Ohio | Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

April 5, 2012

Mr. Mike Willson
APS Materials
4011 Riverside Drive
Dayton, OH 45405

RE: Compliance Evaluation Inspection
Notice of Violation

Dear Mr. Willson:

On March 2, 2012, I met with Mr. Ken Gross to conduct an inspection of your facility with respect to its wastewater discharge to the Stillwater River, authorized by NPDES permit 1IN00216*CD. A review of your Discharge Monitoring Reports (DMRs) since my previous inspection revealed two reported violations of your discharge limit for pH of 9.0. Although the result of 9.04 on February 17, 2012, is a legitimate, albeit minor, violation, the value of 841 reported on September 20, 2011 is an apparent error caused by a missing decimal point. Please review your records and amend the DMR as appropriate. If you have an explanation for the February 17th violation, please provide it.

APS also violated its monitoring frequency requirements in March, April and May 2011 and submitted its April 2011 DMR late. Through our previous email correspondence, I believe you have made corrections to your monitoring practices to ensure the monitoring frequency requirements will be met in the future. Although there has been only one recent late report, I noticed that DMR reports are often submitted on the due date which is twenty days after the end of the reporting period. I urge you to seek a solution for avoiding future reporting violations, especially since all the monitoring is done on site and analytical results are immediately available.

Compliance Monitoring

Mr. Gross demonstrated his pH, chlorine and temperature monitoring procedures, which I greatly appreciated, and I noted the following practices that need to be adopted:

- The pH meter, said to be sent off site twice per year to be calibrated, must instead be calibrated prior to use each monitoring day.

- Calibrations must be recorded in a log book. This log book should also be used to record the results from monitoring done at each outfall (from which the critical value is reported).

Southwest District Office
401 East Fifth Street
Dayton, OH 45402-2911

937 | 285 6357
937 | 285 6249 (fax)
www.epa.ohio.gov

These practices allow for the reported results to be traced back to the person, date and time associated with the result and allows for a demonstration that appropriate analytical equipment and methods were used.

In your June 2, 2010, response to my previous inspection, you indicated that you would be implementing these practices and provided a written description that included the use of a log book. It does not appear that such a book is being used and I ask that you either recommit to using one or provide evidence one is being used (a scanned copy of one of its pages would suffice for this demonstration).

Also, Mr. Gross was not able to produce instructions for how to calibrate the pH meter. I've included a copy of the operating manual from the manufacturer for his use. I encouraged him to obtain liquid buffer solutions (7 and 10) for use in calibrating the meter. Please be prepared to demonstrate a calibration at my next visit. Please note that the user guide calls for the electrode to be capped with the included sponge disk soaked with a pH 4 buffer solution (expired buffer tablets could be used to make up the wetting solution). Please ensure the operating integrity of the electrode is maintained through proper storage.

Residual Chlorine Meter

I wanted to check the suitability of the chlorine meter for determining compliance with the discharge limit but Mr. Gross was not able to locate the manual for the Exstik™ Cl200 meter used for monitoring. I've included a copy of the user guide from the manufacturer for his use. It does not appear that there are any special procedures for using this meter.

Air Filter Cleaning

While in Building 1, I observed large canister filters used for control of air emissions from manufacturing processes throughout APS's campus of buildings being cleaned using an air wand. The very fine particulate being removed from the filters was being captured by the water curtain normally used for, I believe, a thermal spray coating process.

I am concerned that the significant amount of emissions from the filter cleaning activity is not accounted for by APS Material's air permit administered by the Regional Air Pollution Control Agency (RAPCA). It appears that there will be additional filters with the installation of a new baghouse near the southeast corner of the building. Mr. Gross also indicated APS is considering a centralized and dedicated filter wash station. Please contact RAPCA at (937)225-4435 to discuss the acceptability of filter cleaning activities.

Please note that any wastewater from water curtains used for air pollution control or from a future filter cleaning station that is discharged to the sanitary sewer must be authorized by the city of Dayton's Pretreatment Group. Contact Sharon Vaughn with the city at 333-1860 if this wastewater is, or is proposed, to be discharged to the sanitary sewer.

Please provide a written response to the issues raised in this letter by May 4th. If you have any questions, please call me at (937)285-6095.

