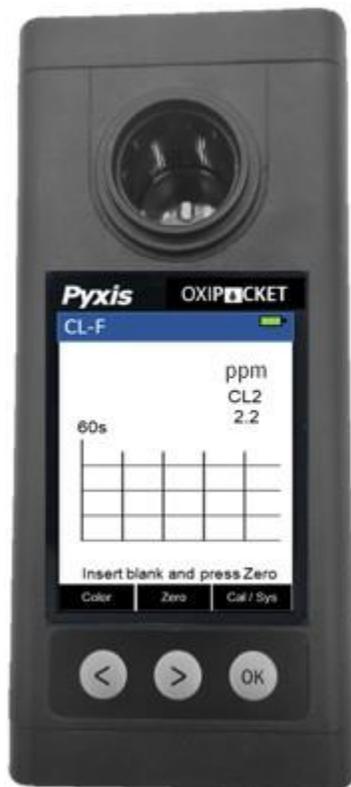




# SP-200 Handheld Colorimetric Analyzer Procedures Manual



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## Pyxis and Hach Required Reagents

Method	Wavelength (nm)	Range	Required Pyxis Reagents	Pyxis Reagents PN	Corresponding Hach Reagents	Corresponding Hach Reagents PN
Br-T	525	4.5 ppm	Br-T	31063	DPD Free Chlorine Powder Pillows	21056-69
CL-F	525	2.2 ppm	CL-F	31002	DPD Free Chlorine Powder Pillows	21055-69
CL-T	525	2.2 ppm	CL-T	31014	DPD Total Chlorine Reagent Powder Pillows	21056-69
CLO2	525	5.0 ppm	CLO2	31016	Chlorine Dioxide DPD/Glycine Reagent Set	27709-00
CLO2D	420	50 ppm	CLO2D	N/A	N/A	N/A
CLO2H	470	1500 ppm	CLO2H	N/A	N/A	N/A
NH2CL	568	4.5 ppm	NH2CL	31036	Monochlor F Reagent Pillows	28022-46
Bleach-L	365	1.0 percent	Bleach-L	N/A	N/A	N/A
Bleach-H	420	16.0 percent	Bleach-H	N/A	N/A	N/A
H2O2	568	400 ppm	H2O2	31117	N/A	N/A
O3	525	2.0 ppm	O3	31118	N/A	N/A
PAA	525	500 ppm	PAA	31079	N/A	N/A
CL2HR	420	10 ppm	CL2HR/ CL2THR	31015/ 31060	DPD Free/Total Chlorine Powder Pillows	14070-99/ 14064-99
CL2UH	568	400ppm	CL2UH	31074	N/A	N/A
NH3S	624	0.5 ppm	NH3S	31035	Ammonia Nitrogen Reagent Set	26680-00
H2O2L	525	1.5 ppm	H2O2L	31124	N/A	N/A

## EXPRESSION FORM

Method	Expression Form		
Bleach-L	Chlr	—	—
Bleach-H	Chlr	—	—
Br-T	Br2	—	—
CL-F	CL2	—	—
CLO2	CLO2	—	—
CLO2D	CLO2	—	—
CLO2H	CLO2	—	—
CL-T	CL2	—	—
H2O2	H2O2	—	—
NH2CL	CL2	—	—
O3	O3	—	—
PAA	PAA	—	—
CL2HR	CL2	—	—
CL2UH	CL2	—	—
NH3S	N	—	—
H2O2L	H2O2	—	—

**Note:**

1. Press the CONF key in the method result page to launch the method setup and calibration page.
2. Press the FORM key to select a concentration form from the list of forms that are available for this specific method

# 1. Bleach – Bleach-L

## Test Program

---

Description: SP-200 Bleach Method (0.015-1 percent) (Direct Reading Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

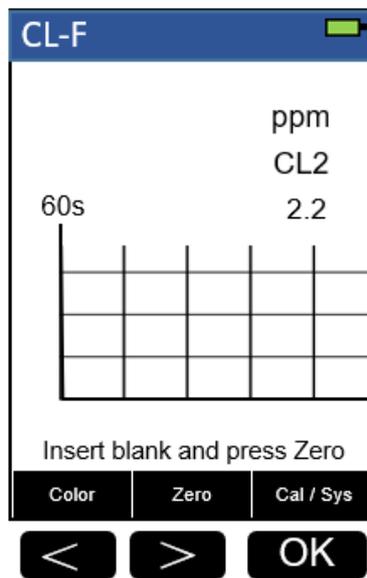


Figure 1

2. Press Up labeled key (<), Down labeled key (>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

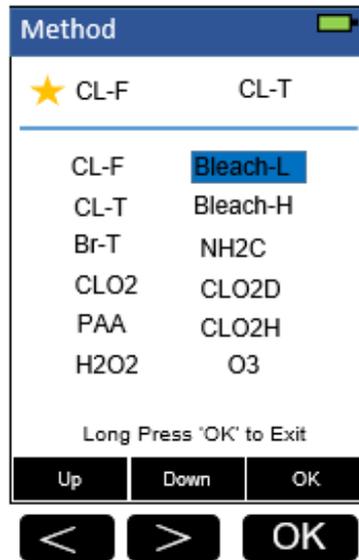


Figure 2

3. Press the OK key to enter **Bleach-L** test program interface.

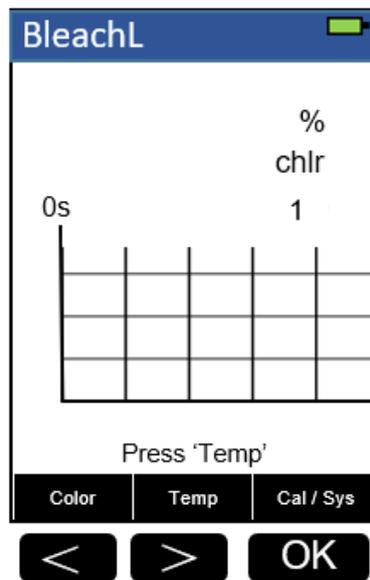


Figure 3

4. Press the **Temp** key to enter the temperature input interface. Enter the temperature of the sample, press OK key to confirm.

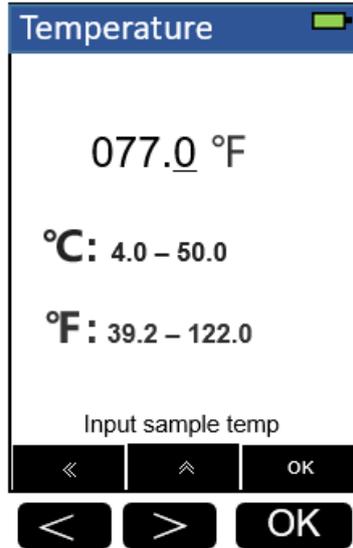


Figure 4

5. Fill a sample vial to the 10-ml line with deionized water (the blank sample).
6. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

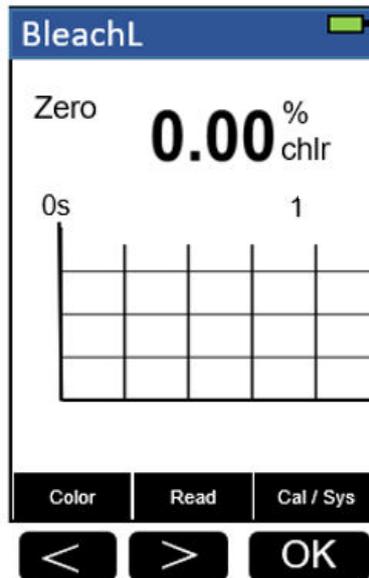


Figure 5

7. Fill a sample vial to the 10-ml line with sample (the prepared sample).  
*Note: Analyze samples immediately after collection.*
8. Use a soft cloth or lint free paper tissue to clean the sample vial.
9. Place the prepared sample into the Pyxis SP-200 sample vial compartment and press **Read** key.
10. Concentration value based on the last absorbance value measured will be calculated and displayed. Pyxis SP-200 will display the page.

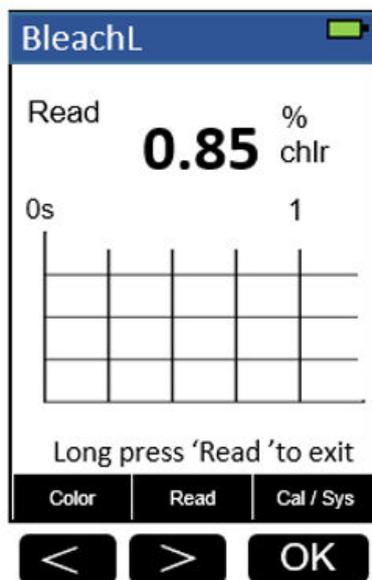


Figure 6

11. Press **Color** key to return to the main page.

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument and return to the original page if it has any measurement data.

## 2. Bleach – Bleach-H

### Test Program

---

Description: SP-200 Bleach Method (0.50-16 percent) (Direct Reading Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

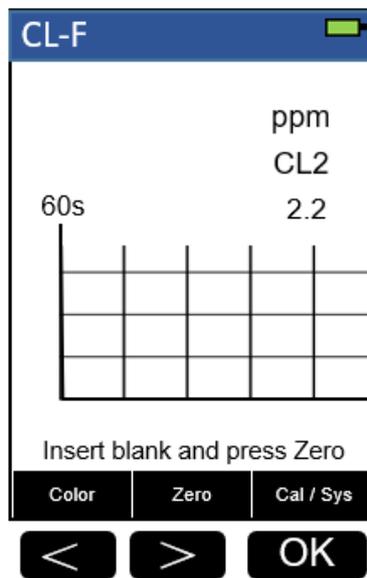


Figure 7

2. Press Up labeled key (<), Down labeled key (>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

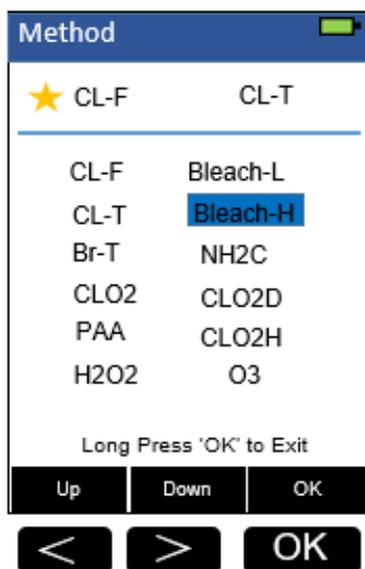


Figure 8

3. Press the OK key to enter **Bleach-H** test program interface.

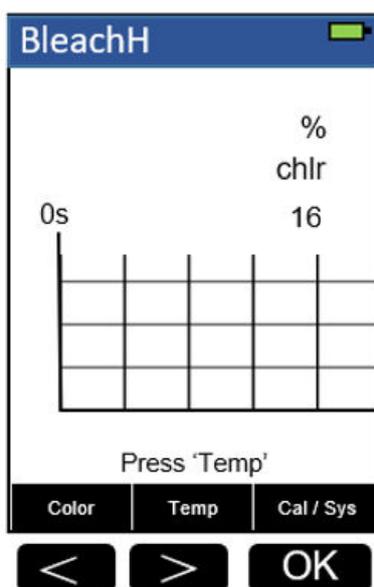


Figure 9

4. Press the **Temp** key to enter the temperature input interface. Enter the temperature of the sample, press OK key to confirm.

