserve battery, the meter will turn off automatically after 15 minutes of inactivity. If a zero reading has been done but not a read, auto-off time is increased to 30 minutes.

7. PHOTOMETER

7.1. METHOD SELECTION

1. Press the ☰ key to enter the menu.
2. Use the functional keys to select *Methods* and press **Select**.
3. Use the functional keys to highlight the desired method then press **Select**.



The instrument enters measurement screen.

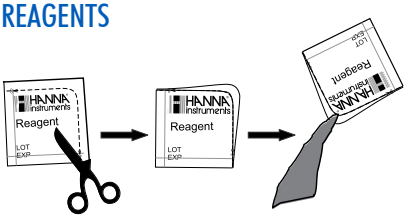
- If tutorial mode is disabled, follow the measurement procedure.
- If tutorial mode is enabled, press **Measure** and follow the messages on the screen.

***Note**: At power on the instrument starts with the previously selected method.*

7.2. COLLECTING & MEASURING SAMPLES AND REAGENTS

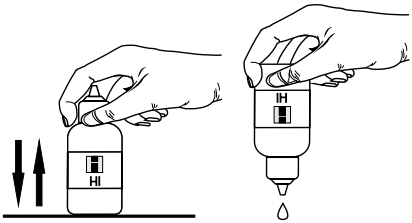
Proper Use of Powder Packet

1. Use scissors to open the powder packet.
2. Push the edges of the packet to form a spout.
3. Pour out the content of the packet.



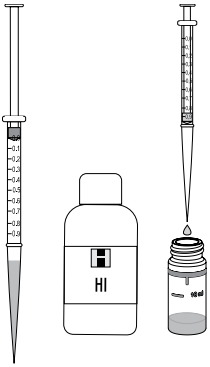
Proper Use of Dropper Bottle

1. Tap the dropper on the table several times and wipe the outside of the tip with a cloth.
2. Always keep the dropper bottle in a vertical position while dosing the reagent.



Proper Use of Syringe

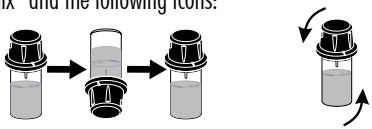
1. Push the plunger completely into the syringe and insert the tip into the solution.
2. Pull the plunger up until the lower edge of the seal is exactly on the mark for the desired volume.
3. Take out the syringe and clean the outside of the syringe tip, be sure that no drops are hanging on the tip of the syringe. Then, keeping the syringe in vertical position above the cuvette, push the plunger down into the syringe, the desired volume has been delivered into the cuvette.



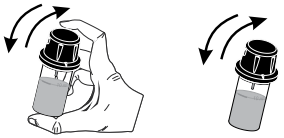
7.3. CUVETTE PREPARATION

Proper mixing is very important for reproducibility of the measurements. The proper mixing technique for each method is listed in the method procedure.

(a) Invert the cuvette a couple of times or for a specified time: hold the cuvette in the vertical position. Turn the cuvette upside-down and wait for all of the solution to flow to the cap end, then return the cuvette to the upright vertical position and wait for all of the solution to flow to the cuvette bottom. This is one inversion. The correct speed for this mixing technique is 10-15 complete inversions in 30 seconds. This mixing technique is indicated with "invert to mix" and the following icons:

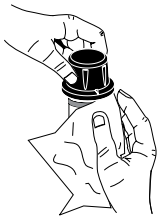


(b) The mixing method is indicated with "shake gently" using one of the following icons:



(c) The mixing method is indicated with "swirl" using one of the following icons:

In order to avoid reagent leaking and to obtain more accurate measurements, close the cuvette first with the supplied HDPE plastic stopper  and then the black cap.



Whenever the cuvette is placed into the measurement holder, it must be dry outside and free of fingerprints, oil or dirt. Wipe it thoroughly with HI731318 microfiber cleaning cloth or a lint-free wipe prior to insertion.
Shaking the cuvette can generate bubbles in the sample, causing higher readings. To obtain accurate measurements, remove such bubbles by swirling or by gently tapping the cuvette.
Do not let the reacted sample stand too long after reagent has been added.
For best accuracy, respect the timings described in each method.

It is possible to take multiple readings in a row, but it is recommended to take a new zero reading for each sample and to use the same cuvette for zeroing and measurement when possible.
Discard the sample immediately after the reading has been taken, or the glass might become permanently stained.
All the reaction times reported in this manual are at 25 °C (77 °F). In general, the reaction time should be increased for temperatures lower than 20 °C (68 °F), and decreased for temperatures higher than 25 °C (77 °F).

8. METHOD PROCEDURE

8.1. BROMINE

REQUIRED REAGENTS

Code	Description	Quantity
HI93716-0	Bromine Reagent	1 packet

REAGENT SETS

HI93716-01 Bromine Reagent - 100 tests
HI93716-03 Bromine Reagent - 300 tests

For other accessories see Accessories section.

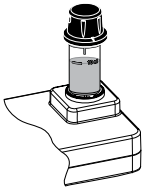
MEASUREMENT PROCEDURE

- Select the Bromine method using the procedure described in the Method Selection section.

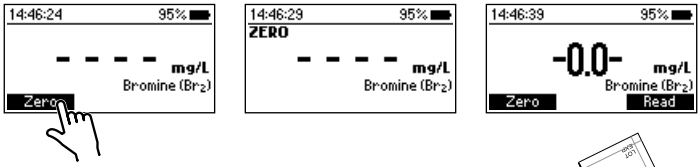
***Note**: If tutorial mode is disabled follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*

- Fill the cuvette with 10 mL of unreacted sample (up to the mark). Replace the plastic stopper and the cap.

- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.

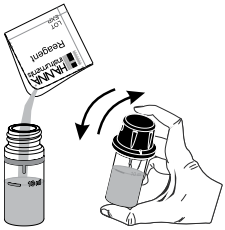


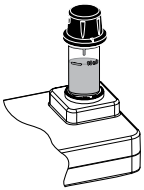
- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.



- Remove the cuvette.

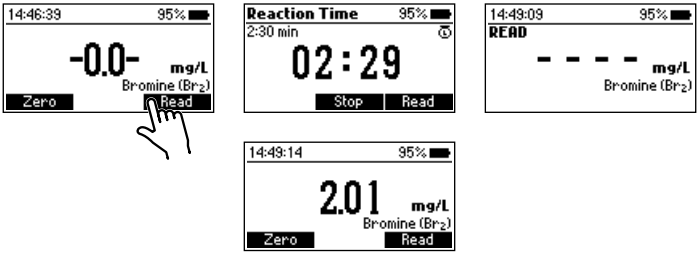
- Add one packet of HI93716-0 Bromine Reagent. Replace the plastic stopper and the cap. Shake gently for about 20 seconds to dissolve most of the reagent.





- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.

- Press **Read** and the display will show a countdown of 2 minutes and 30 seconds prior to the measurement. Alternatively, wait 2 minutes and 30 seconds then press **Read** twice. When the timer ends the meter will perform the reading. The instrument displays the results in **mg/L** of **bromine (Br_2)**.



INTERFERENCES

Interference may be caused by:

- Chlorine, Iodine, Ozone, Oxidized forms of Chromium and Manganese
- Hardness greater than 500 mg/L $CaCO_3$, to remove the interference shake the sample for approximately 1 minute after adding the reagent
- Alkalinity greater than 300 mg/L $CaCO_3$ or acidity greater than 150 mg/L $CaCO_3$, the color of the sample may develop only partially or rapidly fade; to remove the interference, neutralize the sample with diluted HCl or NaOH

8.2. FREE AND TOTAL CHLORINE (LIQUID REAGENT)

REQUIRED REAGENTS

Code	Description	Quantity
HI93701A-T	Total Chlorine Reagent A	3 drops
HI93701B-T	Total Chlorine Reagent B	3 drops
HI93701C-T	Total Chlorine Reagent C	1 drop

***Note**: HI93701A-T and HI93701A-F can be used interchangeably*
HI93701B-T and HI93701B-F can be used interchangeably

REAGENTS SETS

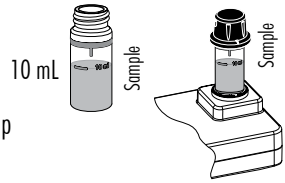
HI93701-T Total Chlorine Reagents - 300 tests
For other accessories see Accessories section.

MEASUREMENT PROCEDURE

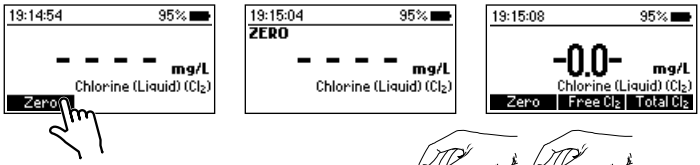
- Ensure the reaction timer has been adjusted according to the user's SOP or the manufacturer's recommended reaction time in Section General Setup, Free Chlorine Timer / Total Chlorine Timer (p. 14).
- Select the Chlorine (Liquid) method using the procedure described in the Method Selection section.

***Note**: If tutorial mode is disabled, follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*

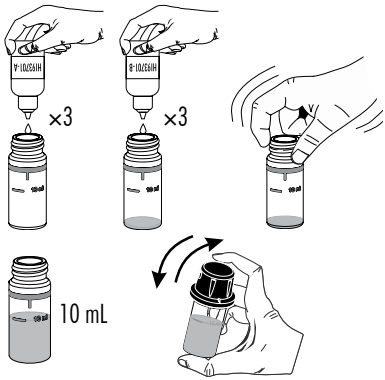
- Fill the cuvette with 10 mL of unreacted sample (up to the mark). Replace the plastic stopper and the cap.
- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.



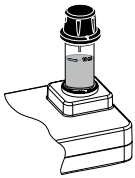
- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.



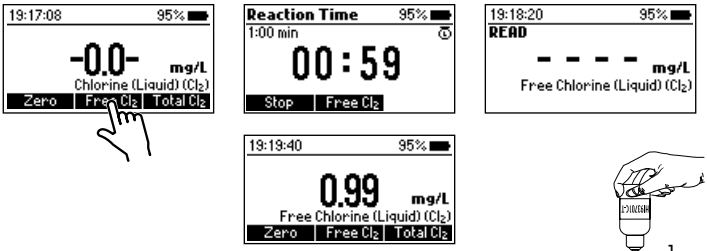
- Remove the cuvette.
- To an empty cuvette add 3 drops of HI93701A-T Total Chlorine Reagent A and 3 drops of HI93701B-T Total Chlorine Reagent B.
- Swirl gently to mix.
- Add unreacted sample up to the 10 mL mark. Replace the plastic stopper and the cap. Shake gently to mix.