Sincerely,

MGB for

Matt Walbridge
Environmental Specialist
Division of Surface Water

MW/tf

enclosure

Ohio Environmental Protection Agency

Southwest District Office

NPDES COMPLIANCE INSPECTION REPORT

Section A: National Data System Coding

Permit Number	NPDES Number	Inspection Date	Inspection Type	Inspector	Facility Type
*1IN00216*CD*	*OH0118265*	*3-2-12*	*Recon*	*S*	*2*

Section B: Facility Data

Name and Location of Facility Inspected:	Entry Time	Permit Effective Date
APS Materials, Inc. *4011 Riverside Drive* *Dayton, OH 45405*	*1405*	*May 1, 2009*
	Exit Time	Permit Expiration Date
	1540	*April 30, 2014*

Name(s) and Titles of On-Site Representative(s)	Phone Number / e-mail address
Ken Gross – Engineer	*(937) 278-6547*

Name, Title and Address of Responsible Official:	Phone Number
Mike Willson – President *APS Materials, Inc.* *4011 Riverside Drive* *Dayton, OH 45405*	*937) 278-6547*

Section C: Areas Evaluated During Inspection

(S = Satisfactory, M = Marginal, U = Unsatisfactory, NA = Not Applicable, NE – Not Evaluated)

S	Permit	*M*	Flow Measurement	*NA*	Pretreatment
M	Records/Reports	*M*	Laboratory	*NA*	Compliance Schedules
S	Operations & Maintenance	*S*	Effluent/Receiving Waters	*NA*	Collection System
S	Facility Site Review	*NA*	Sludge Storage/Disposal	*NA*	Other
M	Self-monitoring Program				

Section D: Summary of Findings/Comments (Attach additional sheets if necessary)

- ***There are approximately 20 thermal spray machines that generate approximately 7 gpm of NCCW. Water is used to cool the electrical supply cables to keep them from melting. Most are on a solenoid valve system that activates with the plasma generator is activated, but some are manually activated.***
- ***Dechlor solution feed rate does not change with respect to flow rate. A flow sensor turns the chemical feed pump on and off.***
- ***10 pounds of erythorbic acid (a stereoisomer of ascorbic acid that is much less expensive) powder is added to the 55-gallon drum and mixed with water.***
- ***There are five cooling systems. Three use city water and discharge to the storm sewer, two use closed-loop chillers.***
- ***Samples are collected from bleed-off valves in each of the three buildings (the line is purged first). These samples are then analyzed for residual chlorine and pH using the portable Extech™ test kit. The highest values (temp, Cl, and pH) from the three locations are recorded and reported.***
- ***Mr. Gross said that if he gets a non-compliant value, he'll adjust the system and retest until it is compliant. When I told him that he needed to report the initial measurement, he indicated that retesting was only done when the dechlorination system was first started.***

Name and Signature of Inspector(s)	Agency / Office / Telephone	Date
MB/w Matt Walbridge	*Ohio EPA / Southwest District Office / (937) 285-6095*	4/5/12
Name and Signature of Reviewer(s)	**Agency / Office / Telephone**	**Date**
Martyn G. Burt	*Ohio EPA / Southwest District Office / (937) 285-6034*	4/5/12