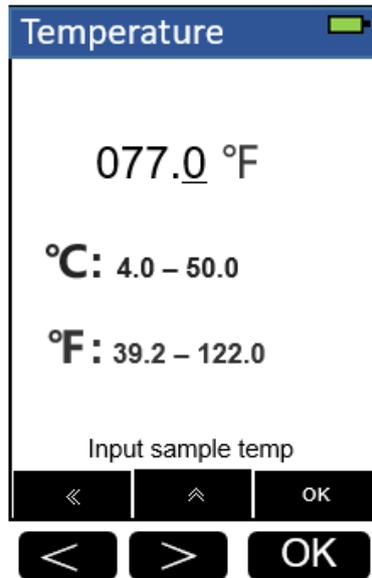


Figure 10

5. Fill a sample vial to the 10-ml line with deionized water (the blank sample).
6. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

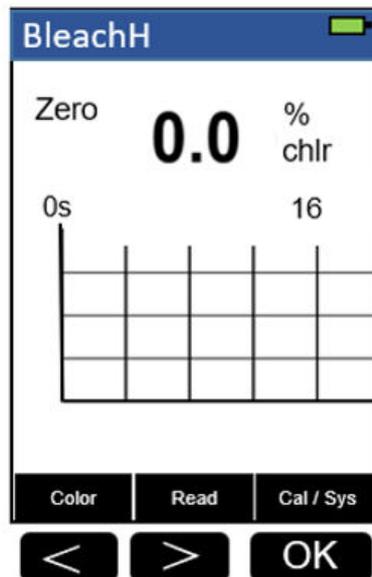


Figure 11

Fill a sample vial to the 10-ml line with sample (the prepared sample).

Note: Analyze samples immediately after collection.

7. Use a soft cloth or lint free paper tissue to clean the sample vial.
8. Place the prepared sample into the Pyxis SP-200 sample vial compartment and press the **Read** key.
9. Concentration value based on the last absorbance value measured will be calculated and displayed. Pyxis SP-200 will display the page.



Figure 12

10. Press **Color** key to return to the main page.

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

### 3. Bromine - Br-T

#### Test Program

---

Description: SP-200 Total Bromine Method (0.04-4.5 ppm Br<sub>2</sub>) (DPD Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis Br-T Reagent Kit PN 31063 (Corresponding Hach DPD Total Chlorine Powder Pillows Cat. No. 21056-69)

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

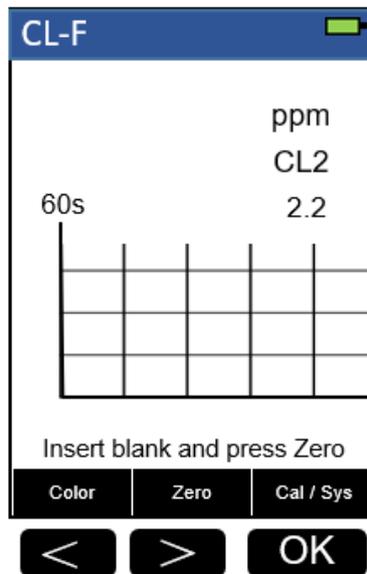


Figure 13

2. Press Up labeled key (<), Down labeled key (>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

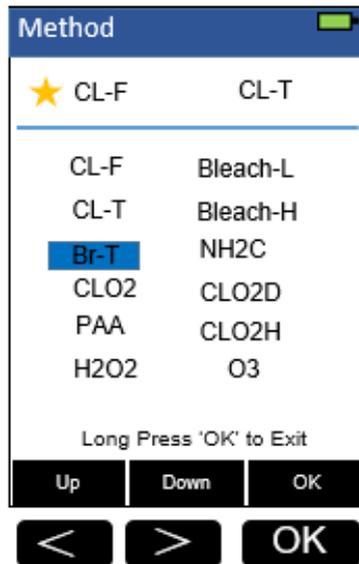


Figure 14

3. Press the OK key to enter **Br-T** test program interface.

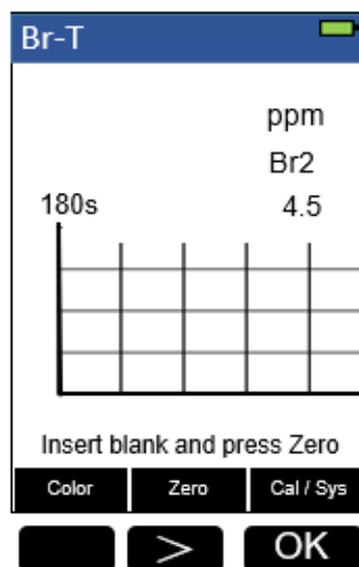


Figure 15

4. Fill a sample vial to the 10-ml line with sample (the blank sample).  
Note: Samples must be analyzed immediately and cannot be preserved for later analysis.
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

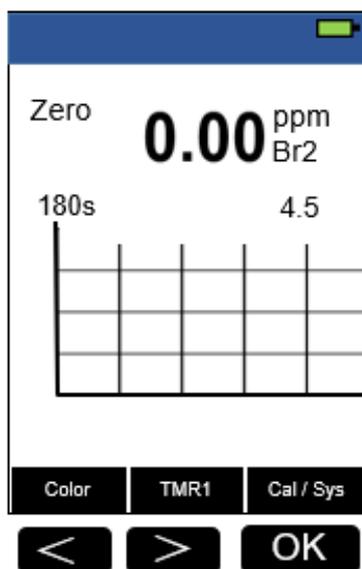


Figure 16

6. Take the sample vial out and add the contents of one *Br-T* Reagent (or one *Hach DPD Total Chlorine Powder Pillow*) to the sample vial. Swirl the vial to mix the reagent.  
*Note: It is not necessary that all the powder dissolves. A pink color will develop if bromine is present.*
7. Place sample vial back into the sample vial compartment and press the **TMR1** key to start the method timer, a 3-minute reaction period will begin.
8. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time.
9. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

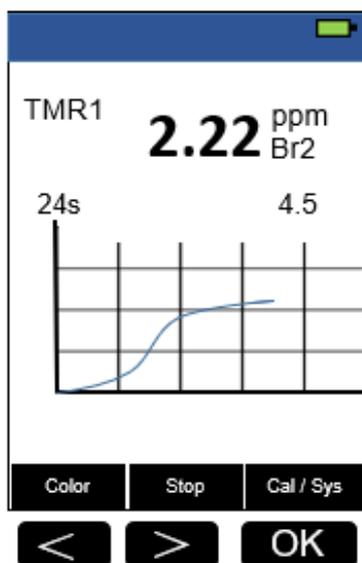


Figure 17

10. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
11. Press **Color** key to return to the main page.

The method is compatible with Hach 8016

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument and return to the original page if it has any measurement data.

## 4. Chlorine, Free - CL-F

### Test Program

---

Description: SP-200 Free Chlorine Method (0.02-2.2 ppm CL<sub>2</sub>) (DPD Method)

#### Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis CL-F Reagent Kit PN 31002 (Corresponding *Hach* DPD Free Chlorine Powder Pillows Cat. No. 21055-69)

#### Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

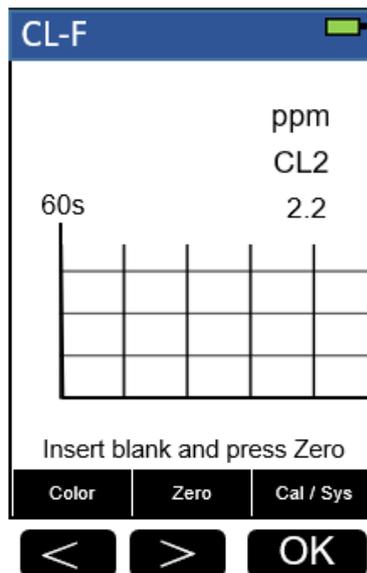


Figure 18

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

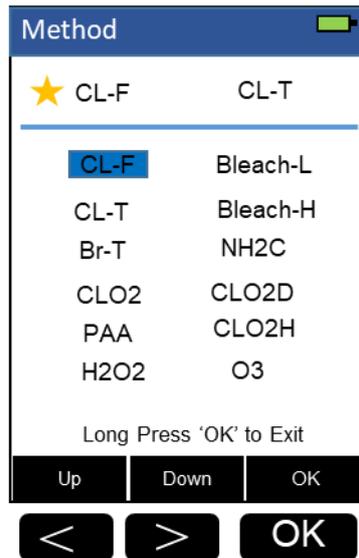


Figure 19

3. Press the OK key to enter **CL-F** test program interface.

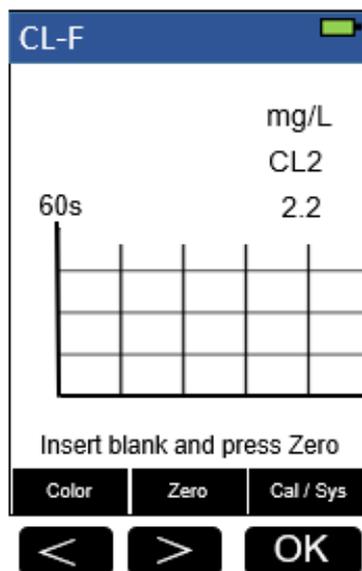


Figure 20

4. Fill a sample vial to the 10-ml line with sample (the blank sample).  
*Note: Samples must be analyzed immediately and cannot be preserved for later analysis.*
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

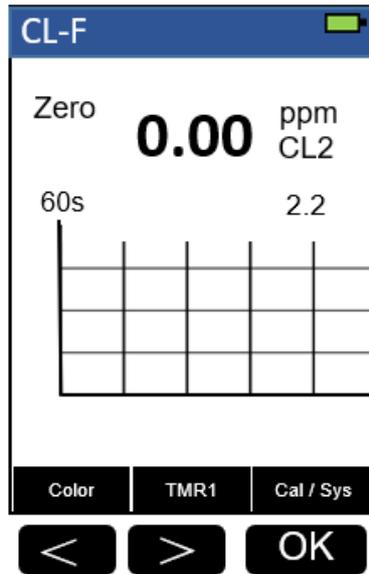


Figure 21

6. Take the sample vial out and add the contents of one CL-F Reagent (or one Hach DPD Free Chlorine Powder Pillow) to the sample vial. Swirl the vial to mix the reagent.

Note: A pink color will develop if chlorine ion is present.

Note: If the sample temporarily turns yellow after sample addition, it is due to high chlorine levels. Dilute a fresh sample and repeat the test.

7. Place sample vial back into the sample vial compartment and press the **TMR1** key to start the method timer, a 1-minute reaction period will begin.
8. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time.
9. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

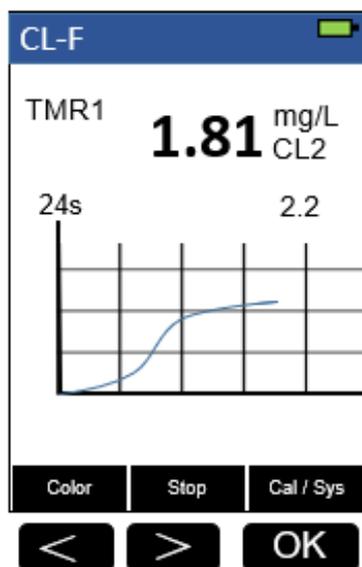


Figure 22

10. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
11. Press **Color** key to return to the main page.

