

INVITATION TO BID

Bid Invitation Number: #4-2012

Date of Issue: 1/19/2012

Sealed bids will be received in the office of the Division of Central Purchasing, 200 East Main Street, Lexington, Kentucky, until **2:00 PM**, prevailing local time on 2/2/2012. Bids must be received by the above-mentioned date and time. Mailed bids should be sent to:

Division of Central Purchasing
200 East Main Street, Rm 338
Lexington, KY 40507, (859) 258-3320

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

All bids must have the company name and address, bid invitation number, and the commodity/service on the outside of the envelope.

Bids are to include all shipping costs to the point of delivery located at: See specifications

Bid Security Required: Yes No Performance Bond Required: Yes No
Cashier Check, Certified Check, Bid Bond (Personal checks and company checks will not be acceptable).

| | |
|------------|---|
| QTY | Commodity/Service |
| PCT | Luminescent Dissolved Oxygen Analyzer w/Digital Controller |
| | See specifications |

| | |
|--|---|
| <p style="text-align: center;"><u>Check One:</u></p> <p><input checked="" type="checkbox"/> Bid Specifications Met</p> <p><input type="checkbox"/> Exceptions to Bid Specifications. <i>Exceptions shall be itemized and attached to bid proposal submitted.</i></p> | <p style="text-align: center;"><u>Proposed Delivery:</u></p> <p><input type="checkbox"/> 30 days after acceptance of bid.</p> |
| <p style="text-align: center;"><u>Procurement Card Usage</u></p> <p><input checked="" type="checkbox"/> Yes The Lexington-Fayette Urban County Government will be using Procurement Cards to purchase goods and services and also to make payments. Will you accept Procurement Cards?</p> <p><input type="checkbox"/> No</p> | |

Submitted by:

Hach Company
Firm
5600 Lindbergh Dr
Address
Loveland CO 80539
City, State & Zip

Signature of Authorized Company Representative – Title
Roxanna Nittmann
Representative's Name (Typed or printed)
800-227-4224 ext 6274 **970-691-3911**
Area Code - Phone – Extension *Fax #*
orders@hach.com
E-Mail Address

Bid must be signed:
(original signature)

The Affidavit in this bid must be completed before your firm can be considered for award of this contract.

AFFIDAVIT

Comes the Affiant, Roxanna Nittmann, and after being first duly sworn under penalty of perjury as follows:

1. His/her name is Roxanna Nittmann and he/she is the individual submitting the bid or is the authorized representative of

Hach Company

the entity submitting the bid (hereinafter referred to as "Bidder").

2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.

3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.

4. Bidder has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.

5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.

6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as "Ethics Act."

7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught.

Roxanna Nittmann

STATE OF CO

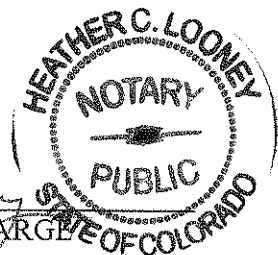
COUNTY OF Larimer

The foregoing instrument was subscribed, sworn to and acknowledged before me

by HEATHER LOONEY on this the 7th day of FEBRUARY, 2012.

My Commission expires: 8/4/2015

Heather C. Looney
NOTARY PUBLIC, STATE AT LARGE OF COLORADO



Please refer to Section II. Bid Conditions, Item "U" prior to completing this form.

I. GREEN PROCUREMENT

A. ENERGY

The Lexington-Fayette Urban County Government is committed to protecting our environment and being fiscally responsible to our citizens.

The Lexington-Fayette Urban County Government mandates the use of Energy Star compliant products if they are available in the marketplace (go to www.Energystar.gov). If these products are available, but not submitted in your pricing, your bid will be rejected as non-compliant.

ENERGY STAR is a government program that offers businesses and consumers energy-efficient solutions, making it easy to save money while protecting the environment for future generations.

Key Benefits

- These products use 25 to 50% less energy
- Reduced energy costs without compromising quality or performance
- Reduced air pollution because fewer fossil fuels are burned
- Significant return on investment
- Extended product life and decreased maintenance

B. GREEN SEAL CERTIFIED PRODUCTS

The Lexington-Fayette Urban County Government is also committed to using other environmentally friendly products that do not negatively impact our environment. Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education.

Go to www.Greenseal.org to find available certified products. These products will have a reduced impact on the environment and on human health. The products to be used must be pre-approved by the LFUCG prior to commencement of any work in any LFUCG facility. If a Green Seal product is not available, the LFUCG must provide a signed waiver to use an alternate product. Please provide information on the Green Seal products being used with your bid response.

C. GREEN COMMUNITY

The Lexington-Fayette Urban County Government (LFUCG) serves as a principal, along with the University of Kentucky and Fayette County Public Schools, in the Bluegrass Partnership for a Green Community. The Purchasing Team component of the Partnership collaborates on economy of scale purchasing that promotes and enhances environmental initiatives. Specifically, when applicable, each principal is interested in obtaining best value products and/or services which promote environment initiatives via solicitations and awards from the other principals.

If your company is the successful bidder on this Invitation For Bid, do you agree to extend the same product/service pricing to the other principals of the Bluegrass Partnership for a Green Community (i.e. University of Kentucky and Fayette County Schools) if requested?

Yes No

II. Bid Conditions

- A. No bid may be withdrawn for a period of sixty (60) days after the date and time set for opening.
- B. No bid may be altered after the date and time set for opening. In the case of obvious errors, the Division of Central Purchasing may permit the withdrawal of a bid. The decision as to whether a bid may be withdrawn shall be that of the Division of Central Purchasing.
- C. Acceptance of this proposal shall be enactment of an Ordinance by the Urban County Council.
- D. The bidder agrees that the Urban County Government reserves the right to reject any and all bids for either fiscal or technical reasons, and to award each part of the bid separately or all parts to one vendor.
- E. Minor exceptions may not eliminate the bidder. The decision as to whether any exception is minor shall be entirely that of the head of the requisitioning Department or Division and the Director of the Division of Central Purchasing. The Urban County Government may waive technicalities and informalities where such waiver would best serve the interests of the Urban County Government.
- F. Manufacturer's catalogue numbers, trade names, etc., where shown herein are for descriptive purposes and are to guide the bidder in interpreting the standard of quality, design, and performance desired, and shall not be construed to exclude proposals based on furnishing other types of materials and/or services. However, any substitution or departure proposed by the bidder must be clearly noted and described; otherwise, it will be assumed that the bidder intends to supply items specifically mentioned in this Invitation for Bids.
- G. The Urban County Government may require demonstrations of the materials proposed herein prior to acceptance of this proposal.
- H. Bids must be submitted on this form and must be signed by the bidder or his authorized representative. Unsigned bids will not be considered.
- I. Bids must be submitted prior to the date and time indicated for opening. Bids submitted after this time will not be considered.
- J. All bids mailed must be marked on the face of the envelope:

"Bid on #4-2012 Luminescent Dissolved Oxygen Analyzer w/Digital Controller"

and addressed to: Division of Central Purchasing
 200 East Main Street, Room 338
 Lexington, Kentucky 40507

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

- K. Bidder is requested to show both unit prices and lot prices. In the event of error, the unit price shall prevail.
- L. A certified check or Bid Bond in the amount of XX percent of the bid price must be attached hereto. This check must be made payable to the Lexington-Fayette Urban County Government, and will be returned when the material and/or services specified herein have been delivered in accordance with specifications. In the event of failure to perform within the time period set forth

in this bid, it is agreed the certified check may be cashed and the funds retained by the Lexington-Fayette Urban County Government as liquidated damages. Checks of unsuccessful bidders will be returned when the bid has been awarded.

- M. The delivery dates specified by bidder may be a factor in the determination of the successful bidder.
- N. Tabulations of bids received may be mailed to bidders. Bidders requesting tabulations must enclose a stamped, self-addressed envelope with the bid.
- O. The Lexington-Fayette Urban County Government is exempt from Kentucky Sales Tax and Federal Excise Tax on materials purchased from this bid invitation. Materials purchased by the bidder for construction projects are not tax exempt and are the sole responsibility of the bidder.
- P. All material furnished hereunder must be in full compliance with OSHA regulations.
- Q. If more than one bid is offered by one party, or by any person or persons representing a party, all such bids shall be rejected.
- R. Signature on the face of this bid by the Bidder or his authorized representative shall be construed as acceptance of and compliance with all terms and conditions contained herein.
- S. The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.
- T. The Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any county, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- (1) *The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;*
- (2) *The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;*
- (3) *The contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and*
- (4) *The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.*

The Act further provides:

KRS 45.610. Hiring minorities - Information required

- (1) *For the length of the contract, each contractor shall hire minorities from other sources*

within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.

- (2) *Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.*

KRS 45.620. Action against contractor - Hiring of minority contractor or subcontractor

- (1) *If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.*
- (2) *If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 to 45.640.*
- (3) *The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.*

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions above quoted to be included as special conditions in each contract. In the case of a contract exceeding \$250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

- U. Any party, firm or individual submitting a proposal pursuant to this invitation must be in compliance with the requirements of the Lexington-Fayette Urban County Government regarding taxes and fees before they can be considered for award of this invitation and must maintain a "current" status with regard to those taxes and fees throughout the term of the contract. The contractor must be in compliance with Chapter 13 from the Code of Ordinances

of the Lexington-Fayette Urban County Government. The contractor must be in compliance with Ordinance 35-2000 pursuant to contractor registration with the Division of Building Inspection. If applicable, said business must have a Fayette County business license.

Pursuant to KRS 45A.343 and KRS 45A.345, the contractor shall

- (1) *Reveal any final determination of a violation by the contractor within the previous five year period pursuant to KRS Chapters 136 (corporation and utility taxes), 139 (sales and use taxes), 141 (income taxes), 337 (wages and hours), 338 (occupational safety and health of employees), 341 (unemployment and compensation) and 342 (labor and human rights) that apply to the contractor; and*
- (2) *Be in continuous compliance with the above-mentioned KRS provisions that apply to the contractor for the duration of the contract.*

A contractor's failure to reveal the above or to comply with such provisions for the duration of the contract shall be grounds for cancellation of the contract and disqualification of the contractor from eligibility for future contracts for a period of two (2) years.

- V. Vendors who respond to this invitation have the right to file a notice of contention associated with the bid process or to file a notice of appeal of the recommendation made by the Director of Central Purchasing resulting from this invitation.

Notice of contention with the bid process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his/her contention with the bid process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Central Purchasing shall promptly respond in writing findings as to the compliance with bid processes. If, based on this review, a bid process irregularity is deemed to have occurred the Director of Central Purchasing will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a bid recommendation must be filed within 3 business days of the bid recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Central Purchasing shall in writing, affirm or withdraw the recommendation.

III. Procurement Contract Bid Conditions

- A. The terms of this agreement shall be for 1 year from the date of acceptance of this contract by the Lexington-Fayette Urban County Government. This agreement may be extended for an additional 2-(1) year renewals upon the written agreement of the bidder and the Lexington-Fayette Urban County Government. Said agreement must be in writing and must be executed prior to the expiration of the current agreement.
- B. Price Changes (Space Checked Applies)
- (XXX) 1. Prices quoted in response to the Invitation shall be firm prices for the first 90 days of the Procurement Contract. After 90 days, prices may be subject to revision and such changes shall be based on general industry changes. Revision may be either increases or decreases and may be requested by either party. There will be no more than one (1) price adjustment per quarter. Requests for price changes shall be received in writing at least twenty (20) days prior to the effective date and are subject to written acceptance before becoming effective. Proof of the validity of a request for revision shall be responsibility of the requesting party. The Lexington-Fayette Urban County Government shall receive the benefit of any decline that the seller shall offer his other accounts.
- 0 2. No provision for price change is made herein. Prices are to be firm for the term of this contract.
- 0 3. Procurement Level Contract
- C. If any contract item is not available from the vendor, the Lexington-Fayette Urban County Government, at its option, may permit the item to be back-ordered or may procure the item on the open market.
- D. All invoices must bear reference to the Lexington-Fayette Urban County Government Purchasing document numbers which are being billed.
- E. This contract may be canceled by either party thirty (30) days after delivery by canceling party of written notice of intent to cancel to the other contracting party.
- F. This contract may be canceled by the Lexington-Fayette Urban County Government if it is determined that the Bidder has failed to perform under the terms of this agreement, such cancellation to be effective upon receipt of written notice of cancellation by the Bidder.
- G. No substitutions for articles specified herein may be made without prior approval of the Division of Central Purchasing.

EQUAL OPPORTUNITY AGREEMENT

The Law

- Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.
- Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and sub-contractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.
- Section 503 of the Rehabilitation Act of 1973 states:

The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.

- Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal contracts.
- Section 206(A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractors may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped and aged persons.

Roxanna Nittmann

Signature

Hach Company

Name of Business

**LUMINESCENT DISSOLVED OXYGEN ANALYZER
WITH DIGITAL CONTROLLER FOR DIGITAL SENSORS**

BID #4-2012

PART 1 GENERAL

1.1 SCOPE

The successful bidder will provide a one (1) year unit price contract, with two (2) one (1) year renewal(s), for luminescent dissolved oxygen (LDO) analyzers with the digital controllers for digital sensors and all related wire and mounting assemblies, that is at a minimum, equal to the HACH LDO Probe and sc100 Controller.