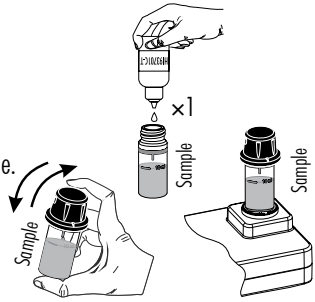


***Note**: Sample temperature must be below 27 °C (80 °F). Samples at higher temperature may result in false low measurements due to volatility of chlorine.*

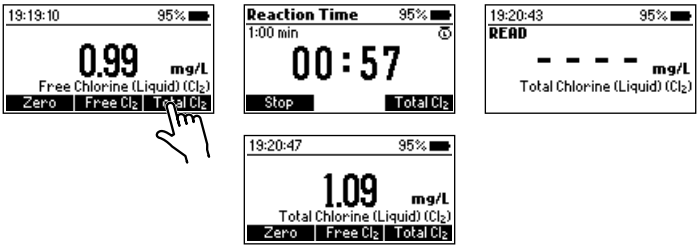


- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.
- Press **Free Cl_2**. The display will show a 1 minute (or user set time) countdown prior to the measurement. Alternatively, wait 1 minute (or set time) then press **Free Cl_2** twice. When the timer ends, the meter will perform the reading.
  The instrument displays the results of **Free Chlorine** in **mg/L** of **chlorine (Cl_2)**.





- Remove the cuvette.
- Add 1 drop of HI93701C-T Total Chlorine Reagent C to the sample.
- Replace the plastic stopper and the cap. Shake gently to mix.
- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.
- Press **Total Cl_2**. The display will show a 1 minute (or user-set time) countdown prior to the measurement. Alternatively, wait 1 minute (or set time) then press **Total Cl_2** twice. When the timer ends, the meter will perform the reading. The instrument displays the results of **Total Chlorine** in **mg/L** of **chlorine (Cl_2)**.



INTERFERENCES

Interference may be caused by:

- Bromine, Iodine, Oxidized forms of Chromium and Manganese, Ozone
- Hardness greater than 500 mg/L $CaCO_3$
- Alkalinity greater than 250 mg/L $CaCO_3$ or acidity greater than 150 mg/L $CaCO_3$, the color of the sample may develop only partially or may rapidly fade; to remove the interference, neutralize the sample with diluted HCl or NaOH

8.3. FREE CHLORINE (LIQUID REAGENT)

***Note**: Free and Total Chlorine can be measured separately with fresh unreacted samples, following the related procedures, if separate values are desired.*

REQUIRED REAGENTS

Code	Description	Quantity
HI93701A-F	Free Chlorine Reagent A	3 drops
HI93701B-F	Free Chlorine Reagent B	3 drops

REAGENT SETS

HI93701-F Free Chlorine Reagent - 300 tests

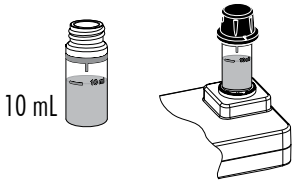
For other accessories see Accessories section.

MEASUREMENT PROCEDURE

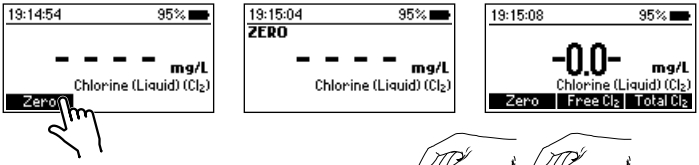
- Ensure the reaction timer has been adjusted according to the user's SOP or the manufacturer's recommended reaction time in Section General Setup, Free Chlorine Timer / Total Chlorine Timer (p. 14).
- Select the Chlorine (Liquid) method using the procedure described in the Method Selection section.

***Note**: If tutorial mode is disabled, follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*

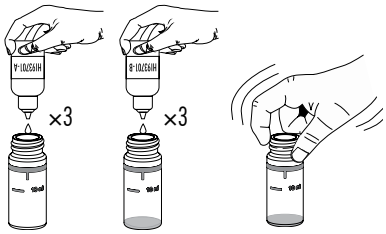
- Fill the cuvette with 10 mL of unreacted sample (up to the mark). Replace the plastic stopper and the cap.
- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.



- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.

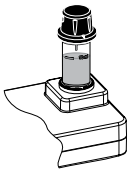


- Remove the cuvette.



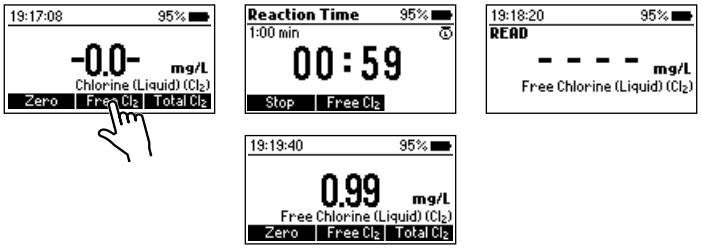
- To an empty cuvette add 3 drops of HI93701A-F Free Chlorine Reagent A and 3 drops of HI93701B-F Free Chlorine Reagent B.
- Swirl gently to mix.
- Add unreacted sample up to the 10 mL mark. Replace the plastic stopper and the cap. Shake gently to mix.

***Note**: Sample temperature must be below 27 °C (80 °F). Samples at higher temperature may result in false low measurements due to volatility of chlorine.*



- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.

- Press **Free Cl_2** and the display will show a 1 minute countdown (or user-set time) prior to the measurement. Alternatively, wait 1 minute (or set time) then press **Free Cl_2** twice.
  When the timer ends, the meter will perform the reading. The instrument displays the results of **Free Chlorine** in **mg/L** of **chlorine (Cl_2)**.