The method is compatible with HACH 8021

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 5. Chlorine Dioxide - CLO2

### Test Program

---

Description: SP-200 Chlorine Dioxide Method (0.04-5 ppm CLO2) (DPD Method)

#### Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis CLO2 Reagent Kit PN 31016. Includes one of each: CLO2-1/CLO2-2  
Corresponding *Hach* Chlorine Dioxide DPD/Glycine Reagent Set (PN. 27709-00)  
Includes one of each:  
(1) DPD Free Chlorine Reagent Powder Pillows (Cat. No. 21055-69)  
(2) Glycine Reagent

#### Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

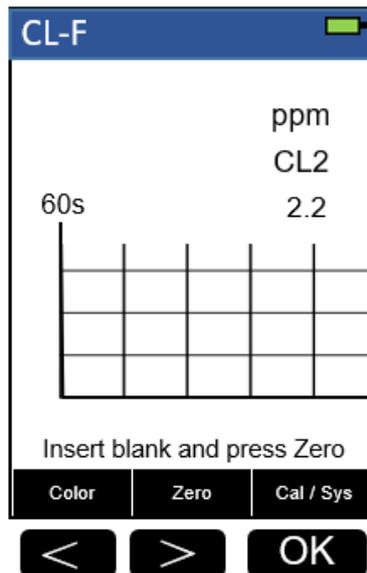


Figure 23

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

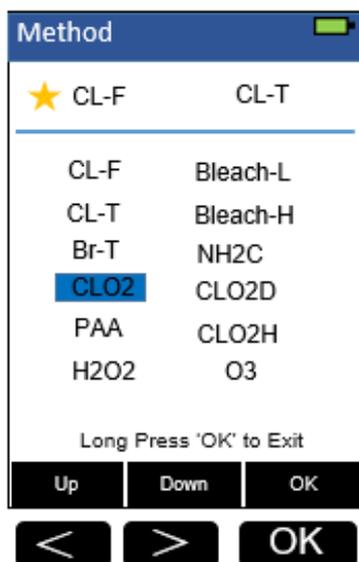


Figure 24

3. Press the OK key to enter **CLO2** test program interface.

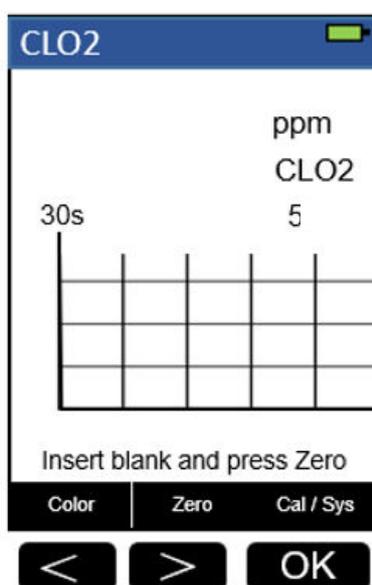


Figure 25

4. Fill a sample vial to the 10-ml line with sample (the blank sample).  
Note: Samples must be analyzed immediately and cannot be preserved for later analysis.  
Note: Wipe off any liquid or fingerprints before inserting the sample vial into the instrument.
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

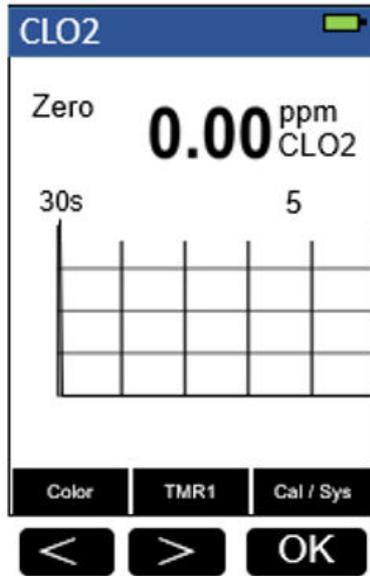


Figure 26

6. Take the sample vial out and add four drops of CLO2-1 Reagent (or HACH Glycine Reagent) to the sample vial. Swirl to mix.
7. Add the contents of one CLO2-2 Reagent (or One HACH DPD Free Chlorine Powder Pillow) to the sample vial (the prepared sample). Cap the vial and swirl to mix.

Note: A pink color will develop if free chlorine dioxide is present.

Note: Perform step 7 within one minute of reagent addition.

8. Allow 30 seconds for undissolved powder to settle. Place the prepared sample vial back into the sample vial compartment and Press the **Read** key.

Note: Wipe off any liquid or fingerprints before inserting the sample cell into the instrument.

9. Concentration value based on the last absorbance value measured will be calculated and displayed.

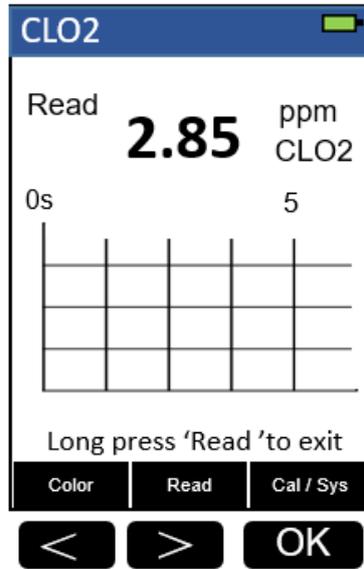


Figure 27

10. Press **Color** key to return to the main page.

The method is compatible with HACH 10126

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 6. Chlorine Dioxide Direct Read Medium Range - CLO2D

### Test Program

---

Description: SP-200 Chlorine Dioxide Direct Read Medium Range Method (7.3-50 ppm CLO<sub>2</sub>) (Direct Reading Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

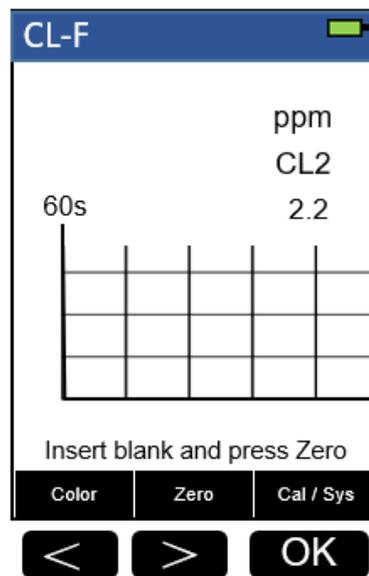


Figure 28

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

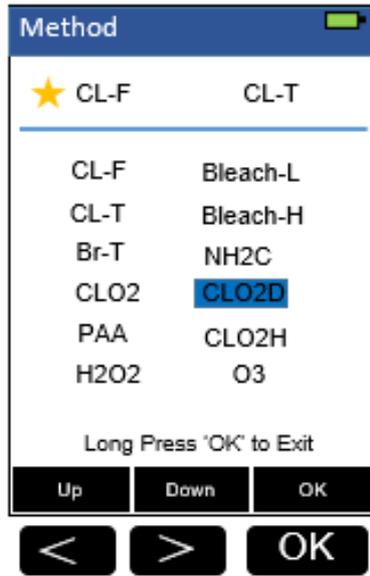


Figure 29

3. Press the OK key to enter **CLO2D** test program interface.

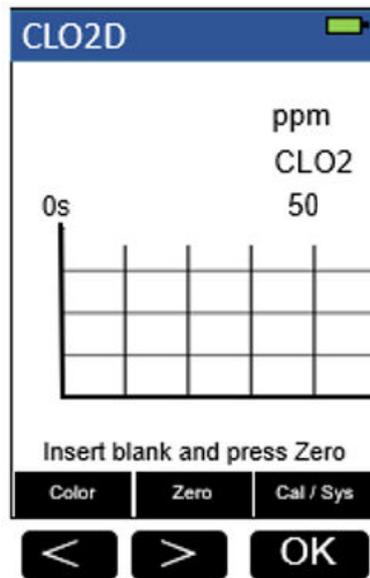


Figure 30

4. Fill a sample vial to the 10-ml line with deionized water (the blank sample).  
*Note: Analyze samples immediately after collection.*
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

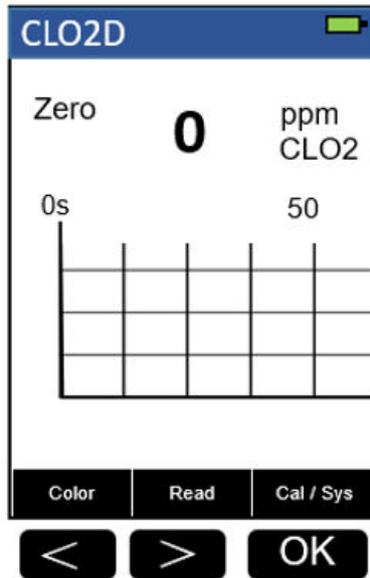


Figure 31

6. Fill a sample vial to the 10-ml line with sample (the prepared sample).
7. Use a soft cloth or lint free paper tissue to clean the sample vial.
8. Place the prepared sample into the Pyxis SP-200 sample vial compartment and press the **Read** key.
9. Concentration value based on the last absorbance value measured will be calculated and displayed.

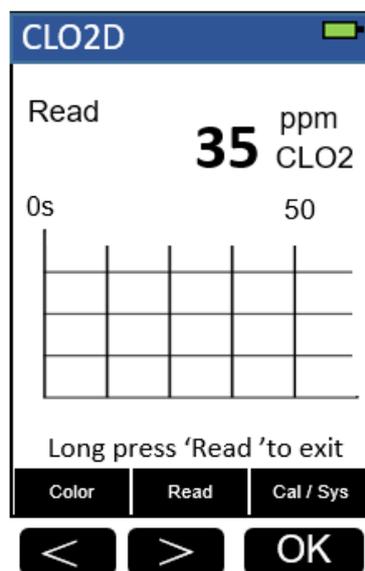


Figure 32

10. Press **Color** key to return to the main page.

The method is compatible with HACH 8345

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 7. Chlorine Dioxide Direct Read High Range - CLO2H

### Test Program

---

Description: SP-200 Chlorine Dioxide Direct Read High Range Method (200-1500 ppm CLO<sub>2</sub>)  
(Direct Reading Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