The Lexington-Fayette Urban County Government anticipates equipment purchased from this contract will be for the purpose of new installations due to process change(s) and/or replacement of existing equipment as necessary due to end of serviceable life expectancy and/or other routine service and/or maintenance needs. There is no guarantee on the quantity of individual specific components that will be purchased during the duration of the unit price contract.

1.2 SUBMITTALS

- A. Manufacturers data and specifications of the Luminescent Dissolved Oxygen Sensor and Controller.
- B. Copy of the manufacturer's equipment warranty detailing the duration of the warranty and all limitations to the warranty.
- D. A copy of this specification with each paragraph check marked to show specification compliance or marked to show deviations. All exceptions should be clearly noted.

1.3 MEASUREMENT PROCEDURES

- A. The method of measurement will be with a probe using luminescent sensor technology.

1.4 ALTERNATES

- A. Other methods of dissolved oxygen measurement, such as probes that use a selective membrane or those that use electrolytes, are not acceptable.

1.5 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. Measurement range: 0.00 to 20 mg/L
 - 2. Accuracy: ± 0.2 percent of span
 - 3. Resolution: 0.01 mg/L
 - 4. Repeatability: ± 0.5 percent of span
 - 5. Sensitivity: ± 0.05 percent of span
 - 6. Response time: 90 percent in less than 30 seconds and 95 percent in less than 90 seconds at 20°C

1.6 CERTIFICATIONS

- A. EMI/RFI conformance exceeds U.S. and meets European standards for conducted and radiated emissions and immunity.
- B. Certified CE compliant for applications as specified by EN 50081-1 for emissions and EN 50082-2 for immunity.

- C. General Purpose: CSA/CSANRTL and FM
- D. Meet EPA CFR 136

1.7 ENVIRONMENTAL REQUIREMENTS

A. Operational Criteria

- 1. Operating temperature:
 - a. Probe: 0 to 50 degrees C
 - b. Controller: -20 to 60 degrees C
- 2. Relative humidity: 95 percent, non condensing
- 3. Immersion depth: 107 meters, maximum
- 4. Immersion pressure: 1050 kPa, maximum
- 5. Distance, analyzer to sensor: 300 meters, maximum

1.7 WARRANTY

- A. The probe includes a three-year warranty from the date of shipment.
- B. The sensor cap includes a one-year warranty from the date of shipment.
- C. The controller includes a one-year warranty from the date of shipment.

1.8 MAINTENANCE SERVICE

A. Scheduled maintenance:

- 1. Sensor cleaning: 90 days or depending on conditions
- 2. Sensor and sensor cap inspection: 90 days
- 3. Sensor cap replacement: annually
- 4. Calibration: per regulatory agency schedule

B. Unscheduled maintenance

- 1. Replace fuse
- 2. Clean instrument enclosure

PART 2 PRODUCTS

2.1 MANUFACTURERS

The recommended LDO analyzer and controller must at a minimum, equal the HACH LDO Probe and sc100 Controller.

2.2 MANUFACTURED UNIT

- A. The LDO probe consists of continuous-reading probe, replaceable sensor cap, and 10-meter integral cable.
- B. The sc100 controller is microprocessor-based and is housed in a NEMA 4X enclosure, rated IP66.

2.3 EQUIPMENT

- A. The sensor is made of polybutyl methacrolate.
- B. The probe is made of foamed Noryl® and 316 stainless steel.
- C. The probe is entirely corrosion-resistant and fully immersible.
- D. The probe does not require sample conditioning or electrolyte solutions.
- E. The probe interface to the controller is MODBUS®.
- F. The operation of the probe is not affected by H₂S, pH, K⁺¹, Na⁺¹, Mg⁺², Ca⁺², NH₄⁺¹, Al⁺³, Pb⁺², Cd⁺², Zn⁺², Cr (total), Fe⁺², Fe⁺³, Mn⁺², Cu⁺², Mi⁺², Co⁺², CN⁻¹, NO₃⁻¹, SO₄⁻², S⁻², PO₄⁺³, Cl⁻¹, anion active tensides, crude oils, or Cl₂⁻¹.
- G. The sc100 operates using 100 or 230 volt, 50/60 Hz power.

- H. The sc100 displays dissolved oxygen measurement, temperature, and menu-driven operation system.
- I. The sc100 is equipped with temperature compensation.
- J. The sc100 can support up to two probes.
- K. The sc100 has a data logger with RS-232 capability.
- L. Calibration methods:
 - 1. Sample calibration: Sample is compared to a standard instrument or the Winkler Titration method.
 - 2. Air calibration: One point, 100 percent water-saturated air.
- M. Three SPDT relays, user-configurable contacts rated 100 to 230 Vac, 5 Amp resistive maximum.
- N. Two analog 4-20 mA outputs and/or optional selectable digital I/O, maximum impedance 500 Ohms.
- O. Alarms
 - 1. Low alarm point
 - 2. Low alarm point deadband
 - 3. High alarm point
 - 4. High alarm point deadband
 - 5. Off delay
 - 6. On delay
- P. Controls
 - 1. High/low phasing
 - 2. Setpoint
 - 3. Deadband
 - 4. Overfeed timer
 - 5. Off delay
 - 6. On delay
- Q. Communication
 - 1. RS-232 (optional)
 - 2. RS-485 (MODBUS): Advanced communications/networking with PLC or SCADA system directly from analyzer.
- R. All user settings of the sc100 are retained indefinitely in memory (non-volatile, EEPROM).

2.4 COMPONENTS

- A. Standard equipment:
 - 1. Analyzer
 - 2. Probe
 - 3. Manual
- B. Dimensions
 - 1. Probe
 - a. Diameter: 60 mm (2.4 in.)
 - b. Length: 290 mm (11.5 in.)
 - 2. Controller
 - a. 1/2 DIN
 - b. Height: 144 mm (5.7 in.)
 - c. Width: 144 mm (5.7 in.)
 - d. Depth: 150 mm (5.9 in.)
- C. Weight
 - 1. Probe: 3 pounds, 2 ounces (1.4 kg)
 - 2. Controller: 3.5 pounds (1.6 kg)
- D. Sensor cable: 30 foot, integral

2.5 ACCESSORIES

- A. Replacement sensor
- B. Sun shield
- C. Junction box for cable extension
- D. Extension cable
- E. Pole mount kit
- F. Ball float mount kit
- G. Air blast cleaning system

2.6 PRODUCT DATA

- A. The following information shall be provided:
 - 1. 2 copies of applicable operation and maintenance information
 - 2. Copy of warranty stated in the bid.

PART 3 EXECUTION

3.01 INSTALLATION

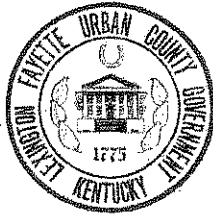
The Luminescent Dissolved Oxygen sensors with the controllers will be installed by plant personnel. The sensors will be installed in the aeration tanks to consistently measure the DO of the tanks.

3.02 TRAINING

A minimum 1day of field service shall be provided. The field service representative shall be on site to supervise installation of one of the LDO sensors, educate personnel in programming the analyzer and to start up the equipment.

Please write in the unit price bid for the 7 items listed below:

| <u>ITEM DESCRIPTION</u> | <u>LFUCG</u> <u>Commodity</u> <u>Number</u> | <u>Manufacturer/Model</u> <small>(Price for one Model Type per specifications)</small> | <u>UNIT PRICE</u> |
|---|---|---|-------------------|
| Controller for measuring Dissolved Oxygen 0-20ppm | 890-28-00-0001 | | |
| LDO probe with 30 foot integral cable | 890-28-00-0002 | | |
| Handrail Pole Mount kit for the LDO probes | 890-28-00-0003 | *Please note Hach pricing has been provided on addendum 3. | |
| Junction box for cable extensions | 890-28-00-0004 | | |
| 25 foot (7.7 meters) extension cable | 890-28-00-0005 | | |
| 50 foot (15 meters) extension cable | 890-28-00-0006 | | |
| 100 foot (31 meters) extension cable | 890-28-00-0007 | | |



Lexington-Fayette Urban County Government
DEPARTMENT OF FINANCE & ADMINISTRATION

Jim Gray
Mayor

Jane C. Driskell
Commissioner

ADDENDUM #1

Bid Number: **4-2012**

Date: January 30, 2012


Subject: **Luminescent Dissolved Oxygen Analyzer**
w/Digital Controller

Please address inquiries to:
Betty Landrum (859) 258-3320

TO ALL PROSPECTIVE BIDDERS:

Please be advised of the following clarifications to the above referenced bid:

- 1) Bid Opening date has been changed to **February 9, 2012 at 2:00 PM local time.**
- 2 Addendum #2 will follow with REVISED specs.



Brian Marcum, Director
Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged. This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: **Hach Company**

ADDRESS: **5600 Lindbergh Dr Loveland CO 80538**

SIGNATURE OF BIDDER: 



Lexington-Fayette Urban County Government
DEPARTMENT OF FINANCE & ADMINISTRATION

Jim Gray
Mayor

Jane C. Driskell
Commissioner

ADDENDUM #2

Bid Number: 4-2012

Date: January 31, 2012

Subject: Luminescent Dissolved Oxygen Analyzer
w/Digital Controller

Please address inquiries to:
Betty Landrum (859) 258-3320

TO ALL PROSPECTIVE BIDDERS:

Please be advised of the following clarifications to the above referenced bid:

PART 3 EXECUTION - REVISED

3.01 TRAINING

At the discretion of Division of Water Quality a minimum one (1) day of field service may be necessary. If deemed necessary the field service representative may be required to be on site to supervise installation of one of the LDO sensors, educate personnel in programming the analyzer and to start up the equipment.

Please write in the unit price bid for the item listed below:

| <u>ITEM DESCRIPTION</u> | <u>LFUCG Commodity Number</u> | <u>Manufacturer/Model</u> (Price for one Model Type per specifications) | <u>UNIT PRICE</u> |
|--|---------------------------------------|---|-------------------|
| (1) day of field service training by service representative | | Hach Company | \$1926.00 |

ADDITIONAL SPECIFICATIONS & PRICING

PART 4 GENERAL

4.1 Section includes:

- A. A modular single or dual channel controller that works with digital sensors and analog sensor modules.

4.2 Measurement Procedures

- A. Microprocessor-based sensor controller.
- B. Change digital sensors connected to the controller by unplugging and plugging sensors as necessary.
- C. Change analog sensors modules connected to the controller by unplugging and plugging analog sensor modules as necessary.

4.3 Alternates

- A. Parameter-specific controllers that do not allow changing parameter configurations in the field are unacceptable.

4.4 System Description

- A. Performance Requirements
- B. DO sensor module
- C. Measurement range:
 - 1. 0 to 40 ppm
 - 2. 200% saturation
- D. Repeatability: $\pm 0.05\%$ of range
- E. Response time: 0.5 s
- F. Temperature range: 0 to 50 °C
 - 1. 20 to 200,000 $\mu\text{S}/\text{cm}$, $K=1: \pm 1\%$ of reading
- G. Response time: 0.5 s
- G. Temperature range: -20 to 200 °C

4.5 Certifications

- A. EMC: Certified CE compliant for conducted and radiated emissions (EN 50081-2) and immunity (EN 61000-6-2).
- B. General purpose: UL through ETL.

4.6 Environmental Requirements

- A. Operational Criteria
 - 1. Temperature: -4.0 to 140.0 °F (-20.0 to 60.0 °C)
 - 2. Relative humidity: 0 to 95%, non-condensing

4.7 Warranty

- A. Warranted for two years from date of shipment from manufacturers defects.

4.8 Maintenance Service

- A. Clean controller keypad
- B. Calibrate mA output signals

PART 5 PRODUCTS

5.1 Manufacturer

- A. Hach Company, Loveland, CO
- B. Hach model sc200 Digital Controller or equal

5.2 Manufactured Unit

- A. The controller provides connections for up to 29 Hach digital and analog sensor families for 15 different parameters.
- B. The controller is available with the following power requirements:
 - 1. AC powered: 100 to 240 Vac \pm 10%, 50/60 Hz; 15 W with 7 W sensor/network card load, 37 W with 25 W sensor/network card load.
- D. The controller uses a menu-driven operation system.
- E. The controller display is graphic dot matrix LCD with LED backlighting.
- F. The controller is equipped with a real-time clock.
- G. The controller is equipped with two security levels.
- H. Four electromechanical, UL rated, SPDT relays (Form C) are provided for user-configurable contacts rated 100 to 230 Vac, 5 Amp at 30 Vdc resistive maximum.
 - a. The following can be programmed:
 - 1. Alarm
 - 2. Warning
 - 3. Timer/scheduled cleaning
 - 4. Feeder control
 - 5. Event control
 - 6. Pulse width modulation
 - 7. Frequency modulation
 - b. The following can be assigned:
 - 1. Primary value measurement I
 - 2. Secondary value measurement I
 - 3. 3rd value measurement I
 - 4. 4th value measurement I
 - 5. Primary value Measurement II
 - 6. Secondary value measurement II
 - 7. 3rd value measurement II
 - 8. 4th value measurement II
 - 9. Real time clock
 - 10. Calculated values
- I. Two analog 0/4-20 mA outputs are provided with a maximum impedance of 500 ohms.
 - a. The following can be programmed:
 - 1. Alarms:
 - i. Low alarm point
 - ii. Low alarm point deadband
 - iii. High alarm point

- iv. High alarm point deadband
- v. Off delay
- vi. On delay
- 2. Controls:
 - i. Linear
 - i. Bi-linear
 - ii. Logarithmic
 - iii. PID
- b. The following can be assigned:
 - 1. Primary value measurement I
 - 2. Secondary value measurement I
 - 3. 3rd value measurement I
 - 4. 4th value measurement I
 - 5. Primary value measurement II
 - 6. Secondary value measurement II
 - 7. 3rd value measurement II
 - 8. 4th value measurement II
 - 9. Calculated values
- J. All user settings of the controller are retained for 10 years in flash memory.
- K. The controller is equipped with a system check for:
 - 1. Power up test (monitoring and shutdown)
 - 2. Total power draw
 - 3. Memory devices
 - 4. Temperature mother board

5.3 Equipment

- A. Materials
 - 1. Housing: polycarbonate, aluminum (powder coated), and stainless steel
 - 2. Rating: NEMA 4X enclosure, rated IP66
- B. Conduit openings: 0.5 in. NPT

5.4 Components

- A. Standard equipment
 - 1. Controller
 - 2. Mounting hardware for wall, pipe, and panel mounting
- B. Dimensions: 1/2 DIN (144 x 144 x 180 mm (5.7 x 5.7 x 7.1 in.))
- C. Weight: 1.6 kg (3.5 lbs.)