INTERFERENCES

Interference may be caused by:

- Bromine, Iodine, Oxidized forms of Chromium and Manganese, Ozone
- Hardness greater than 500 mg/L $CaCO_3$, to remove the interference shake the sample for approximately 2 minutes after adding the powder reagent
- Alkalinity greater than 250 mg/L $CaCO_3$ or acidity value greater than 150 mg/L $CaCO_3$, the color of the sample may develop only partially or rapidly fade; to remove the interference, neutralize the sample with diluted HCl or NaOH

8.4. TOTAL CHLORINE (LIQUID REAGENT)

REQUIRED REAGENTS

Code	Description	Quantity
HI93701A-T	Total Chlorine Reagent A	3 drops
HI93701B-T	Total Chlorine Reagent B	3 drops
HI93701C-T	Total Chlorine Reagent C	1 drop

REAGENT SETS

HI93701-T Total Chlorine Reagent - 300 tests

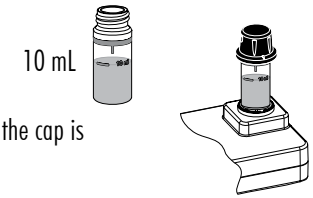
For other accessories see Accessories section.

MEASUREMENT PROCEDURE

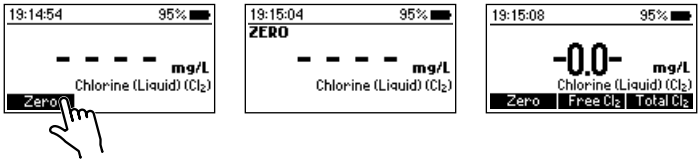
- Ensure the reaction timer has been adjusted according to the user's SOP or the manufacturer's recommended reaction time in Section General Setup, Free Chlorine Timer / Total Chlorine Timer (p. 14).
- Select the Chlorine (Liquid) method using the procedure described in the Method Selection section.

***Note**: If tutorial mode is disabled, follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*

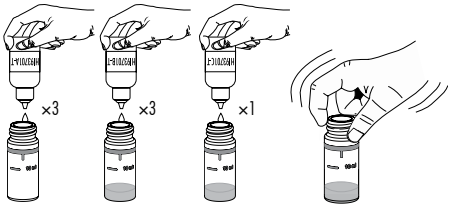
- Fill the cuvette with 10 mL of unreacted sample (up to the mark). Replace the plastic stopper and the cap.



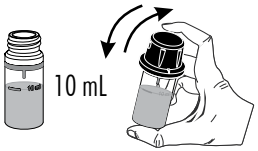
- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.
- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.



- Remove the cuvette.
- To an empty cuvette add 3 drops of HI93701A-T Total Chlorine Reagent A, 3 drops of HI93701B-T Total Chlorine Reagent B and 1 drop of HI93701C-T Total Chlorine Reagent C.

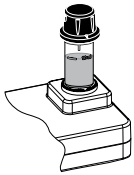


- Swirl gently to mix.
- Add unreacted sample up to the 10 mL mark. Replace the plastic stopper and the cap. Shake gently to mix.

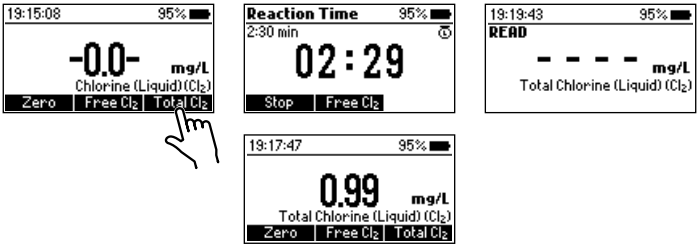


***Note**: Sample temperature must be below 27 °C (80 °F). Samples at higher temperature may result in false low measurements due to volatility of chlorine.*

- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.



- Press **Total Cl_2**. The display will show a 2 minute and 30 second (or user-set time) countdown prior to the measurement. Alternatively, wait 2 minute and 30 second (or set time) then press **Total Cl_2** twice. When the timer ends, the meter will perform the reading. The instrument displays the results of **Total Chlorine** in mg/L of **chlorine (Cl_2)**.



INTERFERENCES

Interference may be caused by:

- Bromine, Iodine, Oxidized forms of Chromium and Manganese, Ozone
- Hardness greater than 500 mg/L $CaCO_3$, to remove the interference shake the sample for approximately 2 minutes after adding the powder reagent
- Alkalinity greater than 250 mg/L $CaCO_3$ or acidity greater than 150 mg/L $CaCO_3$, the color of the sample may develop only partially or may rapidly fade; to remove the interference, neutralize the sample with diluted HCl or NaOH

8.5. TOTAL CHLORINE ULTRA HIGH RANGE

REQUIRED REAGENTS

Code	Description	Quantity
HI95771A-0	Total Chlorine UHR Reagent A	1 packet
HI95771B-0	Total Chlorine UHR Reagent B	1 packet

REAGENT SETS

HI95771-01	Total Chlorine UHR Reagent - 100 tests
HI95771-03	Total Chlorine UHR Reagent - 300 tests

For other accessories see Accessories section.

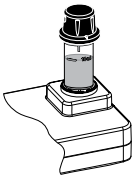
MEASUREMENT PROCEDURE

- Select the Total Chlorine UHR method using the procedure described in the Method Selection section.

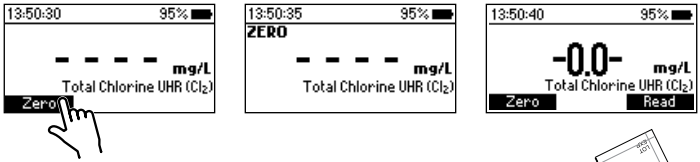
***Note**: If tutorial mode is disabled, follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*

- Fill the cuvette with 10 mL of unreacted sample (up to the mark). Replace the plastic stopper and the cap.

- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.



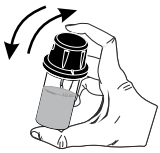
- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.

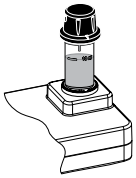


- Remove the cuvette.