User Guide

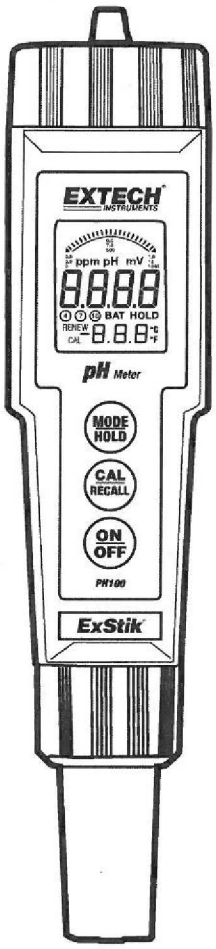
EXTECH INSTRUMENTS

A FLIR COMPANY

ExStik™ Waterproof pH Meter

Model PH100

Patent Pending



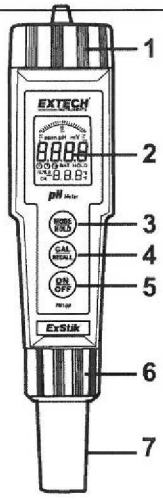
CE

ExStik™ Description

Front Panel Controls

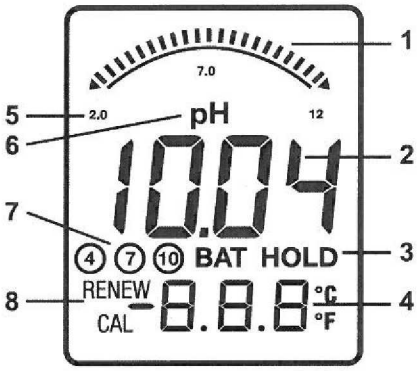
1. Battery compartment cap
2. LCD Display
3. MODE / HOLD button
4. CAL / RECALL button
5. ON/OFF button
6. Electrode collar
7. Electrode

(Electrode cap is not shown)



Display

1. Bargraph reading
2. Measurement reading
3. BAT (low battery) and HOLD (data hold) indicators
4. Temperature display
5. Bargraph scale designations
6. Units of measure
7. Calibration indicators
8. RENEW and CAL indicators



CAUTIONS

- This device is not a toy and must not reach children's hands. It contains hazardous objects as well as small parts that the children could swallow. In case a child swallows any of them, please contact a physician immediately
- Do not leave batteries and packing material lying around unattended; they can be dangerous for children if they use them as toys
- In case the device is going to be unused for an extended period of time, remove the batteries to prevent them from training
- Expired or damaged batteries can cause cauterization on contact with the skin. Always, therefore, use suitable hand gloves in such cases
- See that the batteries are not short-circuited. Do not throw batteries into the fire.

Overview

pH Overview

pH is a unit of measure (ranging from 0 to 14pH) indicating the degree of acidity or alkalinity of a solution. pH tests are the most commonly performed measurements in water analysis and reports the negative log of the hydrogen ion activity of a solution which is an indicator of acidity or alkalinity. Solutions with a pH less than 7 are considered acidic, solutions with a pH higher than 7 are known as bases, and solutions with a pH of exactly 7 are neutral.

The pH scale is logarithmic so, for example, if sample A is 1 pH less than Sample B, this means that Sample A is 10 times more acidic then Sample B. A difference of 1 pH represents a ten-fold difference in acidity.

Getting Started

- For new meters, remove the battery cap and then remove the battery insulating strip.
- Remove the cap from the bottom of the ExStik™ to expose the electrode glass surface and reference junction
- Before first use or after extended storage, soak the electrode (with its cap removed) in a pH 4 solution for about 10 minutes
- White KCL crystals may be present in the cap. These crystals will dissolve in the soak or they can be simply rinsed with tap water
- Always calibrate close to the expected measurement value
- Before A sponge is located in the electrode protective cap. Keep this sponge soaked with a pH 4 solution to preserve Electrode life during storage

Replacing Electrodes

The ExStik™ is shipped with an electrode attached. Electrode life is limited and is dependent on (among other factors) frequency of use and care. If the electrode needs to be replaced, follow these steps for removing and connecting electrodes.

1. To remove an electrode, unscrew and completely remove the electrode retaining collar.
2. Gently rock the electrode from side to side, pulling it away from the meter, until it disconnects.
3. To attach an electrode, carefully plug the electrode into the meter socket (note that the electrode connector is keyed, ensuring proper connection).
4. Secure the electrode in place by tightly turning the collar in place. (a rubber gasket seals the electrode with the meter).

Automatic Electrode Recognition

When the ExStik™ is turned on, it recognizes the type of electrode that is connected and displays the appropriate unit of measure. Attach electrode before turning the ExStik™ on.

Powering the ExStik™

Press the ON/OFF key to turn the ExStik™ on or off. The auto power off feature shuts the ExStik™ off automatically after 10 minutes of inactivity to preserve battery life.

Operation

Overview

When the electrode is placed in a solution, the main display and bargraph indicate the pH reading while the lower display reads temperature (readings flash until they have stabilized). The bargraph is 'center zero', i.e. at pH 7 there is no display. As the pH rises, the bar moves from the center to the right. If the pH drops, the bar moves from the center to the left.

pH Calibration (1, 2, or 3 points)

A two point calibration with a buffer of 7 plus 4 or 10 (whichever is nearest to the expected sample value) is always recommended. A one point calibration (choose the value closest to the expected sample value) is also valid. For best accuracy, always calibrate at the sample temperature.