5.5 Accessories

- A. Weather protection shield
- B. Sun screen
- C. RS-232 / RS-485 MODBUS module
- D. PROFIBUS DP module
- E. Additional mA output module
- F. 4-20 Ma input module
- G. SD card reader (USB) for connection to PC
- H. GB SD Card
- I. Ph and DO Module

PART 6 EXECUTION

6.1 Preparation

- A. The sensor may need to be installed with additional accessories depending on its application.
 - 1. Mount on rail, panel, pipe, or wall.
 - 2. Sensor to analyzer distance: 300 m (985 ft.)


6.2 Installation

- A. DWQ personnel will install the analyzer in strict accordance with the manufacturer's instructions and recommendation.
- B. Manufacturer's representative will include a half-day of start-up service by a factory-trained technician, if requested.
 - 1. DWQ staff will schedule a date and time for start-up.
 - 2. DWQ may require the following people to be present during the start-up procedure.
 - 3. Hach Company factory trained representative

Please write in the unit price bid for the items listed below:

| ITEM DESCRIPTION | LFUCG Commodity Number | Manufacturer/Model (Price for one Model Type per Specifications) | UNIT PRICE |
|---|------------------------|--|------------|
| Controller for Measuring Dissolved Oxygen 0-20 ppm Hach part # LXV404.99.00552 | | | |
| Weather Sun Shield for Controller Hach part # 9220600 | | | |
| UV Protection Screen for Controller Hach part # 8809200 | | | |
| SD Card Reader (USB) for connection to PC Hach part # 9218200 | | | |
| 4 GB SD Card Hach part # 9218100 | | | |
| D.O. Module for controller Hach part # 9012900 | | | |
| 4-20 mA Input Module Hach part # 9012800 | | | |
| Modbus Network Module Hach part # 9013200 | | | |
| Profibus Network Module Hach part # 9173900 | | | |
| 4-20 mA output Module Hach part # 9334600 | | | |
| Power Cord with strain relief for controller Hach part # 9202900 | | | |
| LDO probe with 32.8 ft integral cable Hach part # 5790000 | | | |
| Handrail Pole Mount kit for the LDO probes Hach part # 5794400 | | | |
| Ball Float Mount Kit for the LDO Probes Hach part # 5794300 | | | |

| | | | |
|---|--|--|--|
| Digital Termination box for cable extensions Hach part # 5867000 | | | |
| 25 foot (7.7 meters) extension cable Hach part # 5796000 | | | |
| 50 foot (15 meters) extension cable Hach part # 5796100 | | | |
| 100 foot (31 meters) extension cable Hach part # 5796200 | | | |
| Air Blast Cleaning System Hach part # 6860001 | | | |
| LDO Replacement sensor cap Hach part # 5791100 | | | |
| Half day of on site start up and training on an as needed basis | | | |
| Full day of on site start up and training on an as needed basis | | | |


 Brian Marcum, Director
 Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged. This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: **Hach Company**

ADDRESS: **5600 Lindbergh Dr., Loveland CO 80538**

SIGNATURE OF BIDDER: *Roxanna Neltman*



Lexington-Fayette Urban County Government
DEPARTMENT OF FINANCE & ADMINISTRATION

Jim Gray
Mayor

Jane C. Driskell
Commissioner

ADDENDUM #3

Bid Number: **4-2012**

Date: February 6, 2012

Subject: **Luminescent Dissolved Oxygen Analyzer
w/Digital Controller**

Please address inquiries to:
Betty Landrum (859) 258-3320

TO ALL PROSPECTIVE BIDDERS:

Please be advised of the following clarifications to the above referenced bid:

- 1) The pricing table included in the original bid packet for seven (7) items is no longer considered part of this bid and should not be submitted. Also, the specifications noted 'Additional Specifications & Pricing' that was part of Addendum #2 has been changed to read as follows:
- 2) **All bids are to be submitted on the pricing table shown below.**

REVISED - ADDITIONAL SPECIFICATIONS & PRICING

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 - iv. High alarm point deadband
 - v. Off delay
 - vi. On delay
 - 2. Controls:
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 - ii. Logarithmic

iii. PID

- b. The following can be assigned:
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- H. 4 GB SD Card
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PART 6 EXECUTION

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| Controller for Measuring Dissolved Oxygen 0-20 ppm Hach part # LXV404.99.00552 | | Hach Company Part # LXV404.99.00552 | \$1570.35 |
| Weather Sun Shield for Controller Hach part # 9220600 | | Hach Company Part # 9220600 | \$160.55 |
| UV Protection Screen for Controller Hach part # 8809200 | | Hach Company Part # 8809200 | \$120.65 |
| SD Card Reader (USB) for connection to PC Hach part # 9218200 | | Hach Company Part # 9218200 | \$33.01 |
| 4 GB SD Card Hach part # 9218100 | | Hach Company Part # 9218100 | \$43.94 |
| D.O. Module for controller Hach part # 9012900 | | Hach Company Part # 9012900 | \$310.65 |
| 4-20 mA Input Module Hach part # 9012800 | | Hach Company Part # 9012800 | \$310.65 |

| | | |
|--|--|------------------|
| Modbus Network Module Hach part # 9013200 | Hach Company Part # 9013200 | \$432.25 |
| Profibus Network Module Hach part # 9173900 | Hach Company Part # 9173900 | \$432.25 |
| 4-20 mA output Module Hach part # 9334600 | Hach Company Part # 9334600 | \$269.80 |
| Power Cord with strain relief for controller Hach part # 9202900 | Hach Company Part # 9202900 | \$46.50 |
| LDO probe with 32.8 ft integral cable Hach part # 5790000 | Hach Company Part # 5790000 | \$1570.35 |
| Handrail Pole Mount kit for the LDO probes Hach part # 5794400 | Hach Company Part # 5794400 | \$394.25 |
| Ball Float Mount Kit for the LDO Probes Hach part # 5794300 | Hach Company Part # 5794300 | \$541.50 |
| Digital Termination box for cable extensions Hach part # 5867000 | Hach Company Part # 5867000 | \$130.15 |
| 25 foot (7.7 meters) extension cable Hach part # 5796000 | Hach Company Part# 5796000 | \$151.05 |
| 50 foot (15 meters) extension cable Hach part # 5796100 | Hach Company Part # 5796100 | \$226.10 |
| 100 foot (31 meters) extension cable Hach part # 5796200 | Hach Company Part # 5796200 | \$301.15 |
| Air Blast Cleaning System Hach part # 6860001 | Hach Company Part # 6860001 | \$1711.90 |
| LDO Replacement sensor cap Hach part # 5791100 | Hach Company Part # 5791100 | \$151.05 |
| LDO Model 2 Probe Hach part #9020000 | Hach Company Part # 9020000 | \$1570.35 |
| LDO Model 2 Sensor Cap Hach part #902110 | Hach Company Part # 9021100 | \$170.05 |
| LDO Model 2 Pole Mount Kit Hach part #9253000 | Hach Company Part # 9253000 | \$394.25 |
| LDO Model 2 Ball Float Mount Hach part # 9253100 | Hach Company Part # 9253100 | \$541.50 |

| | | |
|---|---|------------------|
| LDO Model 2 Union Mount Hach part #9257000 | Hach Company Part # 9257000 | \$308.75 |
| LDO Model 2 1" NPT flow cell Hach part #7300800 | Hach Company Part # 7300800 | \$400.90 |
| Half day of on site start up and training on an as needed basis | Hach Company half day of start up services | \$1050.00 |
| Full day of on site start up and training on an as needed basis | Hach Company full day of start up services | \$1926.00 |


 Brian Marcum, Director
 Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged. This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: Hach Company

ADDRESS: 5600 Lindbergh Dr Loveland CO 80538

SIGNATURE OF BIDDER: 

HACH sc200 Controller and Hach LDO sensor

Warranty

Hach Company warrants the sc200 Controller to the original purchaser against any defects that are due to faulty material or workmanship for a period of two years from date of shipment unless otherwise noted in the product manual. Hach Company warrants the LDO sensor for a period of three years to the original purchaser against any defects that are due to faulty material or workmanship for a period of three years from date of shipment unless otherwise noted in the product manual. Warranty is to the original purchaser against any defects that are due to faulty material or workmanship for the period noted above.

In the event that a defect is discovered during the warranty period, Hach Company agrees that, at its option, it will repair or replace the defective product or refund the purchase price excluding original shipping and handling charges. Any product repaired or replaced under this warranty will be warranted only for the remainder of the original product warranty period.

This warranty does not apply to consumable products such as chemical reagents; or consumable components of a product, such as, but not limited to, lamps and tubing. Contact Hach Company or your distributor to initiate warranty support. Products may not be returned without authorization from Hach Company.

Limitations

This warranty does not cover:

- Damage caused by acts of God, natural disaster, labor unrest, acts of war (declared or undeclared), terrorism, civil strife or acts of any governmental jurisdiction
- Damage caused by misuse, neglect, accident or improper application or installation
- Damage caused by any repair or attempted repair not authorized by Hach Company
- Any product not used in accordance with the instructions furnished by Hach Company
- Freight charges to return merchandise to Hach Company
- Freight charges on expedited or express shipment of warranted parts or product
- Travel fees associated with on-site warranty repair

This warranty contains the sole express warranty made by Hach Company in connection with its products. All implied warranties, including without limitation, the warranties of merchantability and fitness for a particular purpose, are expressly disclaimed.

Some states within the United States do not allow the disclaimer of implied warranties and if this is true in your state the above limitation may not apply to you. This warranty gives you specific rights, and you may also have other rights that vary from state to state.

This warranty constitutes the final, complete, and exclusive statement of warranty terms and no person is authorized to make any other warranties or representations on behalf of Hach Company.

Limitation of Remedies

The remedies of repair, replacement or refund of purchase price as stated above are the exclusive remedies for the breach of this warranty. On the basis of strict liability or under any other legal theory, in no event shall Hach Company be liable for any incidental or consequential damages of any kind for breach of warranty or negligence.

Hach sc200™ Universal Controller

Controller—Multi-Parameter

Product Overview

One Controller for the Broadest Range of Sensors

The sc200 Universal Controller is the most versatile controller on the market. The new sc200 controller is the only controller that allows the use of digital and analog sensors, either alone or in combination, to provide compatibility with the broadest range of sensors. It replaces the Hach sc100 digital and GLI53 analog controllers with advanced features for easier operator use.

The sc200 controller platform can be configured to operate either 2 Digital Sensor Inputs, or 1 or 2 Analog Sensor Inputs, or a combination of Digital and Analog Sensor Inputs. Customers may choose their communication options from a variety of offerings including MODBUS RTU, Profibus DPV1, and HART.



Choose from up to 29 digital or analog sensors for up to 15 different parameters.