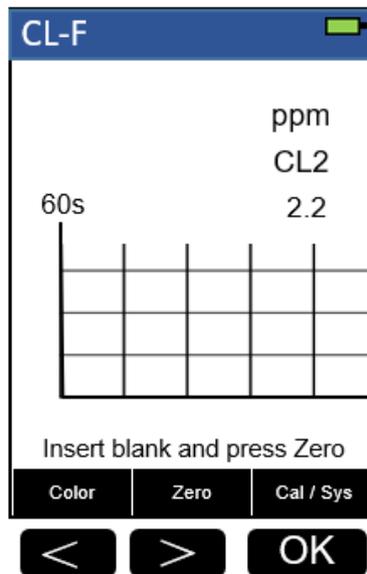


Figure 33

2. Press Up labeled key (<), Down labeled key (>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

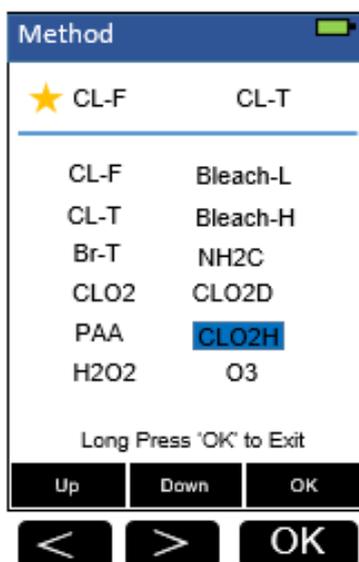


Figure 34

3. Press the OK key to enter **CLO2H** test program interface.

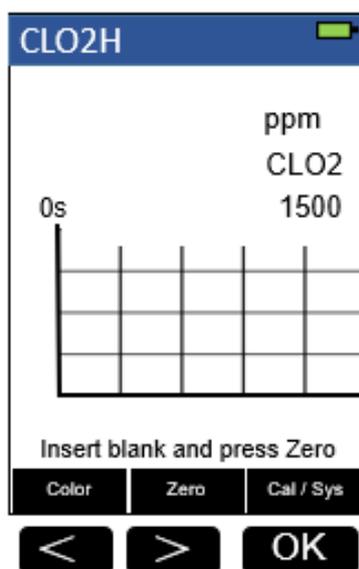


Figure 35

4. Fill a sample vial to the 10-ml line with deionized water (the blank sample).  
*Note: Analyze samples immediately after collection.*
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

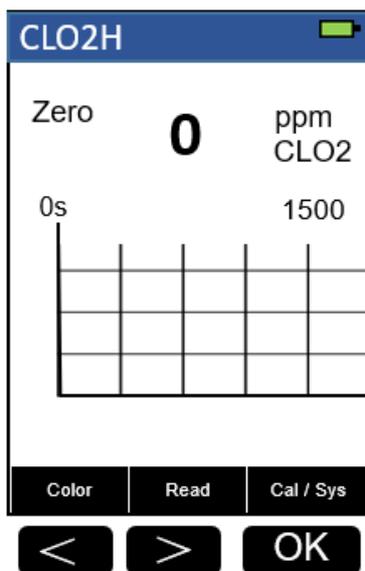


Figure 36

6. Fill a sample vial to the 10-ml line with sample (the prepared sample).
7. Use a soft cloth or lint free paper tissue to clean the sample vial.
8. Place the prepared sample into the Pyxis SP-200 sample vial compartment and press the **Read** key.
9. Concentration value based on the last absorbance value measured will be calculated and displayed.

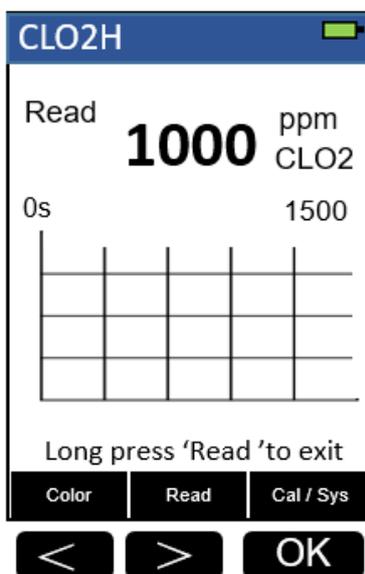


Figure 37

10. Press **Color** key to return to the main page.

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 8. Chlorine, Total - CL-T

### Test Program

---

Description: SP-200 Total Chlorine Method (0.02-2.2 ppm CL<sub>2</sub>) (DPD Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis CL-T Reagent Kit PN 31014 (Corresponding *Hach* DPD Total Chlorine Reagent Powder Pillows PN 21056-69)

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

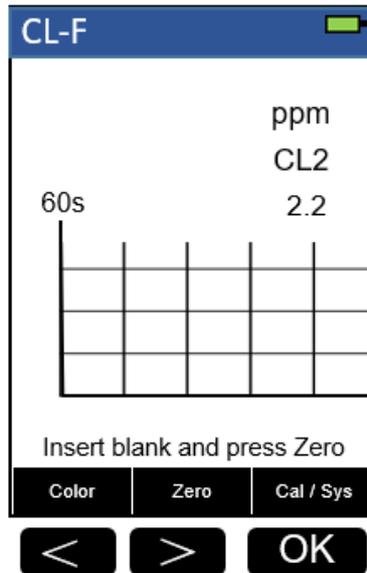


Figure 38

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

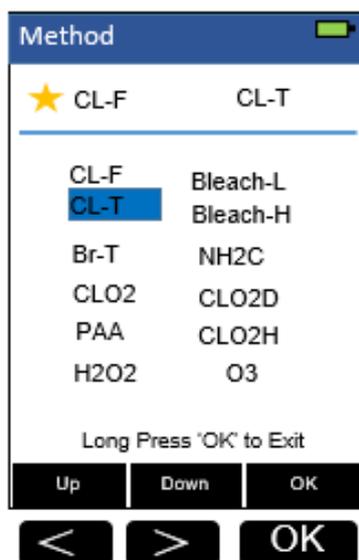


Figure 39

3. Press the OK key to enter **CL-T** test program interface.

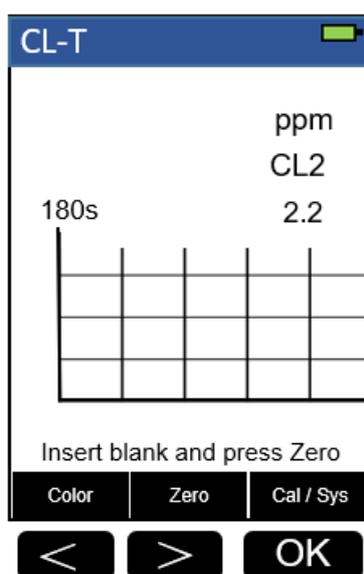


Figure 40

4. Fill a sample vial to the 10-ml line with sample (the blank sample).  
*Note: Samples must be analyzed immediately and cannot be preserved for later analysis.*
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

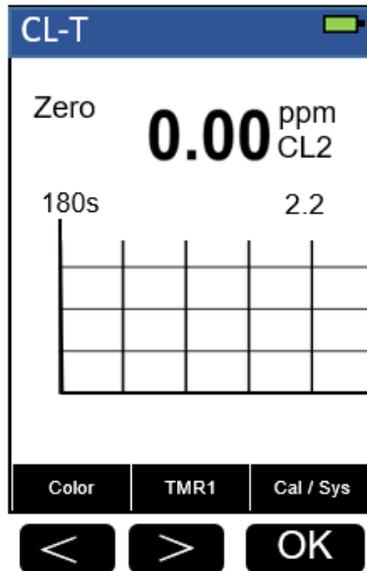


Figure 41

6. Take the sample vial out and add the contents of one *CL-T Reagent* (or one HACH DPD Total Chlorine Powder Pillow) to the sample vial. Swirl the vial to mix the reagent.
 

Note: It is not necessary that all the powder dissolves.

Note: A pink color will develop if chlorine ion is present.

Note: If the sample temporarily turns yellow after sample addition, it is due to high chlorine levels. Dilute a fresh sample and repeat the test.
7. Place sample vial back into the sample vial compartment and press the **TMR1** key to start the method timer, a 3-minute reaction period will begin.
8. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time
9. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

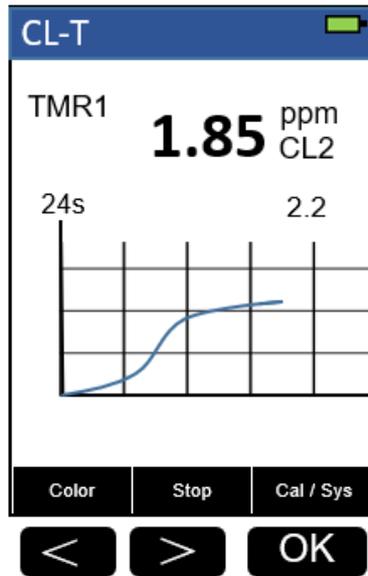


Figure 42

10. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
11. Press **Color** key to return to the main page.

The method is compatible with HACH 8167

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 9. Hydrogen peroxide – H2O2

### Test Program

---

Description: SP-200 Hydrogen peroxide Method (25 – 400 ppm H2O2) (Iodimetry Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis H2O2 Reagent PN: 31079

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

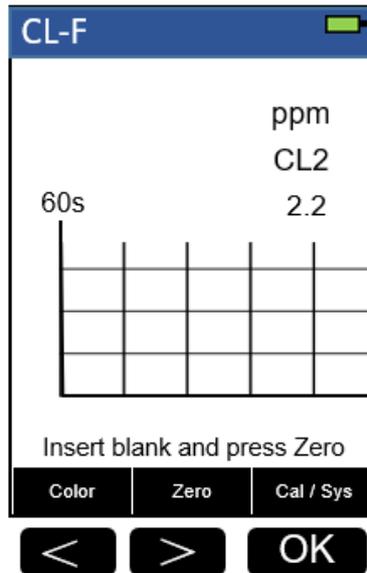


Figure 43

2. Press Up labeled key (<), Down labeled key (>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

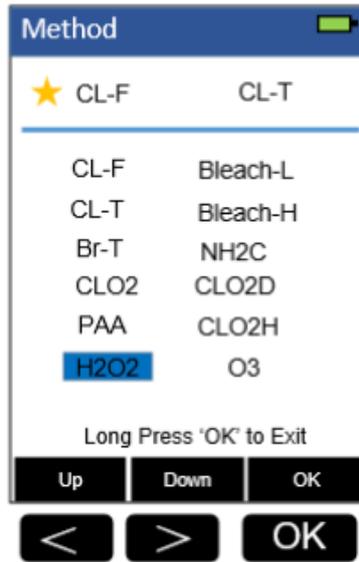


Figure 44

3. Press the OK key to enter **H2O2** test program interface.

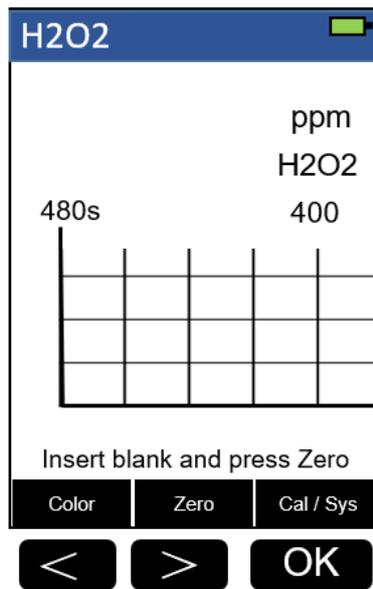


Figure 45

4. Fill a sample vial to the 10-ml line with sample (the blank sample).
5. Use a soft cloth or lint free paper tissue to clean the sample vial.
6. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

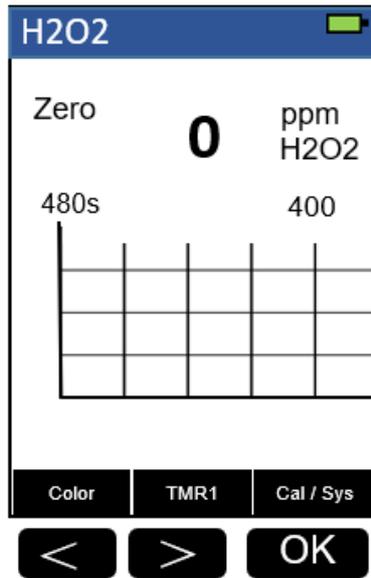


Figure 46

7. Take the sample vial out and add the contents of one H2O2 reagent to the sample vial (the prepared sample).
8. Press the **TMR1** key to start the method timer, an 8-minute reaction period will begin.
9. Immediately place sample vial back into the sample vial compartment.
10. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time.
11. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

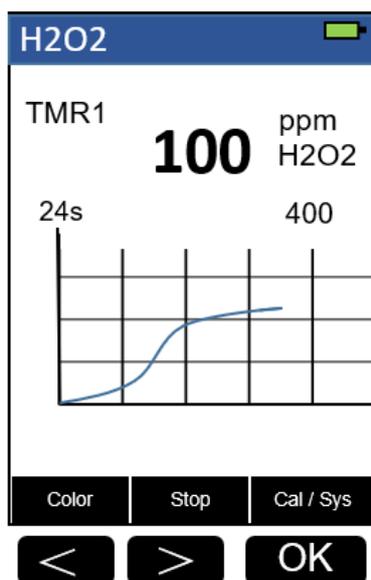


Figure 47

12. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
13. Press **Color** key to return to the main page.