1. Place the electrode into a buffer solution (4, 7, or 10) and momentarily press the CAL key. pH 7 should be calibrated first, then 4 and/or 10 pH.
2. The ExStik™ automatically recognizes the solution and calibrates itself to that value. Note: If the solution is more than 1pH off from the 4, 7, or 10pH standard, the ExStik™ will assume an error and abort the calibration. CAL and END will be displayed.
3. During calibration, the pH reading flashes on the main display.
4. When calibration is complete, the ExStik™ automatically displays 'END' and returns to normal operation mode.
5. The appropriate circled indicator ④ ,⑦ , or ⑩ will appear on the LCD when a calibration has been completed. The calibration data is stored until a new calibration is performed.
6. For a two or three point calibration, repeat steps 1-4.

Note: Always turn the meter off and then on before calibrating to allow sufficient time to complete the calibrations during one power cycle. If the meter auto powers off during calibration the calibrations remain valid, but new calibrations will turn the circled indicators off.

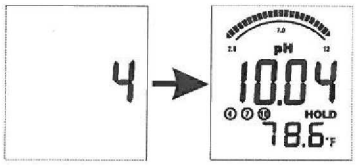
Changing the Displayed Temperature Units

Press and hold the CAL button for approx. 3 seconds. The °C or °F icon will change first and the numerical temperature value will change *after* the button is released. If the Calibration mode is accidentally accessed 'CAL' appears on the LCD. Simply turn the ExStik™ off and start again.

Data Hold

Momentarily press the MODE button to freeze the current reading. The HOLD display icon will appear along with the held reading. The held reading will also be stored in memory. Momentarily press the MODE key to return to normal operation.

15-Storing Readings into Memory



1. Momentarily press the MODE button to store a reading. The LCD will briefly display the memory location number and then the value stored (Data Hold will activate).
2. Momentarily press MODE again to return to normal operation.
3. Repeat step 1 to store the next reading and so on.
4. After 15 readings are stored the ExStik™ will return to memory location 1 and start overwriting existing data with newly stored data.

Recalling Stored Readings

Note: Check that the HOLD symbol is not displayed. If it is, exit the HOLD function by momentarily pressing the MODE button.

1. Momentarily press the CAL button and then press the MODE button immediately after CAL is displayed; the storage location number (1 through 15) will flash. If the CAL mode is accidentally accessed (display flashing), press the CAL button again to exit.
2. The last reading stored will be displayed first. To advance through the stored readings, momentarily press the MODE button. The location number is displayed first, followed by the reading stored in that location.
3. To exit the recall mode, momentarily press the CAL button and the ExStik™ will return to normal operation.

CAL Reminder Display

When the ExStik™ is turned on in the pH mode for the 15th time without recalibration, the 'CAL' icon appears on the LCD indicating that the ExStik™ may require calibration. Some applications may require recalibration of the electrode more frequently than others. The CAL display is simply a reminder and will turn off when the pH electrode is recalibrated.

RENEW Display

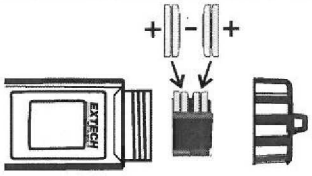
A flashing 'RENEW' warning indicates that the probe may be nearing the end of its useful life. If cleaning or recalibration does not cause the RENEW icon to disappear, replace the electrode. The RENEW display appears when the output of the pH electrode fails a diagnostic test.

Considerations

- If the unit appears to be locked (display frozen) it is possible that the Data Hold mode has been inadvertently accessed by pressing the MODE button. Simply press the MODE button again or turn the meter off and restart if the display appears frozen.
- If the meter does latch up and no button presses revive it, remove the batteries, push the ON button for 3 seconds and then reinsert the batteries.
- Note that if the batteries are removed, any stored readings will be discarded. Also, the user calibration data for pH will be cleared. New user pH calibration data is required. Factory calibration data for all models will be retained, however.

Battery Replacement

1. Twist off the battery compartment cap
2. Replace the four (4) 2032 batteries observing polarity.
3. Replace the battery compartment cap



You, as the end user, are legally bound (**Battery ordinance**) to return all used batteries and accumulators; **disposal in the household garbage is prohibited!**

You can hand over your used batteries / accumulators, gratuitously, at the collection points for our branches in your community or wherever batteries / accumulators are sold!