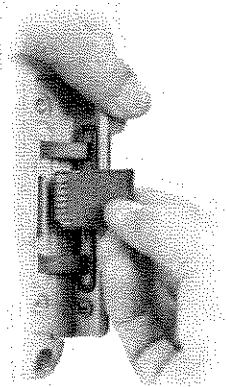
Features and Benefits

Maximum Versatility

- Standardized controller eliminates the need for a variety of dedicated controllers
- Multi-channel controller operates either 1 or 2 sensors reducing inventory holding costs and providing an inexpensive option to add a second sensor at a later time
- "Plug and Play" operation with all Hach digital sensors
- True dual sensor controller provides 4-20 mA outputs to transmit primary and secondary measurement values

Ease of Use and Confidence in Results

- New display and guided calibration procedures reduce operator error
- Password protected SD card reader offers a simple solution for data download and transfer, and sc200 and digital sensor configuration file duplication and backup
- Visual warning system provides critical alerts



Communication Options

- MODBUS RS232/RS485, Profibus DPV1, or HART



Controller Configuration

Functionality

2 Channel Digital Controller

- Maximum versatility and flexibility:
- Plug and play with all Hach digital sensors
 - Mix and match with Hach digital and GLI analog sensors

2 Channel Controller with 1 Analog and 1 Digital Sensor Input

- Plug and play with any one Hach digital sensor
- Mix and match with any one GLI analog sensor

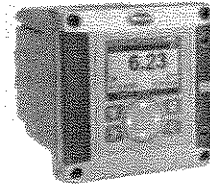
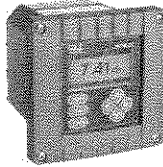
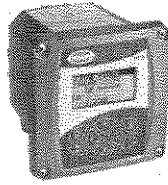
1 or 2 Channel Analog Controller

- Mix and match up to two GLI analog sensors

DW = drinking water WW = wastewater municipal PW = pure water / power
IW = industrial water E = environmental C = collections FB = food and beverage

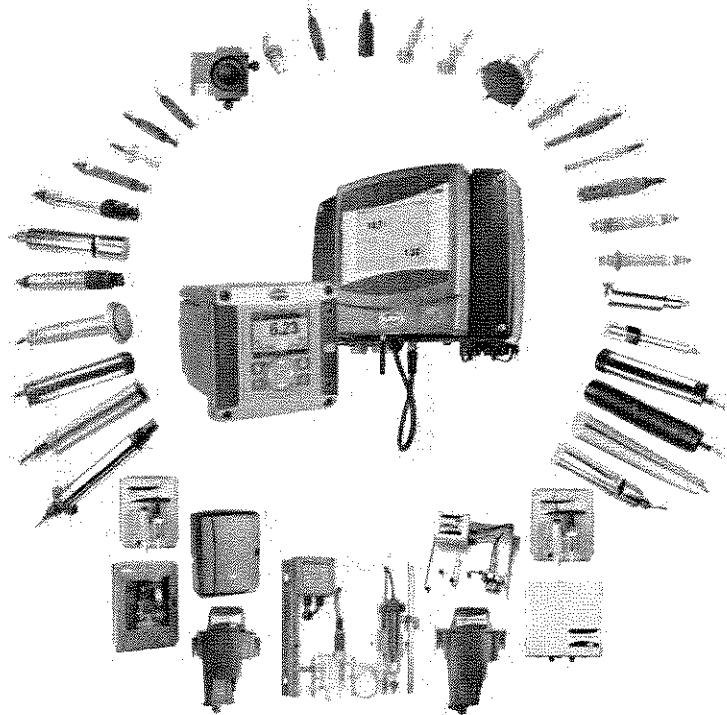


Controller Comparison



| Features | Previous Models | | NEW! | Benefits |
|-----------------------|---|--|--|---|
| | sc100™ Controller | GLI53 Controller | sc200™ Controller | |
| Display | 64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.) | 64 x 128 pixels 33 x 66 mm (1.3 x 2.6 in.) | 160 x 240 pixels 48 x 68 mm (1.89 x 2.67 in.) Transreflective | <ul style="list-style-type: none"> Improved user interface—50% bigger Easier to read in daylight and sunlight |
| Data Management | irDA Port/PDA Service Cable | N/A | SD Card Service Cable | <ul style="list-style-type: none"> Simplifies data transfer Standardized accessories/ max compatibility |
| Sensor Inputs | 2 Max Direct Digital Analog via External Gateway | 2 Max Analog Depending on Parameter | 2 Max Digital and/or Analog with Sensor Card | <ul style="list-style-type: none"> Simplifies analog sensor connections Works with GLI and Hach's digital sensors |
| Analog Inputs | N/A | N/A | 1 Analog Input Signal Analog 4-20mA Card | <ul style="list-style-type: none"> Enables non-sc analyzer monitoring Accepts mA signals from other analyzers for local display Consolidates analog mA signals to a digital output |
| 4-20 mA Outputs | 2 Standard | 2 Standard | 2 Standard Optional 3 Additional | <ul style="list-style-type: none"> Total of five (5) 4-20 mA outputs allows multiple mA outputs per sensor input |
| Digital Communication | MODBUS RS232/RS485 Profibus DP V1.0 | HART | MODBUS RS232/RS485 Profibus DP V1.0 HART 7.2 | <ul style="list-style-type: none"> Unprecedented combination of sensor breadth and digital communication options |

To complete your measurement system, choose from Hach's portfolio of controller and sensor products...



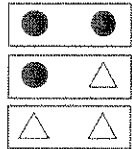
Choose from Hach's Broad Range of Digital and Analog Sensors

| Parameter | Sensor | Digital or Analog |
|------------------|---|-------------------|
| Ammonia | AMTAX™ sc, NH4D sc | ● |
| Chlorine | CLF10 sc, CLT10 sc, 9184 sc | ● |
| Chlorine Dioxide | 9185 sc | ● |
| Conductivity | 3400, 3700 | △ |
| Dissolved Oxygen | LDO™, 5740 sc | ● |
| Dissolved Oxygen | 5500 | △ |
| Flow | U53, F53 Sensors | △ |
| Nitrate | NITRATAX™ sc, NO3D sc | ● |
| Oil in Water | FP360 sc | ● |
| Organics | UVAS sc | ● |
| Ozone | 9187 sc | ● |
| pH/ORP | pHD | ● |
| pH/ORP | pHD, pH Combination, LCP | △ |
| Phosphate | PHOSPHAX™ sc | ● |
| Sludge Level | SONATAX™ sc | ● |
| Suspended Solids | SOLITAX™ sc, TSS sc | ● |
| Turbidity | 1720E, FT660 sc, SS7 sc, ULTRATURB sc, SOLITAX sc | ● |

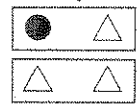
● = Digital △ = Analog

The diagrams below demonstrate the versatility and flexibility for the base controller units. Connect any of the appropriate sensors listed above to meet your measurement needs. Operation of analog sensors require the controller to be equipped with the appropriate sensor card.

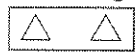
2 Channel Digital Controller Configurations



2 Channel Controller with 1 Analog and 1 Digital Sensor Input Configurations



2 Channel Analog Controller Configurations



Engineering Specifications

1. The controller shall be a microprocessor based instrument.
2. The enclosure shall be 1/2 DIN format, NEMA4X rated for wall, pole and panel mounting.
3. The controller shall be available in either 100–240 Vac 50/60 Hz or 24 Vdc power supply versions.
4. The controller shall offer two analog 0/4-20 mA output signals with independent PID control functions and optional additional 4-20 mA outputs.
5. The controller shall accept either Digital Sensors or Sensor Modules for analog pH, Conductivity, DO, Paddle Wheel Flow, and Ultra Sonic Flow sensors.
6. The controller shall have single channel and dual channel options.
7. The controller shall have options for MODBUS RS232, MODBUS RS485, Profibus DPV1, and HART 7.2 communication.
8. The display contrast shall be adjustable.
9. The Menu shall be available in at least 19 different languages.
10. The controller shall have 2 Data logs, 128 kb each. The logged data shall be downloadable on a SD card in XML format.
11. The controller shall be Hach Company sc200 Universal Controller.

Specifications*

sc200 General Specifications

Display

Graphic dot matrix LCD with LED backlighting
Transreflective

Display Size

48 x 68 mm (1.89 x 2.67 in.)

Display Resolution

240 x 160 pixels

Height x Width x Depth

144 x 144 x 181 mm (5.7 x 5.7 x 7.1 in.)

Weight

1.70 kg (3.75 lb)

Power Requirements

100 – 240 Vac $\pm 10\%$, 50/60 Hz
24 Vdc -15% + 20%

Operating Temperature

-20 to 60°C (-4 to 140°F), 0 to 95% RH non-condensing

Storage Temperature

-20 to 70°C (-4 to 158°F), 0 to 95% RH non-condensing

Analog Output Signal

Two 0/4-20 mA isolated current outputs, max 500 Ω

Operational Mode

Primary or secondary measurement or calculated value
(dual channel only)

Functional Mode

Linear, Logarithmic, Bi-linear, PID

Optional 3 additional 4-20 mA isolated current outputs,
max 500 Ω @ 18-24 Vdc loop-powered or max 350 Ω
@ 15 Vdc (self-powered)

Security Levels

Two password protected levels

Enclosure Materials

Polycarbonate, Aluminum (powder coated), Stainless Steel

Mounting Configurations

Wall, pole and panel mounting

Enclosure Rating

NEMA4X / IP66

Conduit Openings

1/2" NPT Conduit

Relays

Four electromechanical SPDT (Form C) contacts, 1200W,
5 A, 250 Vac

Operational Mode

Primary or secondary measurement, calculated value
(dual channel only) or timer

Functional Mode

Alarm, Timer, Feeder Control, PWM or FM Control,
System Alarm

Digital Communication

MODBUS RS232/RS485, Profibus DPV1,
or HART 7.2 optional

Memory Backup

Flash memory

Electrical Certifications

EMC

CE compliant for conducted and radiated emissions:

- CISPR 11 (Class A limits)
- EMC Immunity EN 61326-1 (Industrial limits)

Safety

cETLus safety mark for:

- General Locations per ANSI/UL 61010-1 & CAN/CSA C22.2. No. 61010-1
- Hazardous Location Class I, Division 2, Groups A,B,C & D (Zone 2, Group IIC) per FM 3600 / FM 3611 & CSA C22.2 No. 213 M1987 with approved options and appropriately rated Class I, Division 2 or Zone 2 sensors

OR

cULus safety mark (for Indoor Use Only)

- General Locations per UL 61010-1 & CAN/CSA C22.2. No. 61010-1

Warranty

2 years

sc200 for Hach Analog pH/ORP Sensors

Measuring Range

-2.0 to 14.0 pH or -2.00 to 14.00 pH
-2,100 to 2,100 mV

Repeatability

$\pm 0.1\%$ of range

Response Time

0.5 s

Temperature Range

PT100/PT1000: -20 to 200°C (-4 to 392°F)
NTC300: -20 to 110°C (-4 to 230°F)
Manual: -25 to 400°C (-13 to 752°F)

Temperature Accuracy

$\pm 0.5^\circ\text{C}$ (0.9°F)

Temperature Drift

$\pm 0.03\%$ of reading /°C

Temperature Compensation

Automatic from -20 to 110°C (-4 to 230°F) or manual

Temperature Sensors

PT100/PT1000/NTC300

Temperature Compensation Curves

Nernst, for Pure Water: Ammonia, Morpholine,
User Defined (linear)

Sensor-to-Controller Distance (maximum)

pH or LCP sensor: 914 m (3000 ft.)
pH Combination electrode w/ preamplifier: 300 m (958 ft.)
pH Combination electrode w/o preamplifier: 30 m (100 ft.),
depending on environment this distance is shorter

Calibration Methods

2-point buffer (pH only)
1-point buffer (pH only)
2-point sample (pH only)
1-point sample (pH or ORP)

Specifications continued**sc200 for Hach Analog Contacting Conductivity Sensors***Measuring Range**Conductivity*

$\mu\text{S/cm}$: 0-2,000, 0-20,00, 0-200.0 or 0-2,000
 mS/cm : 0-2,000, 0-20.00 or 0-200.0

Resistivity

0-19.99 $\text{M}\Omega\cdot\text{cm}$ or 0-999.9 $\text{k}\Omega\cdot\text{cm}$

TDS

0-9999 ppm or 0-9999 ppb

Repeatability, Precision (0-20 $\mu\text{S/cm}$, $K=1$)

± 0.02 mS/cm

Repeatability (20-200,000 $\mu\text{S/cm}$, $K=1$)

$\pm 0.1\%$ of reading

Response Time

0.5 s

Temperature Range

-20 to 200°C (-4 to 392°F)

Temperature Accuracy

$\pm 0.5^\circ\text{C}$ (0.9°F)

Temperature Drift

> 20 $\mu\text{S/cm}$: $\pm 0.02\%$ of reading / °C
 < 20 $\mu\text{S/cm}$: ± 0.004 $\mu\text{S/cm}$

Temperature Compensation

Automatic from -20 to 200°C (-4 to 392°F) or manual

Temperature Sensor

PT100/PT1000

Temperature Compensation Curves

Linear, Ammonia, Natural water, User Defined, none

Sensor-to-Controller Distance (max)

91m (300 ft.)

Calibration Methods

Zero
 GLJ DRY-CAL
 1-point sample

sc200 for Hach Analog Inductive Conductivity Sensors*Measuring Range**Conductivity*

$\mu\text{S/cm}$: 0-200.0 or 0-2,000
 mS/cm : 0-2,000, 0-20.00, 0-200.0 or 0-2,000
 S/cm : 0-2,000

% Concentration

0-99.99% or 0-200.0%

TDS

0-9999 ppm repeatability

Repeatability > 500 $\mu\text{S/cm}$

$\pm 0.5\%$ of reading

Repeatability < 500 $\mu\text{S/cm}$

± 2.5 $\mu\text{S/cm}$

Response Time

1 s

Temperature Range

-20 to 200°C (-4 to 392°F)

Temperature Accuracy

$\pm 0.5^\circ\text{C}$ (0.9°F)

Temperature Drift

> 500 $\mu\text{S/cm}$: $\pm 0.02\%$ of reading / °C
 < 500 $\mu\text{S/cm}$: ± 0.1 $\mu\text{S/cm}$

Temperature Compensation

Automatic from -20 to 200°C (-4 to 392°F) or manual

Temperature Sensors

PT1000

Temperature Compensation Curves

Linear, Natural water, User Defined, none**

Concentration Curves

H_3PO_4 : 0-40%; HCl : 0-18%; HCl : 22-36%; NaOH : 0-16%;
 CaCl_2 : 0-22%; HNO_3 : 0-28%; HNO_3 : 36-96%; H_2SO_4 : 0-30%;
 H_2SO_4 : 40-80%

Sensor-to-Controller Distance

| Full-scale value | Maximum length |
|----------------------------------|----------------|
| 200 to 2,000 $\mu\text{S/cm}$ | 61m (200 ft.) |
| 2,000-2,000,000 $\mu\text{S/cm}$ | 91m (300 ft.) |

Calibration Methods

1-point Cond (or Concentration or TDS)
 Zero

**Available curves depend on the selected type of measurement (Conductivity, Concentration or TDS).

Continued on next page.