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 10. Chloramine, Mono, Low Range - NH<sub>2</sub>CL

### Test Program

---

Description: SP-200 Chloramine, Mono, Low Range Method (0.1-4.5 ppm CL<sub>2</sub>) (Indophenol Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis NH<sub>2</sub>CL Reagent PN 31036 (Corresponding *Hach* Monochlor F Reagent Pillows PN 28022-46)

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

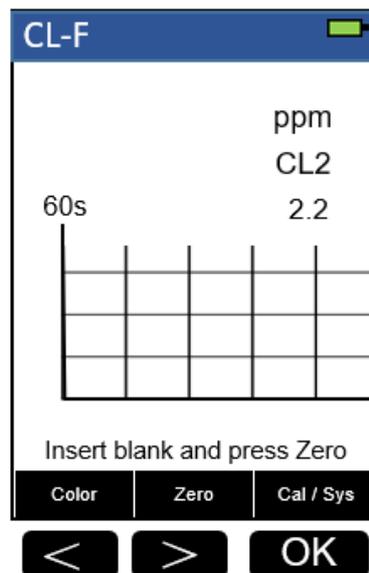


Figure 48

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

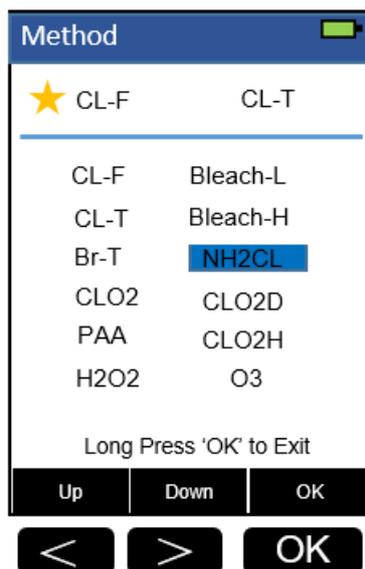


Figure 49

3. Press the OK key to enter **NH<sub>2</sub>CL** test program interface.

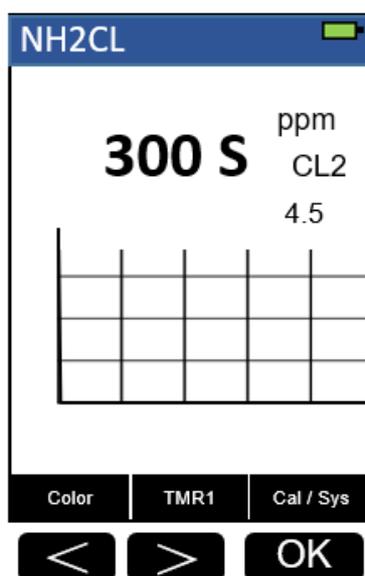


Figure 50

4. Fill a sample vial to the 10-ml line with deionized water (the blank sample).  
*Note: For the most accurate results, determine reagent blank for each new lot of reagent by running the test using deionized water instead of sample.*
5. Fill a sample vial to the 10-ml line with sample (the prepared sample).
6. Add the contents of one NH<sub>2</sub>CL Reagent (or one HACH Monochl or FTM powder pillow) to each sample vial, Swirl the vial about 20 seconds to dissolve.
7. Press the **TMR1** key to start the method timer, a 5-minute reaction period will begin. Pyxis SP-200 will display the page.

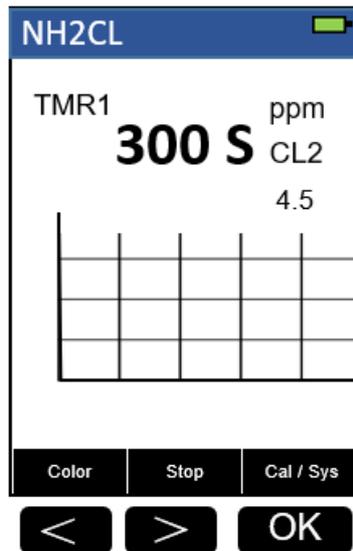


Figure 51

8. When the timer reaches the preset time and the reaction is complete, the timer beeps. the cursor will automatically switch to Zero key.
9. Use a soft cloth or lint free paper tissue to clean the sample vial.
10. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key. Pyxis SP-200 will display the page.

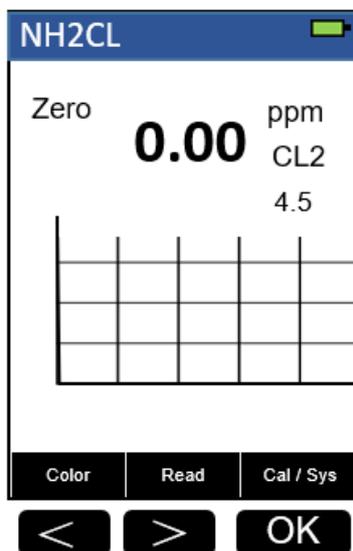


Figure 52

11. Place the prepared sample into the Pyxis SP-200 sample vial compartment and Press the **Read** key.
12. Concentration value based on the last absorbance value measured will be calculated and displayed.

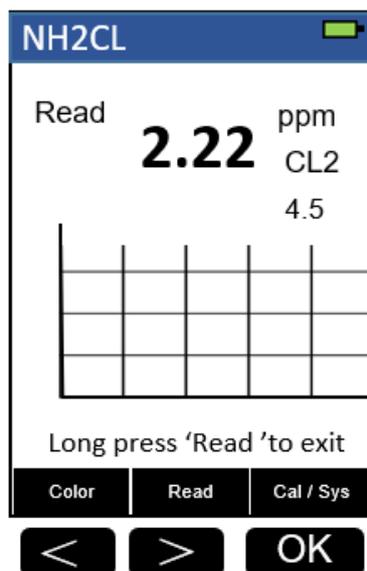


Figure 53

13. Press **Color** key to return to the main page.

The method is compatible with HACH 10171

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

# 11. Ozone – O3

## Test Program

---

Description: SP-200 Ozone Method (0.1-2 ppm O3) (DPD Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis O3 Reagent (PN: 31079)

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

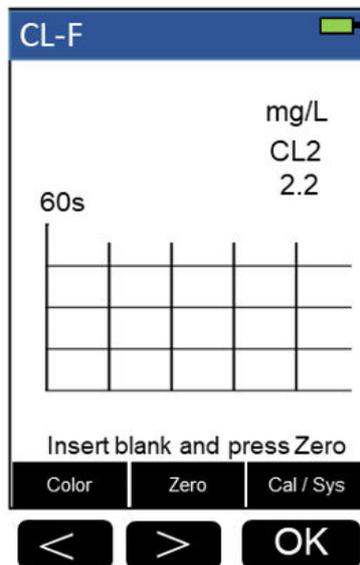


Figure 54

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

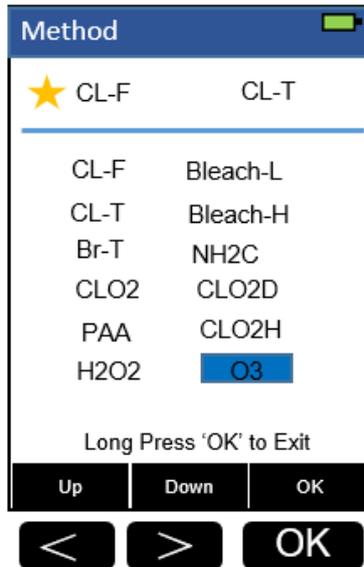


Figure 55

3. Press the OK key to enter **O3** test program interface.

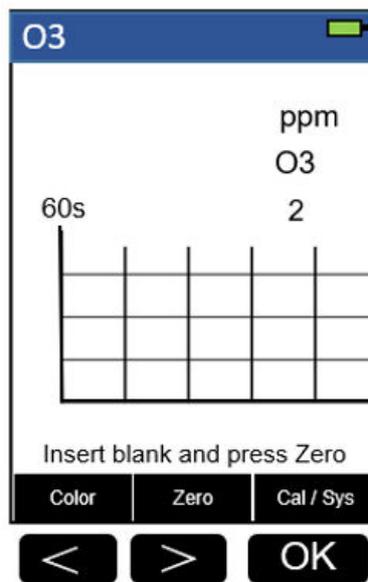


Figure 56

4. Fill a sample vial to the 10-ml line with sample (the blank sample).
5. Use a soft cloth or lint free paper tissue to clean the sample vial.  
Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

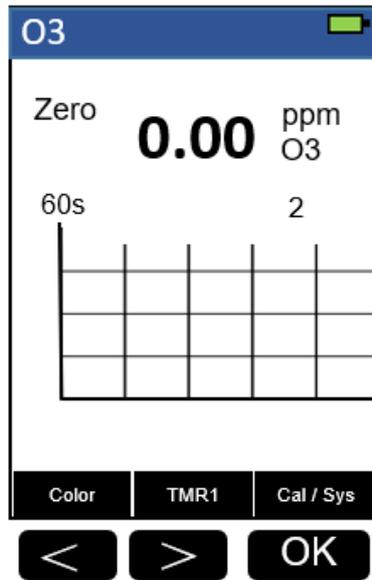


Figure 57

6. Take the sample vial out and add the contents of one O3 reagent to the sample vial (the prepared sample), Cap the sample vial. Swirl the vial to mix the reagent.
7. Place sample vial back into the sample vial compartment and press the **TMR1** key to start the method timer, 60-seconds reaction period will begin.
8. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time
9. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

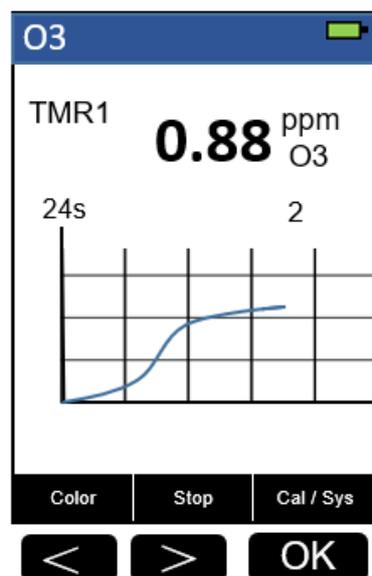


Figure 58

10. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
11. Press **Color** key to return to the main page.