- Add the content of one packet of HI95771A-0 Total Chlorine UHR Reagent A and the content of one packet of HI95771B-0 Total Chlorine UHR Reagent B.
  Replace the plastic stopper and the cap.

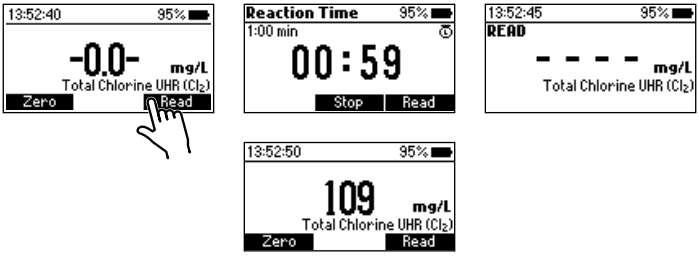
- Shake gently for 20 seconds.





- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.

- Press **Read** and the display will show a 1 minute countdown prior to the measurement. Alternatively, wait 1 minute then press **Read** twice. When the timer ends the meter will perform the reading. The instrument displays the results in **mg/L** of **chlorine (Cl_2)**.



INTERFERENCES

Interference may be caused by:

- Bromine, Chlorine Dioxide, Chromium, Iodine, Oxidized Manganese, Ozone

8.6. CHLORINE DIOXIDE (RAPID)

REQUIRED REAGENTS

Code	Description	Quantity
HI96779A-0	Chlorine Dioxide Reagent A	5 drops
HI96779B-0	Chlorine Dioxide Reagent B	1 packet

REAGENT SETS

HI96779-01 Chlorine Dioxide Reagent - 100 tests
HI96779-03 Chlorine Dioxide Reagent - 300 tests
For other accessories see Accessories section.

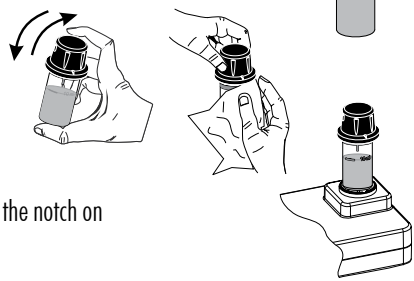
MEASUREMENT PROCEDURE

- Select the Chlorine Dioxide (Rapid) method using the procedure described in the Method Selection section.

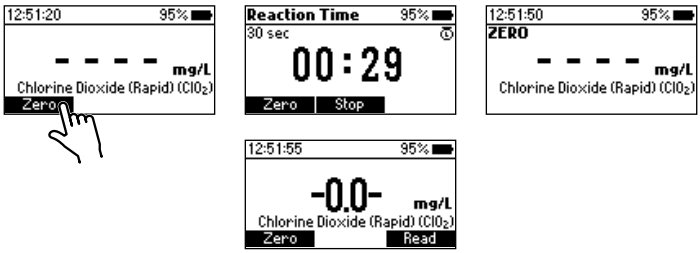
***Note**: If tutorial mode is disabled, follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*

- Fill the cuvette with 10 mL of unreacted sample (up to the mark).

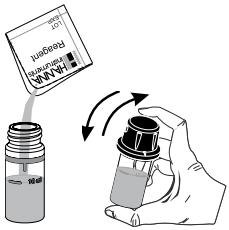
- Add 5 drops of HI96779A-0 Chlorine Dioxide Reagent A.
- Replace the plastic stopper and the cap. Shake gently for 30 seconds.
- Wipe the cuvette clean.
- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.



- Press **Zero** and the display will show a 30 second countdown prior to zeroing. Alternatively, wait 30 seconds then press **Zero** twice. The meter will display "-0.0-" when the meter is zeroed and ready for measurement.

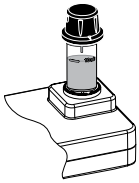


- Remove the cuvette.
- Add one packet of HI96779B-0 Chlorine Dioxide Reagent B.
- Replace the plastic stopper and the cap. Shake gently for 20 seconds.

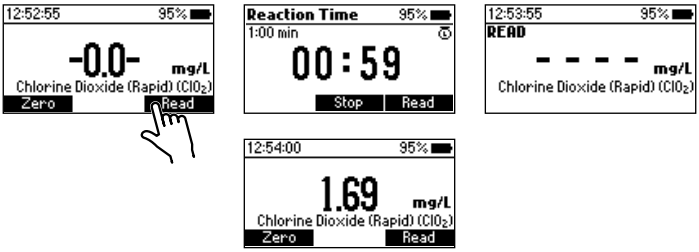


- Wipe the cuvette clean.

- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.



- Press **Read** and the display will show a 1 minute countdown prior to the measurement. Alternatively, wait 1 minute then press **Read** twice. When the timer ends, the meter will perform the reading. The instrument displays the results in **mg/L** of ClO_2.



INTERFERENCES

Interference may be caused by:

- Acidity, Alkalinity, Flocculating agents, Hardness, Inorganic and Organic Chloramines, Manganese, Metals, Monochloramine, Oxidized forms of Chromium and Manganese, Ozone and Peroxides
- Chlorine above 5 mg/L
- Bromine above 0.1 mg/L
- Highly buffered samples or extreme sample pH

8.7. HYDROGEN PEROXIDE

REQUIRED REAGENTS

Code	Description	Quantity
HI96795-0	Hydrogen Peroxide Reagent	6 drops

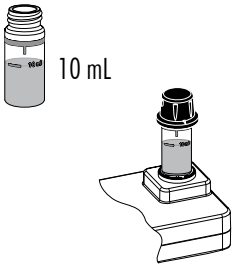
REAGENT SETS

HI96795-01 Hydrogen Peroxide Reagent - 100 tests
HI96795-03 Hydrogen Peroxide Reagent - 300 tests
For other accessories see Accessories section.