Specifications *continued***Linearity 3700 Inductive Conductivity Sensors**

1.5 mS/cm – 2 S/cm
1% or reading

< 1.5 mS/cm
±15 µS/cm

Linearity 3700 Inductive Conductivity Sensors with Multiple Point Calibration

1.5 mS/cm – 2 S/cm
0.5% or reading

< 1.5 mS/cm
±5 µS/cm

sc200 for Hach Analog Dissolved Oxygen Sensors

Measuring Range
0 to 40 ppm
200% saturation

Repeatability
±0.05% of range

Response Time
0.5 s

Temperature Range
0 to 50°C (32 to 122°F)

Temperature Accuracy
±0.5°C (0.9°F)

Temperature Drift
±0.02% of reading / °C

Temperature Compensation
Automatic from 0 to 40 ppm or manual

Temperature Sensor
NTC30K / Manual

Sensor-to-Controller Distance (max)
305 m (1000 ft.)

Calibration Methods
Sample
Air
Saturation

sc200 for Hach UltraSonic Flow Sensor

Flow Rate
0-9999, 0-9999.9, 0-99.99 with selectable flow rate units and multiplier

Volume
0-9,999,999 with selectable volume units

Depth
0-1200.0 inches, 0-100.0 feet, 0-30,000 mm, or 0-30.00 meters

Input Filter
999 sec

Totalizers
8-digit resettable LCD software totalizer

Totalized Flow
Gal., ft.³, acre-ft., lit., m³

Repeatability
±0.1% of span

Sensor-to-Controller Distance (max)
100 m (328 ft.)

Calibration Methods
Cal Depth 1 point
Cal Depth 2 point

sc200 for Hach Paddle Wheel Flow Sensor

Flow Rate
Function of Structure Type: 0-9999, 0-999.9, 0-99.99 with selectable flow rate units and multiplier

Volume
0-9,999,999 with selectable volume units

Input Filter
999 sec

Totalizers
8-digit resettable LCD software totalizer

Totalized Flow
Gal., ft.³, acre-ft., lit., m³

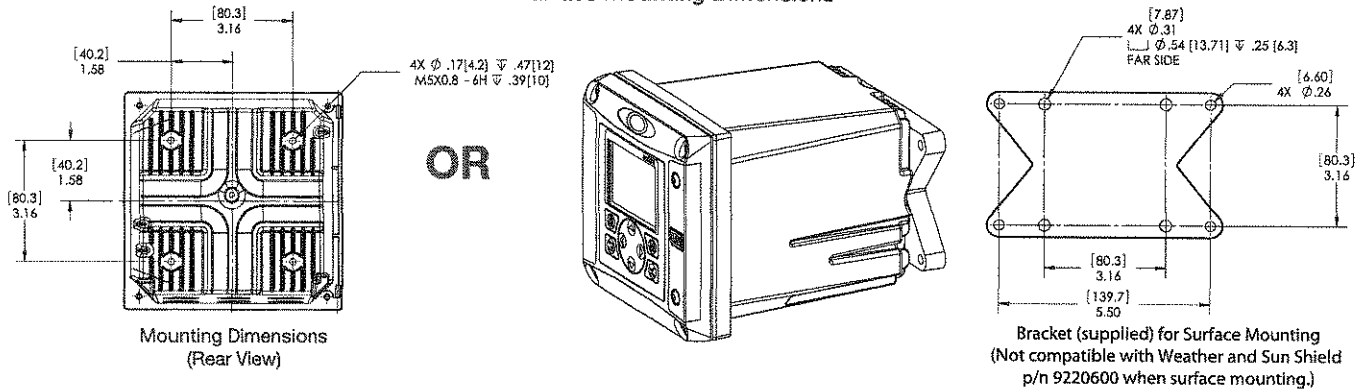
Sensor-to-Controller Distance (max)
GLI impeller Sensors: 610m (2000 ft.)
Non-GLI Sensors: 91m (300 ft.)

**Specifications subject to change without notice.*

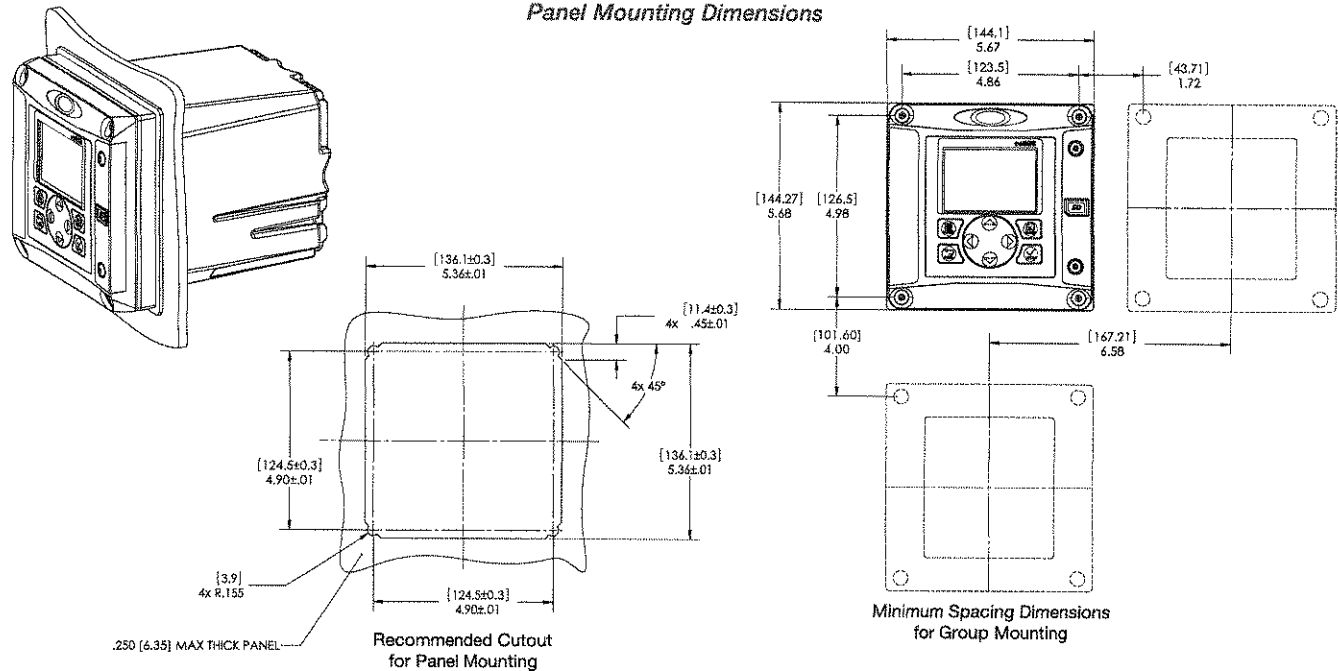
Dimensions

The sc200 controller unit can be installed on a surface, panel, or horizontal or vertical pipe. Pipe Mount hardware is included.
 NOTE: Dimensions are in inches [millimeters].

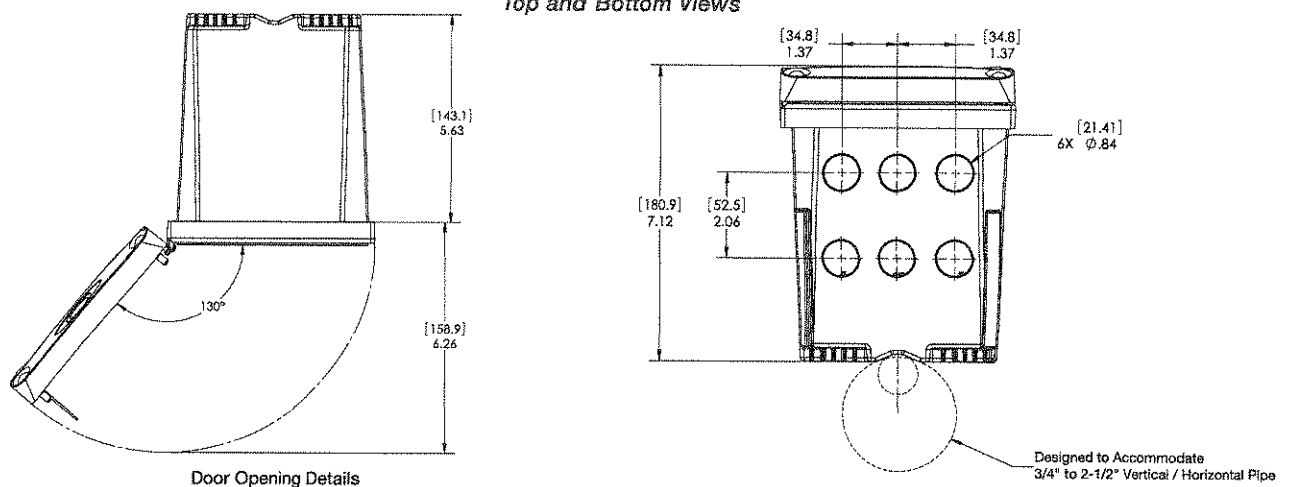
Surface Mounting Dimensions



Panel Mounting Dimensions



Top and Bottom Views



Ordering Information

sc200 for Hach Digital Sensors

| | |
|-----------------|--|
| LXV404.99.00552 | sc200 controller, 2 channel, digital |
| LXV404.99.00502 | sc200 controller, 1 channel, digital |
| LXV404.99.00542 | sc200 controller, 2 channel, digital & mA input |
| LXV404.99.00512 | sc200 controller, 2 channel, digital & analog pH/DO |
| LXV404.99.00522 | sc200 controller, 2 channel, digital & analog Conductivity |
| LXV404.99.00532 | sc200 controller, 2 channel, digital & analog Flow |

sc200 for Hach Analog Sensors

| | |
|-----------------|---|
| LXV404.99.00102 | sc200 controller, 1 channel, pH/DO |
| LXV404.99.00112 | sc200 controller, 2 channel, pH/DO |
| LXV404.99.00202 | sc200 controller, 1 channel, Conductivity |
| LXV404.99.00222 | sc200 controller, 2 channel, Conductivity |
| LXV404.99.00212 | sc200 controller, 2 channel, pH/DO & Conductivity |
| LXV404.99.00302 | sc200 controller, 1 channel, Flow |
| LXV404.99.00332 | sc200 controller, 2 channel, Flow |
| LXV404.99.00312 | sc200 controller, 2 channel, Flow & pH/DO |
| LXV404.99.00322 | sc200 controller, 2 channel, Flow & Conductivity |

Note: Other Sensor combinations are available. Please contact Hach Technical Support or your Hach representative.

Note: Communication options (MODBUS, Profibus DPV1, and HART) are available. Please contact Hach Technical Support or your Hach representative.

Power Cords

| | |
|---------|---|
| 9202900 | sc200 power cord with strain relief, 125 Vac |
| 9203000 | sc200 power cord with strain relief, 230 Vac, European-style plug |

Accessories

| | |
|---------|--|
| 9220600 | sc200 Weather and Sun Shield with UV Protection Screen |
| 8809200 | sc200 UV Protection Screen |
| 9218200 | SD card reader (USB) for connection to PC |
| 9218100 | 4 GB SD card |

Sensor and Communication Modules

| | |
|---------|-------------------------|
| 9012900 | pH and DO module |
| 9013000 | Conductivity module |
| 9012700 | Flow module |
| 9012800 | 4-20 mA input module |
| 9013200 | MODBUS network module |
| 9173900 | Profibus network module |
| 9328100 | HART network module |
| 9334600 | 4-20 mA output module |

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In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications to equipment at any time.

At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water— it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

In the United States, contact:

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P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 800-227-4224
Fax: 970-669-2932
E-mail: orders@hach.com
www.hach.com

U.S. exporters and customers in Canada, Latin America, sub-Saharan Africa, Asia, and Australia/New Zealand, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 970-669-3050
Fax: 970-461-3939
E-mail: intl@hach.com
www.hach.com

In Europe, the Middle East, and Mediterranean Africa, contact:

HACH LANGE GmbH
Willstätterstraße 11
D-40549 Düsseldorf
GERMANY
Tel: +49 (0) 211 5288-0
Fax: +49 (0) 211 5288-143
E-mail: info@hach-lange.de
www.hach-lange.com



Be Right™

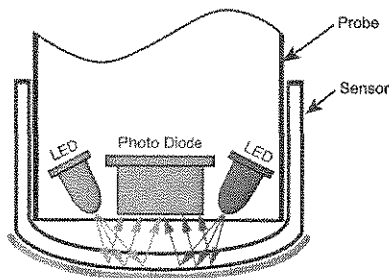
HACH LDO® Dissolved Oxygen Probe

Features and Benefits

Method of Detection

The HACH LDO sensor is coated with a luminescent material. Blue light from an LED is transmitted to the sensor surface. The blue light excites the luminescent material. As the material relaxes it emits red light. The time for the red light to be emitted is measured. Between the flashes of blue light, a red LED is flashed on the sensor and used as an internal reference.