Disposal

Follow the valid legal stipulations in respect of the disposal of the device at the end of its lifecycle

Specifications

Display	Multifunction LCD with Bargraph
Operating conditions	0 to 50°C (32 to 122°F) / < 80% RH
Range and Accuracy	0.00 to 14.00 / ± 0.01pH typical
Temp. Compensation	Automatic from 0 to 90°C (32 to 194°F)
Temperature Range	-5 to 90°C (23 to 194°F)
Temperature Resolution	0.1° up to 99.9 then 1° thereafter
Temperature Accuracy	± 1°C/1.8°F [from -5 to 50°C (23 to 122°F)]
	± 3°C/5.4°F [from 50 to 90°C (122 to 194°F)]
Measurement storage	15 tagged (numbered) readings
Power	Four (4) CR2032 button batteries
Low battery indication	'BAT' appears on the LCD
Auto power off	After 10 minutes of inactivity
Dimensions	35.6x172.7x40.6mm (1.4x6.8x1.6"); 110g (3.85oz)

Copyright © 2008 Extech Instruments Corporation.
All rights reserved including the right of reproduction in whole or in part in any form.
www.extech.com

User's Guide

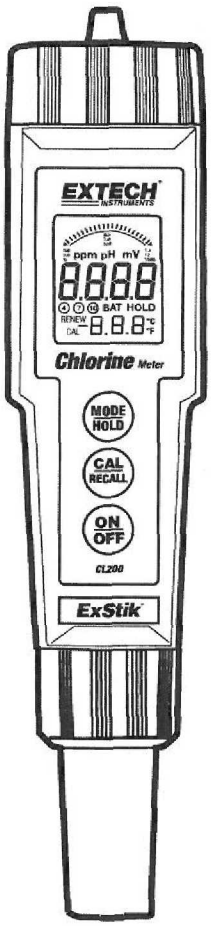
EXTECH® INSTRUMENTS

A FLIR COMPANY

ExStik® CL200A

Waterproof Total Residual Chlorine Tester

Patent Pending



Introduction

Congratulations on your purchase of the ExStik® CL200 chlorine tester. The CL200 is a revolutionary first of its kind measurement device that offers direct reading of Total Chlorine from 0.01 to 10.00 ppm. The electrode method employed by the ExStik® is approved by the U.S. Environmental Protection Agency (EPA) as an acceptable method for wastewater compliance monitoring of total chlorine. For this type of electrode method, a reagent tablet must be added to the measurement solution before testing. The advantages of the CL200 to the user include: Easy to use and maintain, high accuracy, self-calibration, and fast response. The CL200 offers simultaneous Chlorine and Temperature displays and a 15-reading memory storage. Careful use and maintenance will provide years of reliable service.

Applications

The CL200 can be used wherever a measurement of the total chlorine in water is needed. This is also referred to as total residual chlorine. It measures the total of all chlorine present in all forms, including dissolved free chlorine, chloramines, hyporchlorous acid and hypochlorite ion. Typical applications include measurements of discharge water from water treatment plants, public drinking water supplies and cooling towers, and measurement of disinfectant properties in swimming pools and cooling water applications.

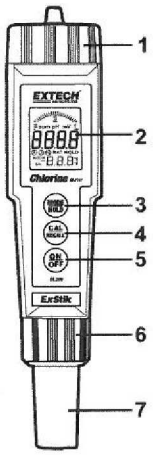
Meter Description

CL200 Front Panel Description

The ExStik's® keys have functions which change depending on the electrode attached (pH, ORP or Chlorine). Key descriptions here apply for the ExStik® with a chlorine electrode attached.

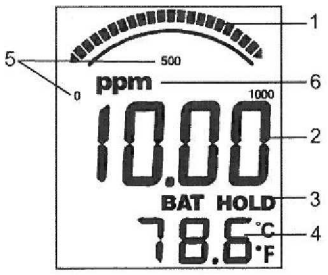
1. Battery compartment
2. LCD Display
3. MODE/HOLD button (store data)
4. CAL/RECALL button (change temperature units and recall data. Calibration not required for chlorine)
5. ON/OFF button
6. Electrode Collar
7. Electrode

(Note: The Electrode cap is not shown)



ExStik® CL200 Display

1. Bargraph display
2. Measurement display
3. BAT (low battery) and HOLD (data hold) indicators
4. Temperature display
5. Bargraph scale designations
6. Unit of measure



Getting Started

Equipment Required

A chlorine test requires a 20ml sample cup, a reagent tablet and the CL200 with a chlorine electrode attached. The optional EX006 Weighted base is a recommended accessory.