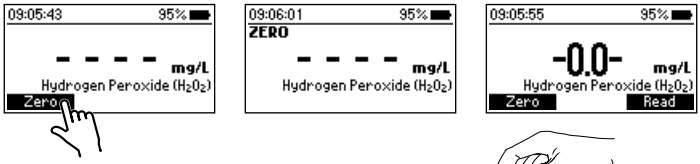
MEASUREMENT PROCEDURE

- Select the Hydrogen Peroxide method using the procedure described in the Method Selection section.

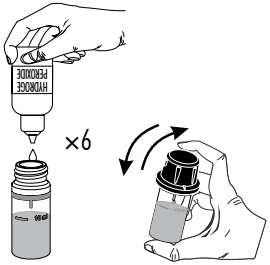
***Note**: If tutorial mode is disabled, follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*



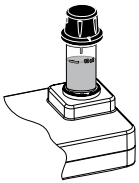
- Fill the cuvette with 10 mL of unreacted sample (up to the mark).
- Replace the plastic stopper and the cap.
  Wipe cuvette clean.
- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.
- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.



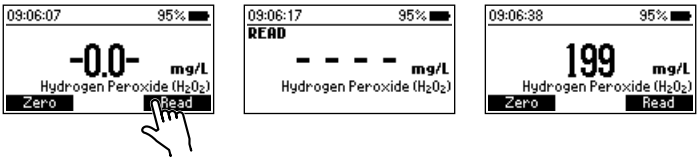
- Remove cuvette.
- Add 6 drops of HI96795-0 Hydrogen Peroxide Reagent.
- Replace the plastic stopper and the cap.
  Shake gently to mix.
- Wipe cuvette clean.



- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.



- Press **Read** to start the reading. The instrument displays the results in **mg/L**.



INTERFERENCES

Interference may be caused by:

- Ethylenedinitrilotetraacetic acid (EDTA) greater than 5 mg/L
- Nitrilotriacetic acid (NTA) greater than 1.5 mg/L
- Orthophosphate, calculated as phosphorus, greater than 50 mg/L
- Fluoride greater than 0.5 mg/L

8.8. OZONE

REQUIRED REAGENTS

Code	Description	Quantity
HI93757-0	Ozone Reagent	1 packet
HI93703-52-0	Glycine Powder (optional)	1 packet

REAGENT SETS

HI93757-01	Ozone Reagent - 100 tests
HI93757-03	Ozone Reagent - 300 tests
HI93703-52	Glycine Powder Reagent for 100 tests (optional)

For other accessories see Accessories section.

STANDARD MEASUREMENT PROCEDURE

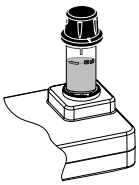
- Select the Ozone method using the procedure described in the Method Selection section.

***Note**: If tutorial mode is disabled follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*

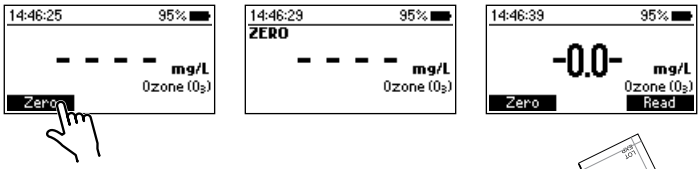
Chlorine-free samples

- Fill the cuvette with 10 mL of unreacted sample (up to the mark). Replace the plastic stopper and the cap.

- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.

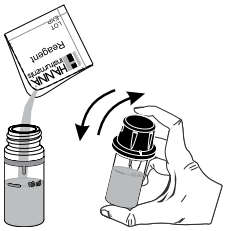


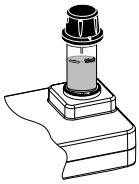
- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.



- Remove the cuvette.

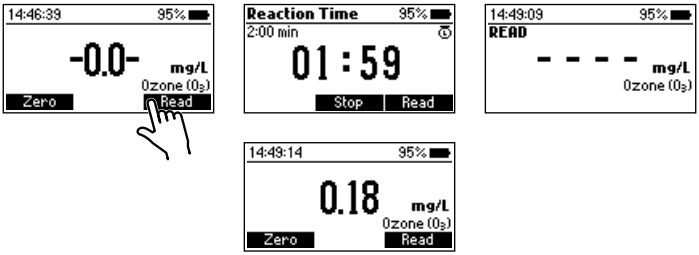
- Add one packet of HI93757-0 Ozone Reagent. Replace the plastic stopper and the cap. Shake gently for about 20 seconds.





- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.

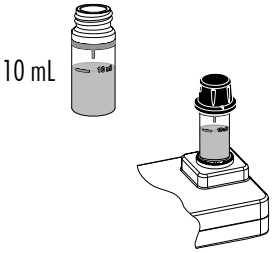
- Press **Read** and the display will show a countdown of 2 minutes prior to the measurement. Alternatively, wait 2 minutes then press **Read** twice. When the timer ends the meter will perform the reading. The instrument displays the results in **mg/L** of **Ozone (O_3)** (chlorine-free sample only).
  For samples containing chlorine, record this value as A.



ADDITIONAL MEASUREMENT PROCEDURE

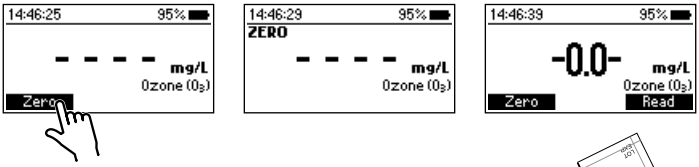
Samples containing chlorine

- Fill the cuvette with 10 mL of unreacted sample (up to the mark). Replace the plastic stopper and the cap.