Increased oxygen in the sample decreases the time it takes for the red light to be emitted. The time measurements correlate to the oxygen concentration.



Accuracy and Speed

The sensor is unaffected by pH swings, hydrogen sulfide, wastewater chemicals, heavy metals, or organic build-up on the sensor. Warm-up time is unnecessary so the analyzer can start measuring within 30 seconds of when it's turned on.

Simple Installation and Maintenance

The HACH LDO probe can be installed with a choice of pole or ball-float mounting kits. The probe has only one inexpensive replacement part—the sensor cap that is simple to replace. The sensor cap is warranted for one year. The probe is warranted for three years.

An internal standard calibrates the instrument with every reading. Factory calibration and membrane replacement are unnecessary. Periodic wiping of the sensor with a wet rag is all that is required for continuous measurement.

Applications

- **Aeration Tanks**—Adequate dissolved oxygen levels in aeration basins are required for microorganisms to remain viable. The HACH LDO probe can be used with a variable frequency drive or PLC control system to control the amount of oxygen being injected into the tank.
- **Nitrification & Denitrification Tanks**
- **Anaerobic Digesters**
- **Aerobic Digesters**
- **NPDES Permit Monitoring**—Up and downstream from plant effluent and plant outfall.

DW = drinking water WW = wastewater municipal FW = pure water / power
IW = industrial water E = environmental C = collections FB = food and beverage



Luminescent Dissolved Oxygen

DW

WW

IW

Break-through luminescent technology for dissolved oxygen. The HACH LDO® Dissolved Oxygen Probe continuously monitors DO with this revolutionary method of detection. It's virtually maintenance-free with no membranes to replace, no electrolyte solution to replenish, and no anode or cathode to clean or replace.

Full-Featured "Plug and Play" Hach sc Digital Controllers

There are no complicated wiring or set up procedures with any Hach sc controller. Just plug in any combination of Hach digital sensors and it's ready to use—it's "plug and play."

One or multiple sensors—The sc controller family allows you to receive data from up to eight Hach digital sensors in any combination using a single controller.

Communications—Multiple alarm/control schemes are available using the relays and PID control outputs. Available communications include analog 4-20 mA, digital MODBUS® (RS485 and RS232) or Profibus DP protocols. (Other digital protocols are available. Contact your Hach representative for details.)

Data logger—A built-in data logger collects measurement data, calibration, verification points, and alarm history.



Be Right™

Specifications*

Measuring Range

0 to 20.0 ppm,
0 to 20.0 mg/L,
0 to 200% saturation

Sensitivity

±0.5% of span

Accuracy

Measurement:

Below 1 ppm: ±0.1 ppm
Above 1 ppm: ±0.2 ppm

Temperature: ±0.2°C

Repeatability

±0.5% of span

Response Time at 20°C

To 90% in less than 40 seconds

To 95% in less than 60 seconds

Resolution

Below 10 ppm:

±0.01 ppm or mg/L, ±0.1% saturation

Above 10 ppm:

±0.1 ppm or mg/L, ±0.1% saturation

Operating Temperature

0 to 50°C (32 to 122°F)

Flow Rate

None required

Probe Immersion Depth and Pressure Limits

107 m (350 ft.), 1050 kPa (150 psi), maximum

Transmission Distance

100 m (328 ft.) maximum

1000 m (3280 ft.) maximum when used with a termination box

Sensor Cable (integral)

10 m (33 ft.) terminated with quick-disconnect plug

Wetted Materials

Probe: Foamed Noryl® and 316 stainless steel

Sensor: Polybutyl methacrylate

Dimensions

60 x 292 mm (2.4 x 11.5 in.)

Weight

1.4 kg (3 lb., 2 oz.)

Warranties

Probe: 3 Years

Sensor Cap: 1 Year

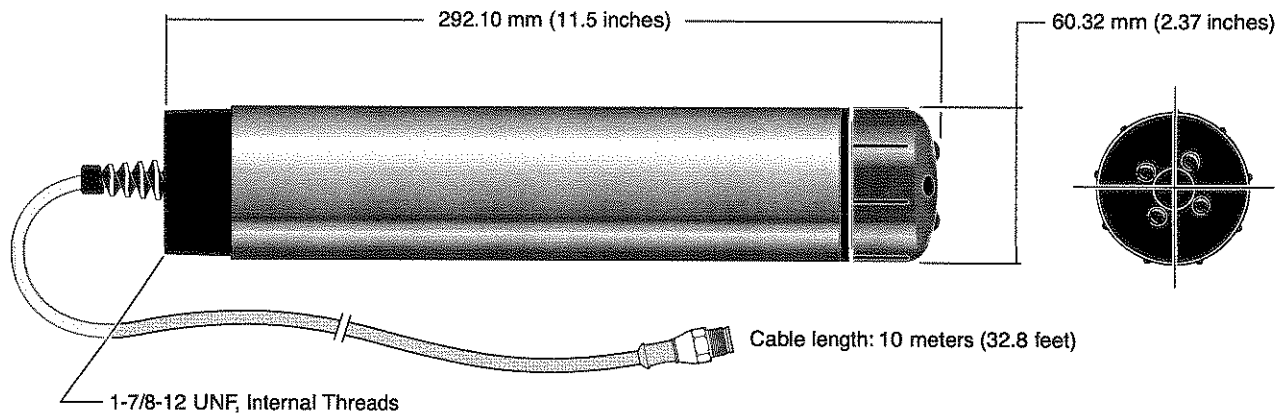
Noryl® is a registered trademark of General Electric Co.

*Specifications subject to change without notice.

Engineering Specifications

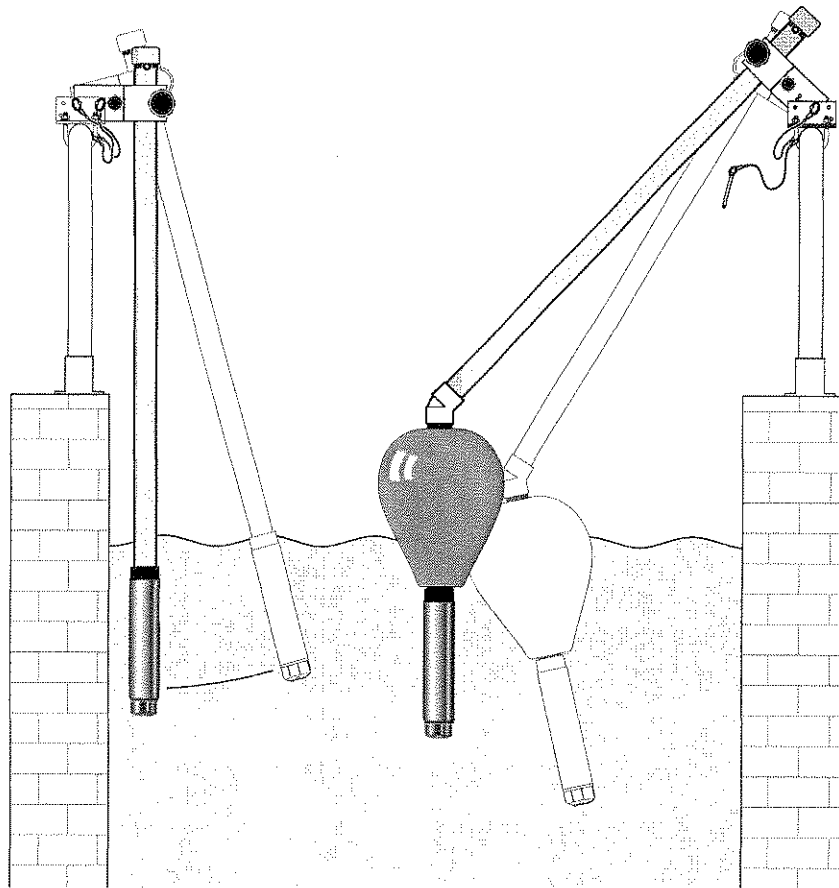
1. The dissolved oxygen probe shall be a continuous-reading probe that utilizes luminescent sensor technology.
2. The probe material shall be foamed Noryl® and 316 stainless steel. All parts of the probe shall be corrosion-resistant and fully-immersible.
3. The sensor material shall be polybutyl methacrylate.
4. The measurement range shall be 0.00 to 20.00 mg/L dissolved oxygen.
5. The operation of the analyzer shall not be affected by H₂S, pH, K⁺, Na⁺, Mg²⁺, Ca²⁺, NH₄⁺, Al³⁺, Pb²⁺, Cd²⁺, Zn²⁺, Cr (total), Fe²⁺, Fe³⁺, Mn²⁺, Cu²⁺, Ni²⁺, Co²⁺, CN⁻, NO₃⁻, SO₄⁻², S⁻², PO₄⁺³, Cl⁻, anion active tensides, crude oils, or Cl₂⁻¹.
6. The probe shall provide electrolyte-free operation without the requirements of sample conditioning.
7. The probe shall be furnished with choice of pole or ball-float mount kit.
8. The sensor cap shall be warranted for one full year against defects in material and workmanship.
9. The probe shall be warranted for three full years against defects in material and workmanship.
10. The analyzer shall be HACH LDO® Probe for dissolved oxygen measurement, manufactured by Hach Company.

Dimensions



Installation Examples

The HACH LDO[®] Probe can be mounted using the optional Pole Mount Kit (P/N 5794400) or Ball Float Mount Kit (P/N 5794300).



Ordering Information

5790000 HACH LDO® Dissolved Oxygen Probe with 10 m (32.8 ft.) integral cable

Accessories

5867000 Termination Box, required for total cable lengths greater than 100 m (328 ft.)
6122400 Extension Cable, 1 m (3.3 ft.)
5796000 Extension Cable, 7.7 m (25 ft.)
5796100 Extension Cable, 15 m (50 ft.)
5796200 Extension Cable, 31 m (100 ft.)
5795100 Air Blast Cleaning System, 115 V
5795200 Air Blast Cleaning System, 230 V

Replacement Parts

5791100 Replacement Sensor Cap

Mounting Kits

5794400 Pole Mount Kit
5794300 Ball Float Mount Kit

To complete your dissolved oxygen measurement system, choose from these Hach controllers...

Model sc200 Controller

(see Lit. #2665)

sc200 for Hach Digital Sensors

LXV404.99.00552 sc200 controller, 2 channel, digital
LXV404.99.00502 sc200 controller, 1 channel, digital
LXV404.99.00542 sc200 controller, 2 channel, digital & mA input
LXV404.99.00512 sc200 controller, 2 channel, digital & pH/DO
LXV404.99.00522 sc200 controller, 2 channel, digital & Conductivity
LXV404.99.00532 sc200 controller, 2 channel, digital & Flow

sc200 for Hach Analog Sensors

LXV404.99.00102 sc200 controller, 1 channel, pH/DO
LXV404.99.00112 sc200 controller, 2 channel, pH/DO
LXV404.99.00202 sc200 controller, 1 channel, Conductivity
LXV404.99.00222 sc200 controller, 2 channel, Conductivity
LXV404.99.00212 sc200 controller, 2 channel, pH/DO & Conductivity
LXV404.99.00302 sc200 controller, 1 channel, Flow
LXV404.99.00332 sc200 controller, 2 channel, Flow
LXV404.99.00312 sc200 controller, 2 channel, Flow & pH/DO
LXV404.99.00322 sc200 controller, 2 channel, Flow & Conductivity

Note: Other sensor combinations are available. Please contact Hach Technical Support or your Hach representative.

Note: Communication options (MODBUS and Profibus DPV1) are available.

Model sc1000 Controller

(see Lit. #2403)

LXV402.99.00002 sc1000 Display Module
LXV400.99.1R572 sc1000 Probe Module, 4 sensors, 4 mA Out, 4 mA In, 4 Relays, 110-230V
LXV400.99.1B572 sc1000 Probe Module, 4 sensors, 4 mA Out, 4 mA In, 4 Relays, RS-485 (MODBUS), 110-230V
LXV400.99.1F572 sc1000 Probe Module, 4 sensors, 4 mA Out, 4 mA In, 4 Relays, PROFIBUS DP, 110-230V
LXV400.99.1R582 sc1000 Probe Module, 6 sensors, 4 mA Out, 4 mA In, 4 Relays, 110-230V

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At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

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In the United States, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 800-227-4224
Fax: 970-669-2932
E-mail: orders@hach.com
www.hach.com

U.S. exporters and customers in Canada, Latin America, sub-Saharan Africa, Asia, and Australia/New Zealand, contact:

HACH COMPANY World Headquarters
P.O. Box 389
Loveland, Colorado 80539-0389
U.S.A.
Telephone: 970-669-3050
Fax: 970-461-3939
E-mail: intl@hach.com
www.hach.com

In Europe, the Middle East, and Mediterranean Africa, contact:

HACH LANGE GmbH
Willstätterstraße 11
D-40549 Düsseldorf
GERMANY
Tel: +49 (0) 211 5288-0
Fax: +49 (0) 211 5288-143
E-mail: info@hach-lange.de
www.hach-lange.com



Be Right™

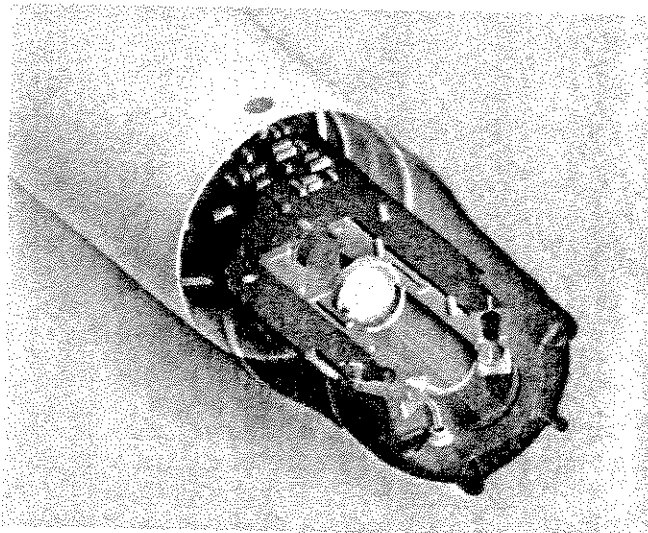
Dissolved Oxygen: Hach LDO[®] Probe

How Does Luminescent Dissolved Oxygen Work?