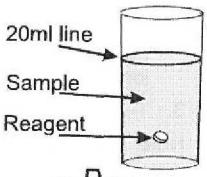
Battery Activation

An insulating tab is located in the battery compartment and prevents battery drain during storage. It must be removed before use. Refer to the battery replacement paragraph in the maintenance section.

Measurement Procedure

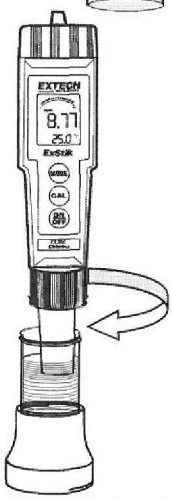
Sample Preparation:

1. Place the test sample into the sample cup up to the 20mL line.
2. Drop one reagent tablet into the sample, wait 10 seconds and then shake or stir vigorously until it is dissolved.



Measurement:

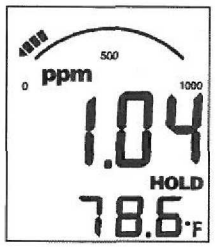
1. Press the ON button and insert the electrode into the sample.
2. Stir the sample with the electrode for 5 to 10 seconds. The "HOLD" indicator will appear after 120 seconds.



Reading:

The value in the display is the total chlorine in ppm.

Note: After running a test, wipe the entire electrode with a clean/dry paper towel.



Storing Readings

1. Press the MODE button to store a reading. The storage location number will be displayed followed by the stored reading and the "HOLD" indicator.
2. Only one reading can be stored during the 120 second measurement cycle.
3. Press the MODE button again to return to normal operation.
4. If more than 15 readings are stored, previously stored readings (starting with number 1) will be overwritten.

Recalling Stored Readings

1. Press the CAL button and then press the MODE button immediately after CAL is displayed; a location number (1 through 15) will flash.
2. The last stored reading taken will be displayed first. To scroll through the stored readings, press the MODE button. The location number is displayed first, followed by the reading stored in that location.
3. To exit the storage mode, press the CAL button and the CL200 will return to normal operation.

Note: If the batteries are removed all stored readings will be lost.

Changing the Temperature Units

Press and hold the CAL button for approx. 3 seconds to change the temperature units.

Auto-Power OFF

The auto power off feature automatically shuts the CL200 off 10 minutes after the last keypress.

Low Battery Indication

When the batteries become weak the "BAT" icon will appear in the display. Refer to the Maintenance section for battery replacement information.

Offset Adjustment Procedure

If it is necessary to adjust the chlorine reading to match the value of a known standard or to agree with the reading from another chlorine meter, the following procedure can be used.

1. Using a chlorine solution of known concentration perform the normal sampling procedure (refer to the operator's manual) with 20 ml of the solution, wait for the display to read "HOLD" (approx. 2 minute sampling time).
2. With meter still in the solution press the Mode/Hold button for approximately 5 seconds until "CO" appears at the bottom of the Display.
3. The concentration value on the Display can now be adjusted up or down to match the actual known concentration of the solution.
4. Press the MODE/HOLD key to increase the value or Press the CAL/RECALL button to decrease the value.
5. Once the reading is adjusted to the desired value do a quick press of the ON/OFF button and "SA" will appear on the Display followed by "END". This indicates that the adjusted value was saved to memory.
6. Turn the meter off and proceed with the sampling procedure as described in the operator's manual.