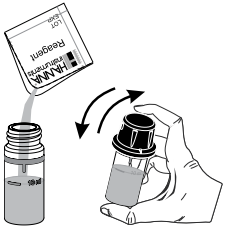
- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.

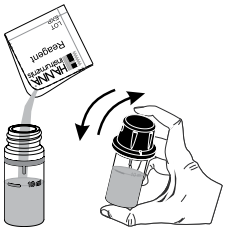
- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.



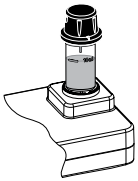
- Remove the cuvette.

- Add one packet of HI93703-52-0 Glycine powder. Replace the plastic stopper and the cap. Shake gently until the powder is completely dissolved.



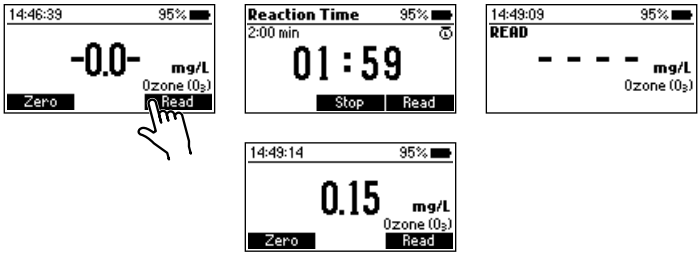


- Add one packet of HI93757-0 Ozone Reagent. Replace the plastic stopper and the cap. Shake gently for 20 seconds.



- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.

- Press **Read** and the display will show a countdown of 2 minutes prior to the measurement. Alternatively, wait 2 minutes then press **Read** twice. When the timer ends the meter will perform the reading. Record this value as B.



- To determine the **mg/L ozone (O_3)** concentration in sample containing chlorine, subtract value B (additional measurement procedure) from value A (standard measurement procedure).

INTERFERENCES

Interference may be caused by:

- Bromine, Chlorine Dioxide, Iodine
- Hardness greater than 500 mg/L $CaCO_3$
  Shake the sample for approximately 2 minutes after adding the powder reagent.
- Alkalinity above 250 mg/L $CaCO_3$ will not reliably develop the full amount of color or it may rapidly fade
  Neutralize the sample with diluted HCl.
- Chlorine is a strong interferent. If the sample is suspected to contain chlorine residue (free or total chlorine), follow the alternative measurement procedure described below:
  1. Perform the Standard Measurement Procedure. Record the result as Value A.
  2. Perform Additional Measurement Procedure. Record the result as Value B.
  3. To determine the ozone concentration in mg/L, subtract Value B from Value A.

$$\text{mg/L ozone } (O_3) = \text{Value A} - \text{Value B}$$

8.9. pH

REQUIRED REAGENTS

Code	Description	Quantity
HI93710-0	pH Reagent	5 drops

REAGENT SETS

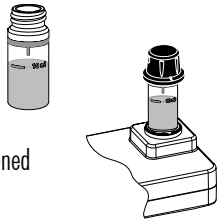
HI93710-01 pH Reagent - 100 tests
HI93710-03 pH Reagent - 300 tests
For other accessories see Accessories section.

MEASUREMENT PROCEDURE

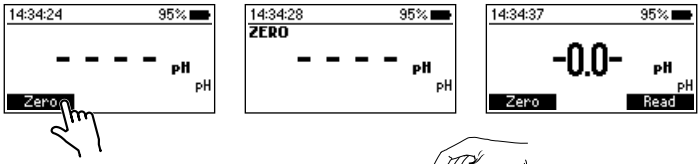
- Select the pH method using the procedure described in the Method Selection section.

***Note**: If tutorial mode is disabled, follow the measurement procedure below. If the tutorial mode is enabled, press **Measure** and follow the messages on the screen.*

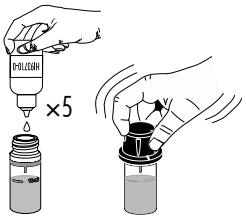
- Fill the cuvette with 10 mL of unreacted sample (up to the mark). Replace the plastic stopper and the cap.

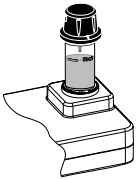


- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.
- Press **Zero**. The display will show "-0.0-" when the meter is zeroed and ready for measurement.

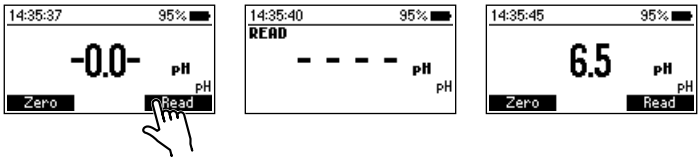


- Remove the cuvette.
- Add 5 drops of HI93710-0 pH Reagent indicator. Replace the plastic stopper and the cap.
- Swirl to mix.





- Insert the cuvette into the holder and ensure that the notch on the cap is positioned securely in the groove.
- Press **Read** to start reading. The instrument displays the results in **pH**.

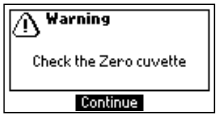


9. WARNING & ERROR DESCRIPTIONS

The instrument shows clear warning messages when erroneous conditions appear and when measured values are outside the expected range.
The information below provides an explanation of the errors and warnings, and recommended action to be taken.

There is an excess amount of ambient light reaching the detector. Ensure that the notch on the cap is positioned securely in the groove before performing any measurements.
If the issue persists, please contact Hanna Instruments® technical support.