The HACH LDO sensor is coated with a luminescent material. Blue light from an LED is transmitted to the sensor surface. The blue light excites the luminescent material. As the material relaxes it emits red light. The time for the red light to be emitted is measured. This time is known as the luminescent lifetime of the material.

Oxygen in the sample interacts with the luminescent material and decreases the luminescent lifetime. The lifetime decreases with increasing oxygen concentration. The change in lifetime correlates directly to oxygen concentration in the sample.

Between the flashes of blue light, a red LED is flashed on the sensor and used as an internal reference.



| Prod. No. | Description | Price |
|-----------|--|--------------|
| 9020000 | Hach LDO Model 2 Probe with 10m (32 ft.) Cable | Contact Hach |

Accessories

| | |
|---------|--|
| 5867000 | Digital Termination Box |
| 5796000 | Digital Extension Cable, 7.7m (25ft.) |
| 5796100 | Digital Extension Cable, 15m (50 ft.) |
| 5796200 | Digital Extension Cable, 31m (100 ft.) |
| 6860000 | High Output Air Blast Cleaning System, 115 Vac |
| 6860100 | High Output Air Blast Cleaning System, 230 Vac |
| 9253500 | Air Blast Hardware Components |

Replacement Parts

| | |
|---------|--------------------------------|
| 9021100 | LDO Sensor Cap Replacement Kit |
|---------|--------------------------------|

Mounting Kits

| | |
|---------|-----------------------------|
| 9253000 | Pole Mount Kit, PVC |
| 9253100 | Ball Float Mount Kit, PVC |
| 9257000 | Union Mount Kit, PVC |
| 7300800 | 1" NPT sc Sensors Flow Cell |

Hach WarrantyPlus

| | |
|-----------|---|
| WRTUPGLDO | Hach LDO Probe WarrantyPlus Instrument Protection and Service |
|-----------|---|



LDO Flow Cell

Primary Applications

- Wastewater
- Industrial Water
- Drinking Water

Specifications*

| | |
|--------------------------------|---|
| Measuring Range | 0 to 20 ppm, 0 to 20 mg/L, 0 to 200% saturation |
| Accuracy | below 5 ppm ± 0.1 ppm, above 5 ppm ± 0.2 ppm |
| Response Time | To 90% in less than 40 seconds, To 95% in less than 60 seconds |
| Sensitivity | $\pm 0.5\%$ of span |
| Repeatability | $\pm 0.5\%$ of span |
| Resolution | Below 10ppm ± 0.01 ppm or mg/L, $\pm 0.1\%$ saturation; Above 10ppm: ± 0.1 ppm or mg/L |
| Operating Temperature | 0 to 50°C (32 to 122°F) |
| Temperature Accuracy | $\pm 0.1^\circ\text{C}$ |
| Flow Rate | None Required |
| Probe Pressure Limit | 1050 kPa (150psi), maximum |
| Transmission Distance | 100 m (328ft.) maximum; 1000m (3280 ft.) maximum with a termination box |
| Sensor Cable (integral) | 10m (33ft.) terminated with quick-disconnect plug |
| Wetted Materials | Probe Body - CPVC, Polyurethane, Viton, Noryl, 316 Stainless; Sensor Cap - Acrylic |
| Dimensions | 49.3 x 255.4 mm (1.94 x 10.05 in.) |
| Weight | 1.0 kg (2 lb., 3 oz.) |

*Subject to change without notice.

See pages 24-47 for information on Hach laboratory and field LDO instruments.

Find it here... Buy it today on www.hach.com
U.S. customers only.



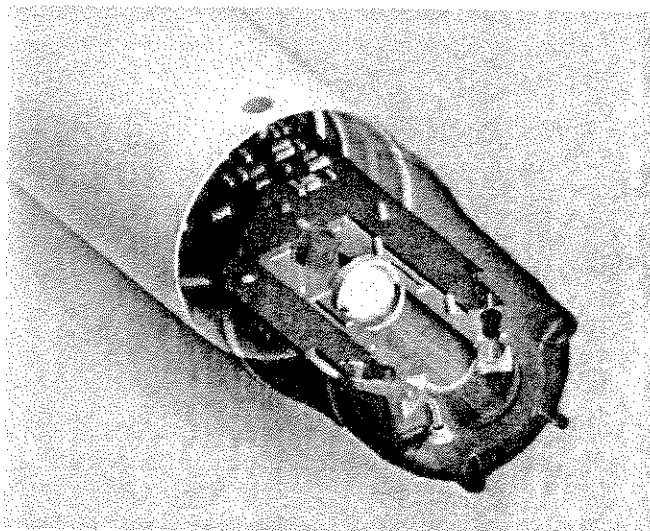
Dissolved Oxygen: Hach LDO® Probe

How Does Luminescent Dissolved Oxygen Work?

The HACH LDO sensor is coated with a luminescent material. Blue light from an LED is transmitted to the sensor surface. The blue light excites the luminescent material. As the material relaxes it emits red light. The time for the red light to be emitted is measured. This time is known as the luminescent lifetime of the material.

Oxygen in the sample interacts with the luminescent material and decreases the luminescent lifetime. The lifetime decreases with increasing oxygen concentration. The change in lifetime correlates directly to oxygen concentration in the sample.

Between the flashes of blue light, a red LED is flashed on the sensor and used as an internal reference.



| Prod. No. | Description | Price |
|-----------|--|--------------|
| 9020000 | Hach LDO Model 2 Probe with 10m (32 ft.) Cable | Contact Hach |

Accessories

| | | |
|---------|--|----------|
| 5867000 | Digital Termination Box | 137.00 |
| 5796000 | Digital Extension Cable, 7.7m (25ft.) | 159.00 |
| 5796100 | Digital Extension Cable, 15m (50 ft.) | 238.00 |
| 5796200 | Digital Extension Cable, 31m (100 ft.) | 317.00 |
| 6860000 | High Output Air Blast Cleaning System, 115 Vac | 1,670.00 |
| 6860100 | High Output Air Blast Cleaning System, 230 Vac | 1,670.00 |
| 9253500 | Air Blast Hardware Components | 395.00 |

Replacement Parts

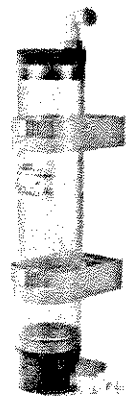
| | | |
|---------|--------------------------------|--------|
| 9021100 | LDO Sensor Cap Replacement Kit | 179.00 |
|---------|--------------------------------|--------|

Mounting Kits

| | | |
|---------|-----------------------------|--------|
| 9253000 | Pole Mount Kit, PVC | 415.00 |
| 9253100 | Bail Float Mount Kit, PVC | 570.00 |
| 9257000 | Union Mount Kit, PVC | 325.00 |
| 7300800 | 1" NPT sc Sensors Flow Cell | 422.00 |

Hach WarrantyPlus

| | | |
|----------|---|--------|
| WRTUPLD0 | Hach LDO Probe WarrantyPlus Instrument Protection and Service | 399.00 |
|----------|---|--------|



LDO Flow Cell

Primary Applications

- Wastewater
- Industrial Water
- Drinking Water

Specifications*

| | |
|--------------------------------|---|
| Measuring Range | 0 to 20 ppm, 0 to 20 mg/L, 0 to 200% saturation |
| Accuracy | below 5 ppm ± 0.1 ppm, above 5 ppm ± 0.2 ppm |
| Response Time | To 90% in less than 40 seconds, To 95% in less than 60 seconds |
| Sensitivity | $\pm 0.5\%$ of span |
| Repeatability | $\pm 0.5\%$ of span |
| Resolution | Below 10ppm ± 0.01 ppm or mg/L, $\pm 0.1\%$ saturation; Above 10ppm: ± 0.1 ppm or mg/L |
| Operating Temperature | 0 to 50°C (32 to 122°F) |
| Temperature Accuracy | $\pm 0.1^\circ\text{C}$ |
| Flow Rate | None Required |
| Probe Pressure Limit | 1050 kPa (150psi), maximum |
| Transmission Distance | 100 m (328ft.) maximum; 1000m (3280 ft.) maximum with a termination box |
| Sensor Cable (Integral) | 10m (33ft.) terminated with quick-disconnect plug |
| Wetted Materials | Probe Body - CPVC, Polyurethane, Viton, Noryl, 316 Stainless; Sensor Cap - Acrylic |
| Dimensions | 49.3 x 255.4 mm (1.94 x 10.05 in.) |
| Weight | 1.0 kg (2 lb., 3 oz.) |

*Subject to change without notice.

See pages 24-47 for information on Hach laboratory and field LDO instruments.

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Hach Company EEO Compliance Form

The employment policy of Hach Company is to provide equal opportunity to all persons. Our company, therefore, has made a commitment to equal employment opportunity through a positive and continuing Affirmative Action Program. No employee or applicant for employment will be discriminated against because of race, color, religion, sex, national origin, age, marital status, sexual orientation, citizenship status, or otherwise qualified disabled or veteran status.

Hach Company:

1. Complies with the requirements of Executive Order 11246, and any amendments thereto and that the Equal Employment Opportunity clause is incorporated in and made a part of all contracts or purchase orders.
2. Complies with the requirement of Certification of Nonsegregated Facilities 41 C.F.R 60-1.
3. Complies with the requirements of the written Affirmative Action Compliance Program.
4. Complies with all reporting requirements of the Joint Reporting Committee, the Director of Office of Federal Contract Compliance, or Equal Employment Opportunity Commission. 41 C.F. R 60-1.7.
5. Complies with the requirements of Section 503 of Rehabilitation Act of 1973 and 41 C.F.R. Section 60-741, and 29 C.F.R. part 1630 – Equal Employment Opportunity for Individuals with Disabilities and agrees that the applicable contract clauses are incorporated in and made a part of all contracts, agreements or purchase orders.
6. Complies with the requirements of Section 2012 of the Vietnam Era Veterans Readjustment Act of 1974 and 41 C.F.R. 60-250 and agrees that the applicable contract clauses are incorporated in and made a part of all contracts, agreements or purchase orders.
7. Complies with 48 C.F.R. 19.7, 52.219.8 requiring Utilization of Minority Business Enterprises and agrees that the applicable contract clauses are incorporated in and made a part of all contracts, agreements, or purchase orders.
8. Complies with 48 C.F.R. Section 19.9, and 48 C.F.R. 52.291-13, Utilization of Women-Owned Small businesses, and agrees that the applicable contract clauses are incorporated in and made a part of all contracts, agreements, or purchase orders.
9. Complies with Section 8d(6) of the Small Business Act requiring Utilization of Small Business Concerns and agrees that the applicable contract clauses are incorporated in and made a part of all contracts, agreements or purchase orders.
10. Complies with 48 C.F.R. 20.3, 52.220-3 requiring Utilization of Labor Surplus Area Concerns and agrees that the applicable contract clauses are incorporated in and made a part of all contracts, agreements or purchase orders.
11. Complies with the purpose of the Age Discrimination in Employment Act of 1967 and any amendments thereto, E.O. 11141 and P.L. 90-202.
12. Complies with the requirements of Title 1 of the Americans with Disabilities Act.

Hach Company is not a:

- Minority-owned business
- Woman-owned business
- Small business concern



TERMS & CONDITIONS OF SALE FOR HACH COMPANY PRODUCTS AND SERVICES

This document sets forth the Terms & Conditions of Sale for goods manufactured and/or supplied, and services provided, by Hach Company of Loveland, Colorado ("Hach") and sold to the original purchaser thereof ("Buyer"). Unless otherwise specifically stated herein, the term "Hach" includes only Hach Company and none of its affiliates. Unless otherwise specifically stated in a previously-executed written purchase agreement signed by authorized representatives of Hach and Buyer, these Terms & Conditions of Sale establish the rights, obligations and remedies of Hach and Buyer which apply to this offer and any resulting order or contract for the sale of Hach's goods and/or services ("Products").