**Notes:**

1. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
2. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
3. Pyxis SP-200 automatically turns itself off after 2 minutes with no-Key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 12. Peroxyacetic - PAA

### Test Program

---

Description: SP-200 Peroxyacetic Method (25.0-500 ppm PAA) (Iodimetry Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis PAA Reagent (PN: 31079)

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

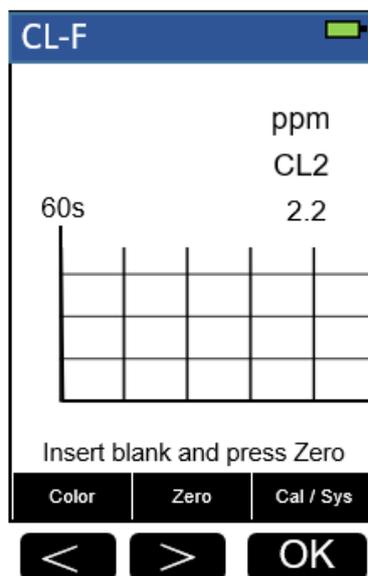


Figure 59

2. Press OK key (the center key) on the navigation control panel for 3 seconds until the screen lights up. The main page will display six major feature groups.

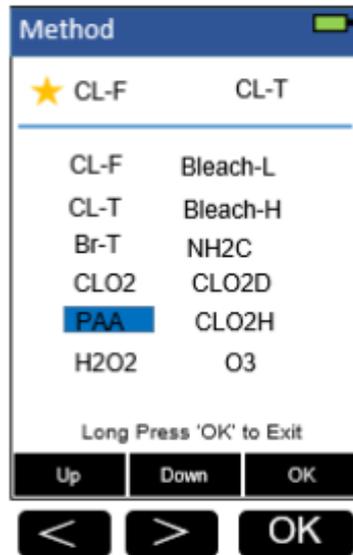


Figure 60

3. Press the OK key to enter **PAA** test program interface.

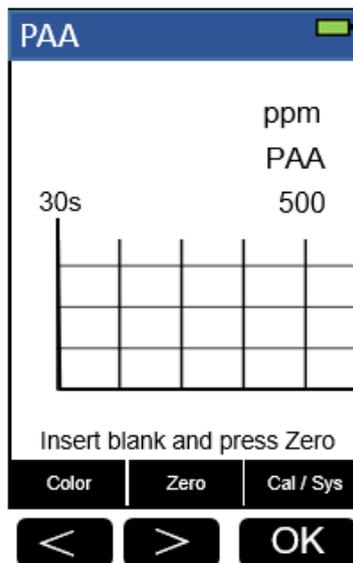


Figure 61

4. Fill a sample vial to the 10-ml line with sample (the blank sample).
5. Use a soft cloth or lint free paper tissue to clean the sample vial.  
Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

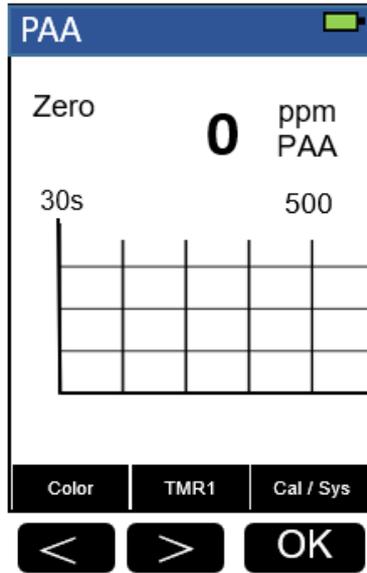


Figure 62

6. Take the sample vial out and add the contents of one PAA reagent to the sample vial (the prepared sample), Cap the sample vial.
7. Press the **TMR1** key to start the method timer, 30-seconds reaction period will begin. Keep shake the sample vial until the timer beeps.

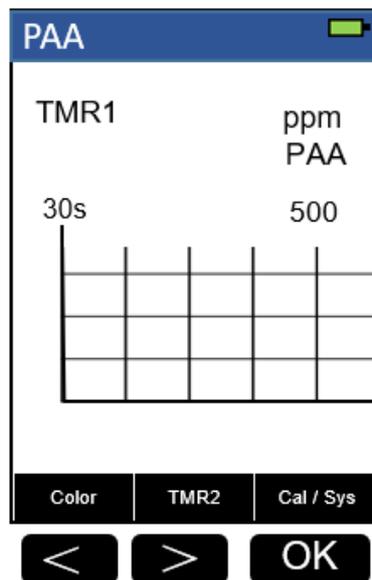


Figure 63

8. After the timer beeps, place sample vial back into the sample vial compartment and press the **TMR2** key to start the method timer, A 30-seconds reaction period will begin.

9. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time
10. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

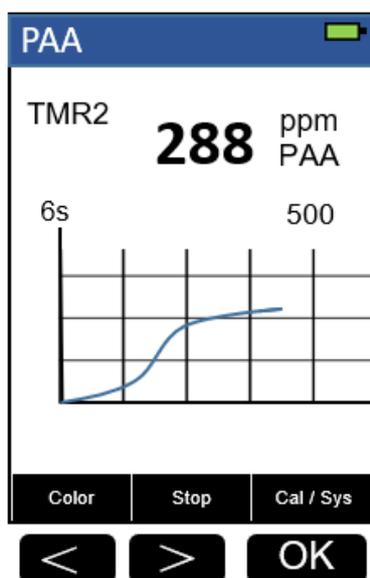


Figure 64

11. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
12. Press **Color** key to return to the main page.

**Notes:**

1. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
2. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
3. Pyxis SP-200 automatically turns itself off after 2 minutes with no-Key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

### 13. Chlorine, Free, High range – CL2HR

#### Test Program

---

Description: SP-200 Chlorine, Free, High range Method (0.1-10 ppm CL<sub>2</sub>) (DPD Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis CL2HR Reagent Kit PN 31015 (Corresponding *Hach* DPD Free Chlorine Powder Pillows Cat. No. 14070-99)

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

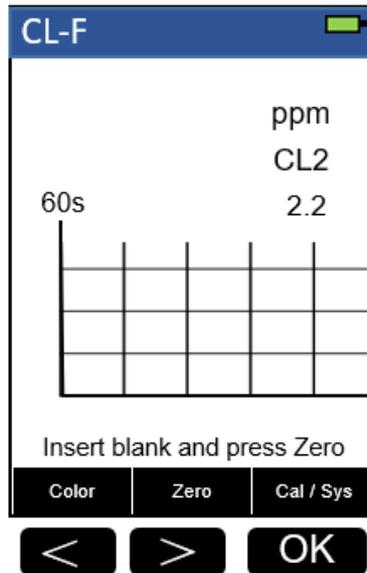


Figure 65

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

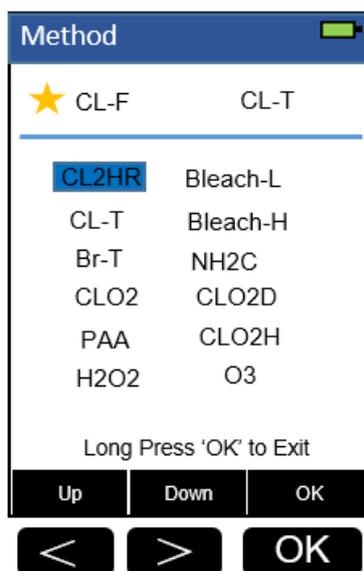


Figure 66

3. Press the OK key to enter **CL2HR** test program interface.

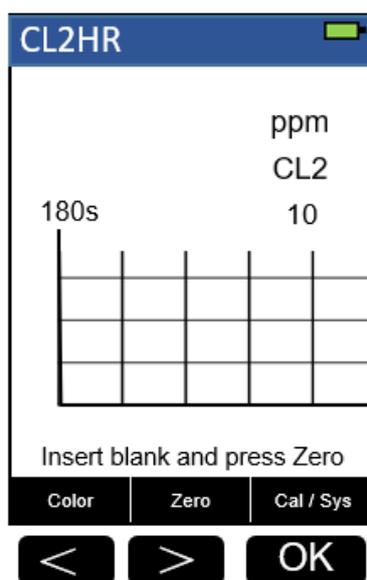


Figure 67

4. Fill a sample vial to the 10-ml line with sample (the blank sample).  
*Note: Samples must be analyzed immediately and cannot be preserved for later analysis.*
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

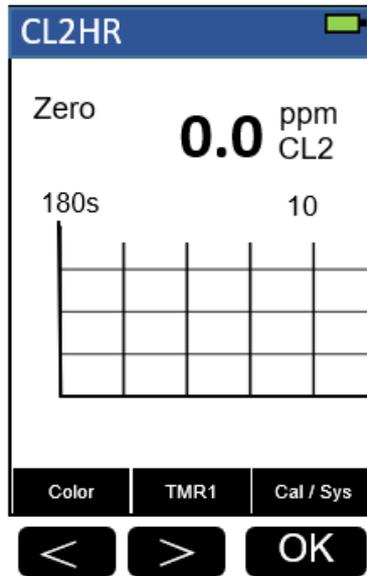


Figure 68

6. Take the sample vial out and add the contents of one CL2HR Reagent (or two Hach DPD Free Chlorine Powder Pillows) to the sample vial. Swirl the vial to mix the reagent.

Note: A pink color will develop if chlorine ion is present.

Note: If the sample temporarily turns yellow after sample addition, it is due to high chlorine levels. Dilute a fresh sample and repeat the test.

7. Place sample vial back into the sample vial compartment and press the **TMR1** key to start the method timer, a 3-minute reaction period will begin.
8. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time.
9. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

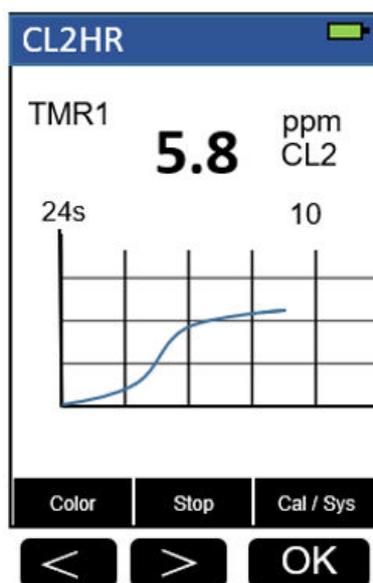


Figure 69

10. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
11. Press **Color** key to return to the main page.