The sample and the zero cuvettes are inverted.
Swap the cuvettes and repeat the measurement.



There is either too much light or the instrument can not adjust the light level. Please check the preparation of the zero cuvette and that the sample does not contain any debris.

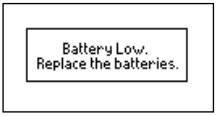
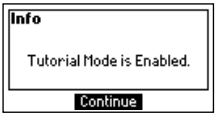
The meter is either overheating or its temperature has dropped too low to operate within published accuracy specifications.
The meter must be between 0 and 50 °C (32 and 122 °F) to perform any measurements.

Meter temperature has changed significantly since the zero measurement has been performed.
The zero measurement must be performed again.

The measured value is outside the limits of the method. Verify that the sample does not contain any debris.
Check the sample preparation, the measurement preparation and method range.

Date and time settings have been lost.
Please reset the values.
If the issue persists, please contact Hanna Instruments technical support.

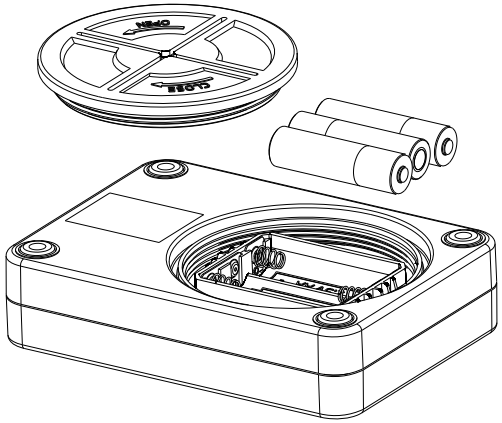
English is the only available language. Help function is not available.
Restart the meter.
If the issue persists, please contact Hanna Instruments technical support.

	Battery level is too low for the meter to function properly. Replace the batteries with new ones.
	Tutorial mode has been enabled in the Setup menu. Press **Continue** and follow the prompt on the screen. Tutorial mode can be disabled in the Setup menu.
	A critical error has occurred. Restart the meter. If the issue persists, please contact Hanna Instruments® technical support.

10. BATTERY REPLACEMENT

To replace the instrument's batteries, follow these steps:

- Turn the instrument off by pressing and holding the key.
- Remove the battery cover by turning it counterclockwise.
- Remove the old batteries, replace them with three new 1.5V AA batteries.
- Replace the battery cover, turn it clockwise to close.



11. ACCESSORIES

11.1. REAGENT SETS & STANDARDS

Ordering Information	Description
HI93701-F	Free Chlorine Reagent- 300 tests (liquid)
HI93701-T	Total Chlorine Reagent - 300 tests (liquid)
HI93703-52	Glycine Powder Reagent - 100 tests
HI93710-01	pH Reagent - 100 tests
HI93710-03	pH Reagent - 300 tests
HI93716-01	Bromine Reagent - 100 tests
HI93716-03	Bromine Reagent - 300 tests
HI93757-01	Ozone Reagent - 100 tests
HI93757-03	Ozone Reagent - 300 tests
HI95771-01	Total Chlorine UHR Reagent - 100 tests
HI95771-03	Total Chlorine UHR Reagent - 300 tests
HI96779-01	Chlorine Dioxide (Rapid) Reagent - 100 tests
HI96779-03	Chlorine Dioxide (Rapid) Reagent - 300 tests
HI96795-01	Hydrogen Peroxide Reagent - 100 tests
HI96795-03	Hydrogen Peroxide Reagent - 300 tests
HI97107-11	CAL Check™ standards for Disinfectants Multiparameter Photometer - cuvette kit

11.2. OTHER ACCESSORIES

Ordering Information	Description
HI7101422	Blue carrying case for HI97107C
HI731318	Cloth for wiping cuvettes (4 pcs.)
HI731331	Glass cuvette (4 pcs.)
HI731336N	Cap for glass cuvette (4 pcs.)
HI740034P	Cap for 100 mL beaker (10 pcs.)
HI740036P	100 mL plastic beaker (10 pcs.)
HI740142P	1 mL graduated syringe (10 pcs.)
HI740143	1 mL graduated syringe (6 pcs.)
HI740144P	Pipette tip for 1 mL graduated syringe (10 pcs.)
HI93703-50	Cuvette cleaning solution (250 mL)

CERTIFICATION

All Hanna® instruments conform to the **CE European Directives.**

Disposal of Electrical & Electronic Equipment. The product should not be treated as household waste. Instead, hand it over to the appropriate collection point for the recycling of electrical and electronic equipment, which will conserve natural resources.

Disposal of waste batteries. This product contains batteries, do not dispose of them with other household waste. Hand them over to the appropriate collection point for recycling.

Ensuring proper product and battery disposal prevents potential negative consequences for the environment and human health. For more information, contact your city, your local household waste disposal service, or the place of purchase.

RECOMMENDATIONS FOR USERS

Before using this product, make sure it is entirely suitable for your specific application and for the environment in which it is used. Any variation introduced by the user to the supplied equipment may degrade the meter's performance. For your and the meter's safety do not use or store the meter in hazardous environments.

WARRANTY

The HI97107 is warranted for two years against defects in workmanship and materials when used for its intended purpose and maintained according to instructions. This warranty is limited to repair or replacement free of charge. Damage due to accidents, misuse, tampering, or lack of prescribed maintenance is not covered. If service is required, contact your local Hanna Instruments® office. If under warranty, report the model number, date of purchase, serial number (engraved on the bottom of the meter), and the nature of the problem. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the meter is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization (RGA) number from the Technical Service department and then send it with shipping costs prepaid. When shipping any meter, make sure it is properly packed for complete protection.