Considerations and Techniques

1. If the meter has not been used for several weeks or is new, at least two tests should be made to condition the electrode.
2. Do not touch the reagent tablets. Touching can cause contamination.
3. If the electrode has not been used for in a 24hr period, wipe the tip with a clean/dry paper towel before use.
4. Before use, wash the sample cups and the caps and then rinse them completely.
5. The CL200 should not be left in a solution while turned off. If left in solution while turned off, subsequent readings may take longer to reach the correct value.
6. Do not touch the sensor surface except with a clean/dry paper towel.
7. When measuring solutions that have large differences in chlorine concentration, i.e. 0.1ppm and 5.0ppm, use separate sample cups.
8. Discard the sample cup when it shows a color change.
9. Maintain the electrode by completely wiping dry and then replacing the electrode cover immediately after taking a measurement. The electrode should always be stored in the dry cap.
10. Cover the connector with the clear cover whenever the electrode is removed from the meter body.
11. Gently stirring the probe in the solution for 10 seconds, within the first minute of operation, will accelerate the process and yield more accurate readings. Do not stir after 10 seconds.

Troubleshooting Guide

1. If the unit appears locked it is possible that the Data Hold mode has been inadvertently accessed. If the HOLD icon is displayed, simply press the MODE button or turn the meter off and restart.
2. If the meter latches up and cannot be reactivated by a button press, remove the batteries and restart. Note that if the batteries are removed, any stored readings will be lost.

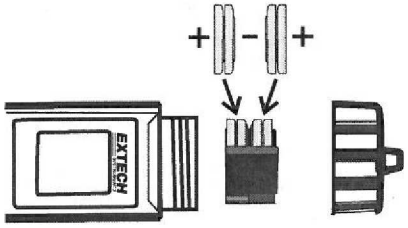
Electrodes Types

The CL200 can also measure ORP and pH. To perform these tests, the appropriate electrode must be acquired and connected to the ExStik®. When the unit is turned on, it recognizes the type of electrode that is connected and displays the appropriate unit of measure.

Maintenance

Battery Replacement

1. Twist off the battery compartment cap
2. Replace the four (4) CR2032 batteries observing polarity.
3. Replace the battery compartment cap



You, as the end user, are legally bound (**EU Battery ordinance**) to return all used batteries, **disposal in the household garbage is prohibited!** You can hand over your used batteries / accumulators at collection points in your community or wherever batteries / accumulators are sold!

Disposal: Follow the valid legal stipulations in respect of the disposal of the device at the end of its lifecycle.

Cleaning and Maintaining the Electrode

The CL200 Chlorine Electrode arrives in a factory-cleaned condition and is ready to be used. The electrode will perform best and yield more stable readings after the first few tests. Before and after tests, firmly wipe the electrode tip with a clean, dry paper towel to remove any compounds that may have formed. When not in use, the CL200 should be stored with the electrode cap in place.

Electrode Replacement

The CL200 is shipped with an electrode attached. If the electrode has to be replaced, or if a pH or ORP electrode is to be installed, follow these steps:

1. Turn the unit off.
2. To remove an electrode, unscrew and remove the electrode collar (turn the collar counter-clockwise).
3. Gently rock the electrode from side to side, pulling it downwards, until it disconnects from the meter.
4. To attach an electrode, allign the slots and carefully plug the electrode into the meter socket.
5. Tighten the electrode collar firmly enough to make a good seal (a rubber gasket seals the electrode with the meter).

Specifications

Display	Multifunction LCD with Bargraph
Operating conditions	0 to 50°C (32 to 122°F) and < 80% RH
Chlorine range	0.01 to 10.00 ppm (Total Chlorine)
Chlorine accuracy	0.05 to 5.00ppm; ± (10%reading + 0.01ppm) 5.00 to 10.00ppm; ± (15%reading + 0.05ppm)
Temperature measurement range	-5 to 90°C (23 to 194°F)
Temperature range for Chlorine measurement	0 to 50°C (32 to 122°F)
Temp. Resolution	0.1° up to 99.9 then 1°
Temp. Accuracy	± 1°C (1.8°F) from -5 to 50°C (23 to 122°F) ± 3°C (5.4°F) from 50 to 90°C (122 to 194°F)
Measurement storage	15 readings can be stored and recalled
Low battery indication	'BAT' appears on the LCD
Power	Four CR2032 button batteries
Dimensions	35.6x172.7x40.6mm (1.4x6.8x1.6"); 110g (3.85oz)
Auto power off	Automatically turns off 10 minutes after the last key press

Copyright © 2011 Extech Instruments Corporation (a FLIR company)
All rights reserved including the right of reproduction in whole or in part in any form.
www.extech.com