The method is compatible with HACH 10069

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 14. Chlorine, Total, High range – CL2HR

### Test Program

---

Description: SP-200 Chlorine, Total, High range Method (0.1-10 ppm CL<sub>2</sub>) (DPD Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis CL<sub>2</sub>-THR Reagent Kit PN 31060 (Corresponding *Hach* 25 ml DPD Total Chlorine Powder Pillows Cat. No. 14064-99)

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

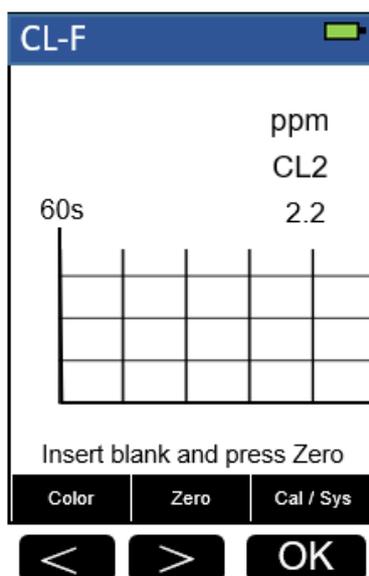


Figure 70

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

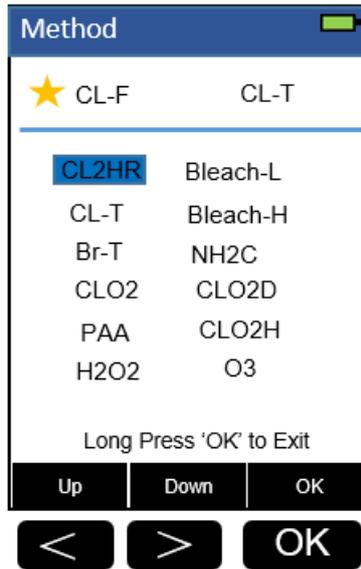


Figure 71

3. Press the OK key to enter **CL2HR** test program interface.

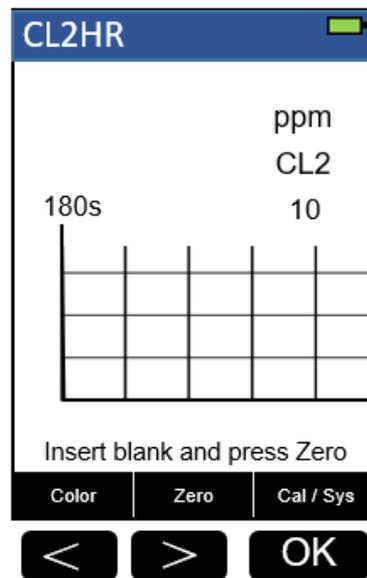


Figure 72

4. Fill a sample vial to the 10-ml line with sample (the blank sample).  
*Note: Samples must be analyzed immediately and cannot be preserved for later analysis.*
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

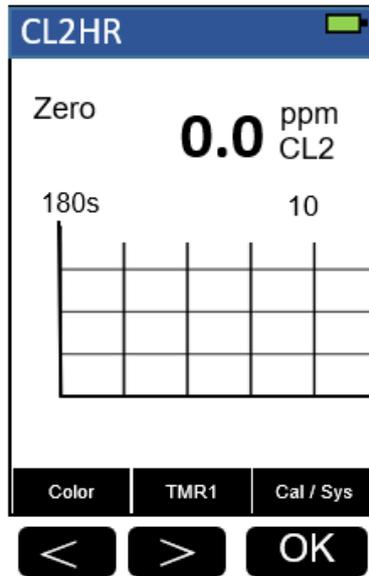


Figure 73

6. Take the sample vial out and add the contents of one CL2THR Reagent (or two Hach DPD Total Chlorine Powder Pillows) to the sample vial. Swirl the vial to mix the reagent.

Note: A pink color will develop if chlorine ion is present.

Note: If the sample temporarily turns yellow after sample addition, it is due to high chlorine levels. Dilute a fresh sample and repeat the test.

7. Place sample vial back into the sample vial compartment and press the **TMR1** key to start the method timer, a 3-minute reaction period will begin.
8. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time.
9. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

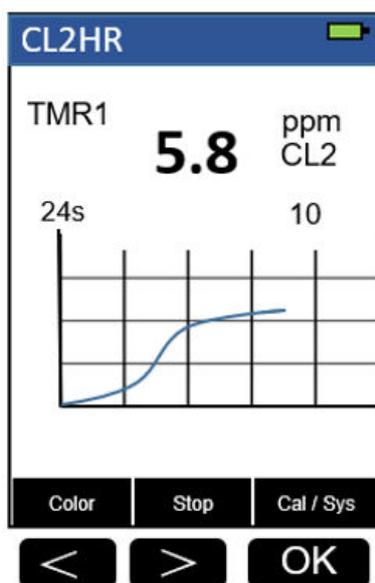


Figure 74

10. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
11. Press **Color** key to return to the main page.

The method is compatible with HACH 10070

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 15. Chlorine, Ultrahigh range – CL2UH

### Test Program

---

Description: SP-200 Chlorine, Ultrahigh range Method (5-400 ppm CL2) (Iodometry Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis CL2UH Reagent Kit PN 31074

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

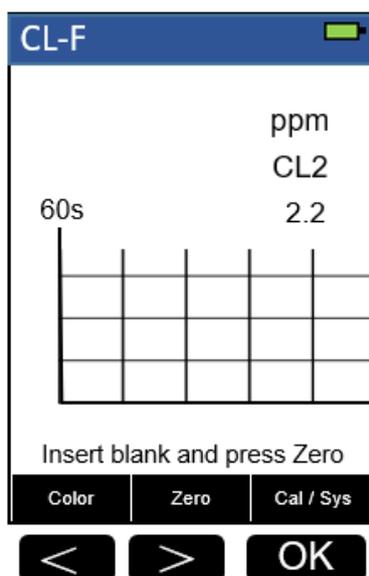


Figure 75

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

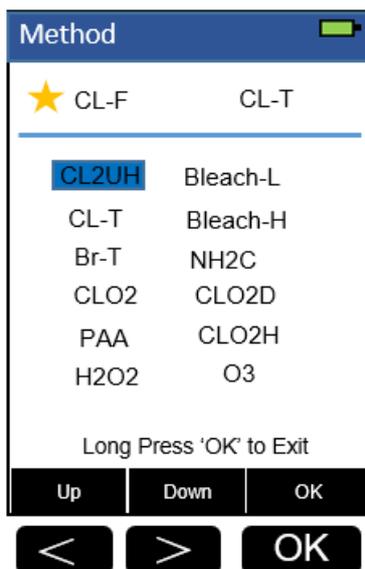


Figure 76

3. Press the OK key to enter **CL2UH** test program interface.

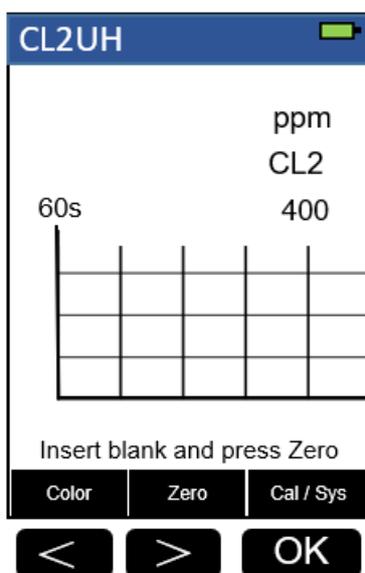


Figure 77

4. Fill a sample vial to the 10-ml line with sample (the blank sample).  
*Note: Samples must be analyzed immediately and cannot be preserved for later analysis.*
5. Use a soft cloth or lint free paper tissue to clean the sample vial. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

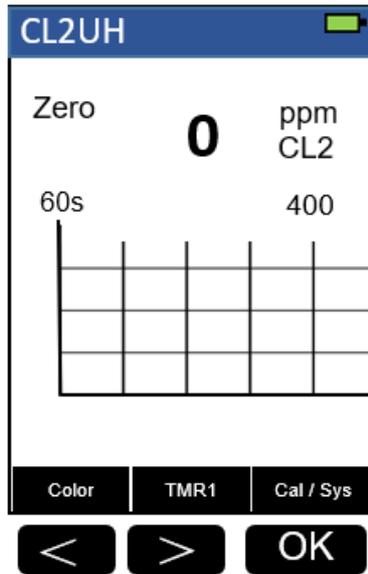


Figure 78

6. Take the sample vial out and add the contents of CL2UH Reagent to the sample vial. Swirl the vial to mix the reagent.  
Note: A pink color will develop if chlorine ion is present.  
Note: If the sample temporarily turns yellow after sample addition, it is due to high chlorine levels. Dilute a fresh sample and repeat the test.
7. Place sample vial back into the sample vial compartment and press the **TMR1** key to start the method timer, a 1-minute reaction period will begin.
8. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time.
9. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

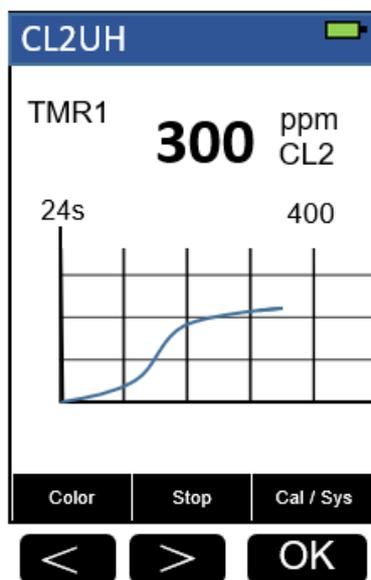


Figure 79

10. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
11. Press **Color** key to return to the main page.

**Notes:**

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 16. Nitrogen, Ammonia - NH<sub>3</sub>S

### Test Program

---

Description: SP-200 Nitrogen, Ammonia Method (0.02-0.5 ppm NH<sub>3</sub>-N) (Salicylate Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis NH<sub>3</sub>S Reagent Kit PN 31035 (Corresponding *Hach* Ammonia Nitrogen Reagent Set Cat. No. 26680-00)

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

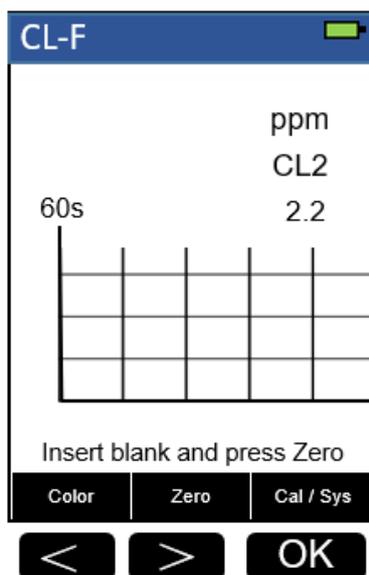


Figure 80

2. Press Up labeled key(<), Down labeled key(>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

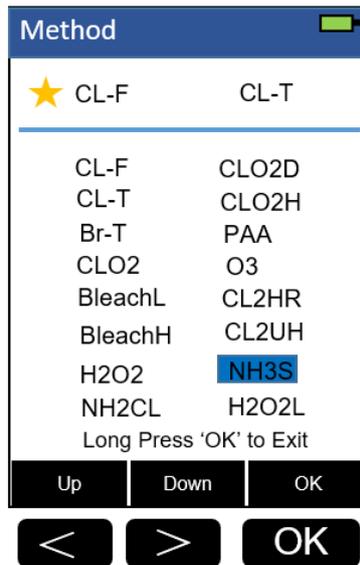


Figure 81

3. Press the OK key to enter **NH3S** test program interface.

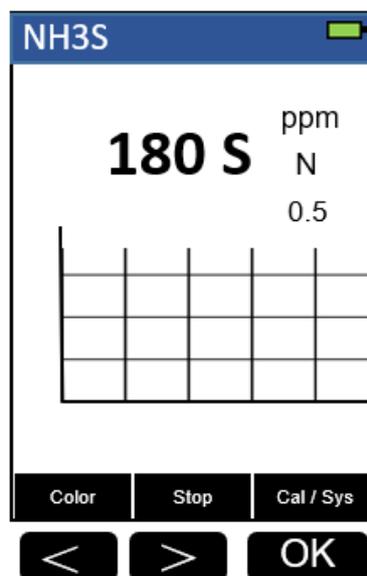


Figure 82

4. Fill a sample vial to the 10-ml line with deionized water (the blank sample).
5. Fill a sample vial to the 10-ml line with sample (the prepared sample).
6. Add the contents of one NH3S-1 Reagent (or one Hach Ammonia Salicylate Reagent Powder Pillow) to each sample vial. Cap the vials and invert to mix.
7. Press the **TMR1** key to start the method timer, a 3-minute reaction period will begin. Pyxis SP-200 will display the page.

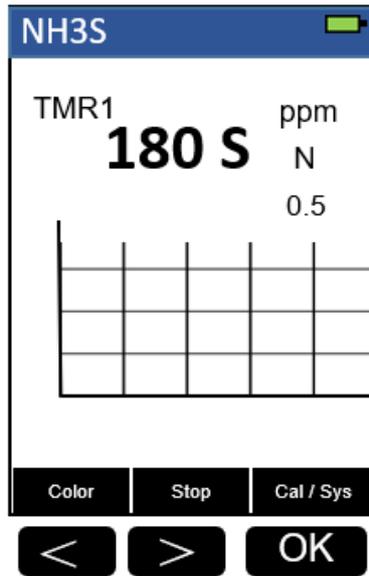


Figure 83

8. When the timer reaches the preset time and the reaction is complete, the timer beeps. the cursor will automatically switch to **TMR2** key.
9. Add the contents of one NH3S-2 Reagent (or one Hach Ammonia Cyanurate Reagent Powder Pillow) to each sample vial. Cap the vials and shake to dissolve the reagent.  
*Note: A green color will develop if ammonia nitrogen is present.*
10. Press the **TMR2** key to start the method timer, a 15-minute reaction period will begin.

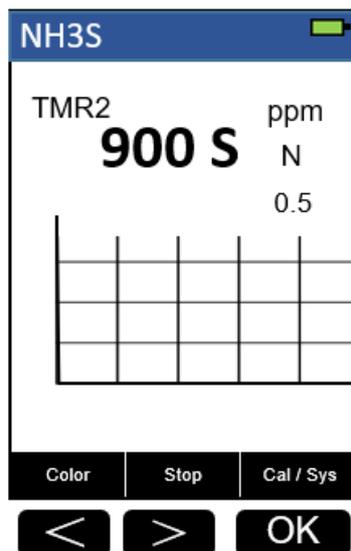


Figure 84

11. When the timer reaches the preset time and the reaction is complete, the cursor will automatically switch to Zero key.
12. Use a soft cloth or lint free paper tissue to clean the sample vial.

- Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

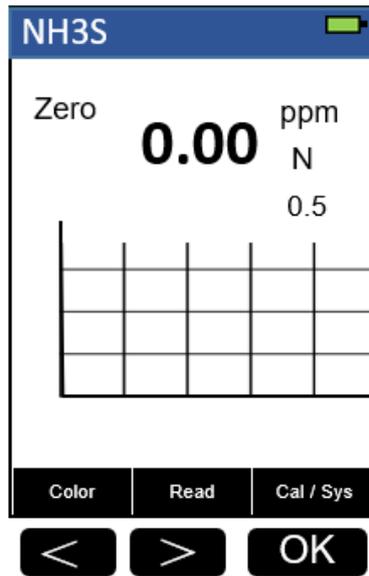


Figure 85

- Place the prepared sample into the Pyxis SP-200 sample vial compartment and press the **Read** key.
- Concentration value based on the last absorbance value measured will be calculated and displayed.

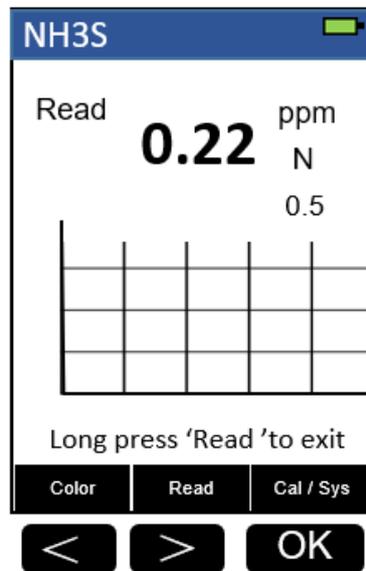


Figure 86

- Press **Color** key to return to the main page.

The method is compatible with HACH 8155

Notes:

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.

## 17. Hydrogen peroxide – H2O2L

### Test Program

---

Description: SP-200 Hydrogen peroxide Method (0.05-1.5 ppm H2O2) (Iodimetry Method)

Instruments and Reagents:

1. SP-200 Portable Water Analyzer
2. 10-ml Sample Vial
3. Pyxis H2O2L Reagent Kit PN 31124

Program:

1. Press **Color** labeled key (<) to start the colorimetric method selection page.

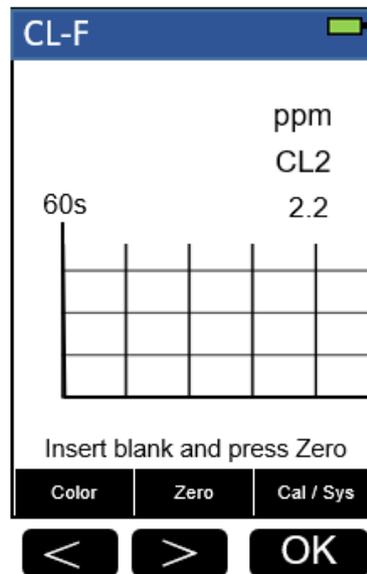


Figure 87

2. Press Up labeled key (<), Down labeled key (>) and the OK key to select and start a method which is needed. Pyxis SP-200 will display the page.

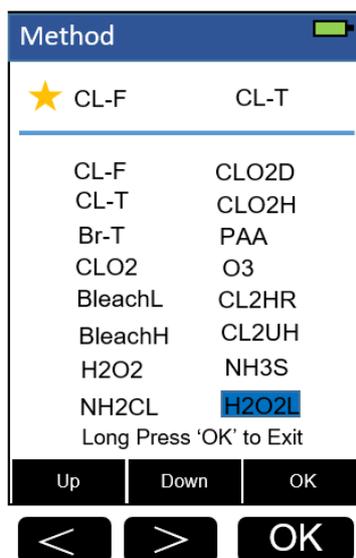


Figure 88

3. Press the OK key to enter **H2O2L** test program interface.

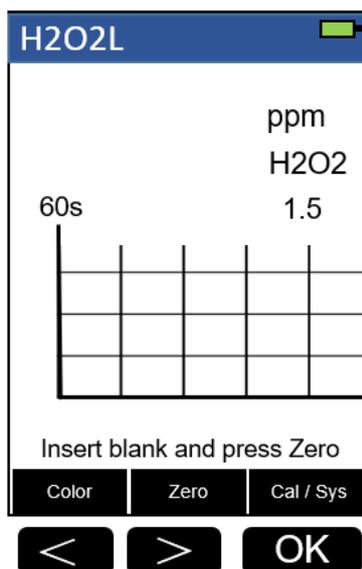


Figure 89

4. Fill a sample vial to the 10-ml line with sample (the blank sample).
5. Use a soft cloth or lint free paper tissue to clean the sample vial.
6. Place the prepared blank into the Pyxis SP-200 sample vial compartment and press the **Zero** key to zero the instrument. Pyxis SP-200 will display the page.

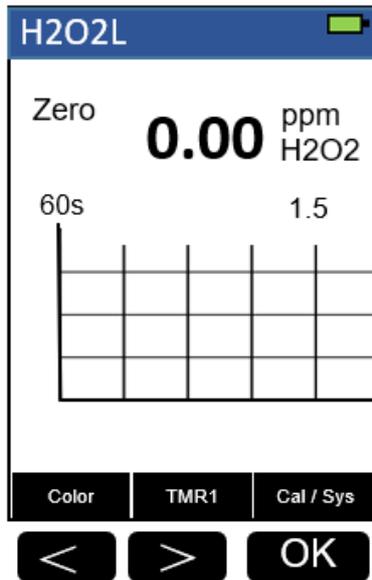


Figure 90

7. Take the sample vial out and add one drop of H2O2L-1 reagent to the sample vial (the prepared sample), Cap the sample vial. Swirl the vial to mix the reagent.
8. Then add the contents of one H2O2L-2 reagent to the sample vial (the prepared sample). Swirl the vial to mix the reagent.
9. Immediately place sample vial back into the sample vial compartment.
10. Press the **TMR1** key to start the method timer, a 60-second reaction period will begin.
11. Pyxis SP-200 will start to monitor the reaction between the reagent and the species you want to measure in the water sample. The concentration is shown in the chart as a function of time.
12. When the timer reaches the preset time and the reaction is complete, the value of concentration will be shown on the page.

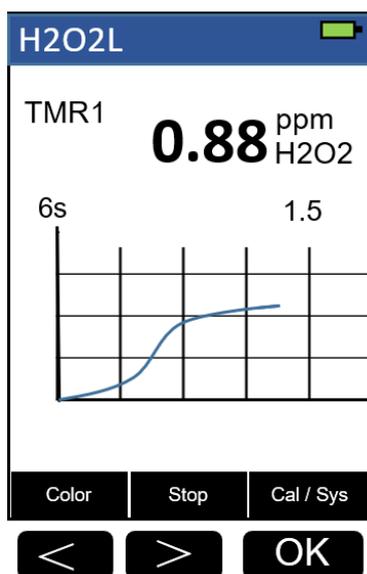


Figure 91

13. The rate of the reaction is often faster than the standard pre-set time, which will become apparent from the concentration-time plot. You can press the **Stop** key to stop the timer and terminate the timing step. The last read concentration value will be displayed on the page after you terminate the timing step.
14. Press **Color** key to return to the main page.

Notes:

1. The center key is the OK key. Press the OK key on a selected item to launch the action associated with the selected item.
2. Rinse all glassware with 1:1 hydrochloric acid solution. Rinse again with deionized water.
3. When the sample vial is inserted into the sample vial compartment, the triangular mark on the sample vial should be aligned approximately with the 6 o'clock position of the sample vial compartment or any position consistently.
4. Pyxis SP-200 automatically turns itself off after 2 minutes with no-key activity, except for during a measurement. Pressing and holding the OK key for 3 seconds will wake up the instrument, and return to the original page if it has any measurement data.