1. **APPLICABLE TERMS & CONDITIONS:** These Terms & Conditions of Sale are contained directly and/or by reference in Hach's offer, order acknowledgment, and invoice documents. The first of the following acts constitutes an acceptance of Hach's offer and not a counteroffer and creates a contract of sale ("Contract") in accordance with these Terms & Conditions, subject to final credit approval by Hach: (i) Buyer's issuance of a purchase order document against Hach's offer; (ii) acknowledgment of Buyer's order by Hach; or (iii) commencement of any performance by Hach pursuant to Buyer's order. Provisions contained in Buyer's purchase documents (including electronic commerce interfaces) that materially alter, add to or subtract from the provisions of these Terms & Conditions of Sale are not a part of the Contract.

2. **CANCELLATION:** Buyer may cancel goods orders subject to fair charges for Hach's expenses including handling, inspection, restocking, freight and invoicing charges as applicable, provided that Buyer returns such goods to Hach at Buyer's expense within 30 days of delivery and in the same condition as received. Buyer may cancel service orders on ninety (90) day's prior written notice, and refunds will be prorated based on the duration of the service plan. Inspections and re-instatement fees may apply upon cancellation or expiration of service programs.

3. **DELIVERY:** Delivery will be accomplished FCA Hach's facility located in Ames, Iowa or Loveland, Colorado, United States (Incoterms 2010). For orders having a final destination within the U.S., legal title and risk of loss or damage pass to Buyer upon transfer to the first carrier. For orders having a final destination outside the U.S., legal title and risk of loss or damage pass to Buyer when the Products enter international waters or airspace or cross an international frontier. Hach will use commercially reasonable efforts to deliver the Products ordered herein within the time specified on the face of this Contract or, if no time is specified, within Hach's normal lead-time necessary for Hach to deliver the Products sold hereunder. Upon prior agreement with Buyer and for an additional charge, Hach will deliver the Products on an expedited basis. Standard service delivery hours are 8 am – 5 pm Monday through Friday, excluding holidays.

4. **INSPECTION:** Buyer will promptly inspect and accept any Products delivered pursuant to this Contract after receipt of such Products. In the event the Products do not conform to any applicable specifications, Buyer will promptly notify Hach of such nonconformance in writing. Hach will have a reasonable opportunity to repair or replace the nonconforming product at its option. Buyer will be deemed to have accepted any Products delivered hereunder and to have waived any such nonconformance in the event such a written notification is not received by Hach within thirty (30) days of delivery.

5. **PRICES & ORDER SIZES:** All prices are in U.S. dollars and are based on delivery as stated above. Prices do not include any charges for services such as insurance; brokerage fees; sales, use, inventory or excise taxes; import or export duties; special financing fees; value added taxes; income or royalty taxes imposed outside the U.S.; consular fees; special permits or licenses; or similar charges imposed upon the production, sale, distribution, or delivery of Products hereunder. Buyer will either pay any and all such taxes and charges or provide Hach with acceptable exemption certificates, which obligation survives performance under this Contract. Hach reserves the right to establish minimum order sizes and will advise Buyer accordingly.

6. **PAYMENTS:** All payments must be made in U.S. dollars. For internet orders, the purchase price is due at the time and in the manner set forth at www.hach.com. Invoices for all other orders are due and payable NET 30 DAYS from date of the invoice without regard to delays for inspection or transportation, with payments to be made by check to Hach at the above address or by wire transfer to the account stated on the front of Hach's invoice. In the event payments are not made or not made in a timely manner, Hach may, in addition to all other remedies provided at law, either: (1) declare Buyer's performance in breach and terminate this Contract for default; (2) withhold future shipments until delinquent payments are made; (3) deliver future shipments on a cash-with-order or cash-in-advance basis even after the delinquency is cured; (4) charge interest on the delinquency at a rate of 1-1/2% per month or the maximum rate permitted by law, if lower, for each month or part thereof of delinquency in payment plus applicable storage charges and/or inventory carrying charges; (5) repossess the Products for which payment has not been made; (6) recover all costs of collection including reasonable attorney's fees; or (7) combine any of the above rights and remedies as is practicable and permitted by law. Buyer is prohibited from settling off any and all monies owed under this from any other sums, whether liquidated or not, that are or may be due Buyer, which arise out of a different transaction with Hach or

any of its affiliates. Should Buyer's financial responsibility become unsatisfactory to Hach in its reasonable discretion, Hach may require cash payment or other security. If Buyer fails to meet these requirements, Hach may treat such failure as reasonable grounds for repudiation of this Contract, in which case reasonable cancellation charges shall be due Hach. Buyer grants Hach a security interest in the Products to secure payment in full, which payment releases the security interest but only if such payments could not be considered an avoidable transfer under the U.S. Bankruptcy Code or other applicable laws. Buyer's insolvency, bankruptcy, assignment for the benefit of creditors, or dissolution or termination of the existence of Buyer, constitutes a default under this Contract and affords Hach all the remedies of a secured party under the U.C.C., as well as the remedies stated above for late payment or non-payment.

7. **LIMITED WARRANTY:** Hach warrants that Products sold hereunder will be free from defects in material and workmanship and will conform to any express written warranty pertaining to the specific goods purchased, which for most Hach instruments is for a period of twelve (12) months from delivery. Hach warrants that services furnished hereunder will be free from defects in workmanship for a period of ninety (90) days from the completion of the services. Parts provided by Hach in the performance of services may be new or refurbished parts functioning equivalent to new parts. Any non-functioning parts that are repaired by Hach shall become the property of Hach. No warranties are extended to consumable items such as, without limitation, reagents, batteries, mercury cells, and light bulbs. **All other guarantees, warranties, conditions and representations, either express or implied, whether arising under any statute, law, commercial usage or otherwise, including implied warranties of merchantability and fitness for a particular purpose, are hereby excluded.** The sole remedy for Products not meeting this Limited Warranty is replacement, credit or refund of the purchase price. This remedy will not be deemed to have failed of its essential purpose so long as Hach is willing to provide such replacement, credit or refund.

8. **INDEMNIFICATION:** Indemnification applies to a party and to such party's successors-in-interest, assignees, affiliates, directors, officers, and employees ("Indemnified Parties"). Hach is responsible for and will defend, indemnify and hold harmless the Buyer Indemnified Parties against all losses, claims, expenses or damages which may result from accident, injury, damage, or death due to Hach's breach of the Limited Warranty. This indemnification is provided on the condition that the Buyer is likewise responsible for and will defend, indemnify and hold harmless the Hach Indemnified Parties against all losses, claims, expenses or damages which may result from accident, injury, damage, or death due to the negligence or misuse or misapplication of any goods or services by the Buyer or any third party affiliated or in privity with Buyer.

9. **PATENT PROTECTION:** Subject to all limitations of liability provided herein, Hach will, with respect to any Products of Hach's design or manufacture, indemnify Buyer from any and all damages and costs as finally determined by a court of competent jurisdiction in any suit for infringement of any U.S. patent (or European patent for Products that Hach sells to Buyer for end use in a member state of the E.U.) that has issued as of the delivery date, solely by reason of the sale or normal use of any Products sold to Buyer hereunder and from reasonable expenses incurred by Buyer in defense of such suit if Hach does not undertake the defense thereof, provided that Buyer promptly notifies Hach of such suit and offers Hach either (i) full and exclusive control of the defense of such suit when Products of Hach only are involved, or (ii) the right to participate in the defense of such suit when products other than those of Hach are also involved. Hach's warranty as to use patents only applies to infringement arising solely out of the inherent operation of the Products according to their applications as envisioned by Hach's specifications. In case the Products are in such suit held to constitute infringement and the use of the Products is enjoined, Hach will, at its own expense and at its option, either procure for Buyer the right to continue using such Products or replace them with non-infringing products, or modify them so they become non-infringing, or remove the Products and refund the purchase price (prorated for depreciation) and the transportation costs thereof. The foregoing states the entire liability of Hach for patent infringement by the Products. Further, to the same extent as set forth in Hach's above obligation to Buyer, Buyer agrees to defend, indemnify and hold harmless Hach for patent infringement related to (x) any goods manufactured to the Buyer's design, (y) services provided in accordance with the Buyer's instructions, or (z) Hach's Products when used in combination with any other devices, parts or software not provided by Hach hereunder.

10. **TRADEMARKS AND OTHER LABELS:** Buyer agrees not to remove or alter any indicia of manufacturing origin or patent numbers contained on or within the Products, including without limitation the serial numbers or trademarks on nameplates or cast, molded or machined components.

11. **SOFTWARE:** All licenses to Hach's separately-provided software products are subject to the separate software license agreement(s) accompanying the software media. In the absence of such terms and for all other software, Hach grants Buyer only a personal, non-exclusive license to access and use the software provided by Hach with Products purchased hereunder solely as necessary for Buyer to enjoy the benefit of the Products. A portion of the software

may contain or consist of open source software, which Buyer may use under the terms and conditions of the specific license under which the open source software is distributed. Buyer agrees that it will be bound by any and all such license agreements. Title to software remains with the applicable licensor(s).

12. NONDISCLOSURE AND NON-USE OF HACH'S PROPRIETARY INFORMATION: Hach may disclose PROPRIETARY Information during the performance or fulfillment of this Contract. "Proprietary Information" means any information, technical data or know-how in whatever form, including, but not limited to, documented information, machine readable or interpreted information, information contained in physical components, mask works and artwork, which Hach considers proprietary or Proprietary, including but not limited to Hach's service and maintenance manuals. Buyer and its customers, employees and agents will keep confidential all such Proprietary Information and will not transfer or disclose it without Hach's prior written consent, or use it for the manufacture, procurement, servicing or calibration of Products or any similar products, or cause such products to be manufactured, serviced or calibrated by or procured from any other source, or reproduce or otherwise appropriate it without Hach's prior written consent. All Proprietary Information obtained from or through Hach remains property of Hach. No right or license is granted hereby to Buyer or its customers, employees or agents, expressly or by implication, with respect to the Proprietary Information or any patent, patent application or other proprietary right of Hach, except for the limited use licenses implied by law.

13. CHANGES AND ADDITIONAL CHARGES: Hach reserves the right to make changes in design or additions or improvements to any products of the same general class as Products being delivered hereunder without liability or obligation to incorporate such changes, additions or improvements to Products ordered by Buyer unless specifically agreed upon in writing reasonably in advance of such Products' delivery date. Services which must be performed as a result of any of the following conditions are subject to additional charges for labor, travel and parts: (a) equipment alterations not authorized in writing by Hach; (b) damage resulting from improper use or handling, accident, neglect, power surge, or operation in an environment or manner in which the instrument is not designed to operate or is not in accordance with Hach's operating manuals; (c) the use of parts or accessories not provided by Hach; (d) damage resulting from acts of war, terrorism or nature; or (e) services outside standard business hours.

14. SITE ACCESS / PREPARATION / WORKER SAFETY / ENVIRONMENTAL COMPLIANCE: In connection with services provided by Hach, Buyer agrees to permit prompt access to equipment. Buyer assumes full responsibility to back-up or otherwise protect its data against loss, damage or destruction before services are performed. Buyer is the operator and in full control of its premises, including those parts of the premises where Hach employees or contractors are performing service, repair and maintenance activities. Buyer will ensure that all necessary measures are taken for safety and security of working conditions, sites and installations during the performance of services. Buyer is the generator of any wastes, including without limitation hazardous wastes, resulting from such services, repair and maintenance. Buyer is solely responsible to arrange for the disposal of any wastes at its own expense. Buyer will, at its own expense, provide Hach employees and contractors working on Buyer's premises with all information and training required under applicable safety compliance regulations and Buyer's policies. If the instrument to be serviced is in a Confined Space, as that term is defined under OSHA regulations, Buyer is solely responsible to make it available to be serviced in an unconfined space. Hach service technicians will not work in Confined Spaces. In the event that a Buyer requires Hach employees or contractors to attend safety or compliance training programs provided by Buyer, Buyer will pay Hach the standard hourly rate and expense reimbursement for such training attended. The attendance at or completion of such training does not create or expand any warranty or obligation of Hach and does not serve to alter, amend, limit or supersede any part of this Contract.

15. LIMITATIONS ON USE: Buyer will not use any Products for any purpose other than that identified in Hach's catalogs and literature as their intended use. Unless Hach has otherwise advised the Buyer in writing, in no event will Buyer use any Products in drugs, food additives, food or cosmetics, whether for humans or animals. In no event will Buyer use in a manufacturing process or in manufactured products any Products stipulated by Hach as intended for research and development. Any warranty granted by Hach is void if any goods covered by such warranty are used for any purpose not permitted hereunder.

16. EXPORT AND IMPORT LICENSES AND COMPLIANCE WITH LAWS: Unless otherwise specified in this Contract, Buyer is responsible for obtaining any required export or import licenses. Hach represents that all Products delivered hereunder will be produced and supplied in compliance with all applicable laws and regulations. Buyer will comply with all laws and regulations applicable to the installation, use, or export and import of all Products, including applicable export control laws and regulations of the U.S., E.U. and any other country having proper jurisdiction and will obtain all necessary export licenses in connection with any subsequent export, re-export, transfer and use of all Products and technology delivered hereunder. Buyer will not sell, transfer, export or re-export any Hach Products or technology for use in activities which involve the design, development, production, use or stockpiling of nuclear, chemical or biological weapons or

missiles, nor use Hach Products or technology in any facility which engages in activities relating to such weapons. Buyer will comply with all local, national, and other laws of all jurisdictions globally relating to anti-corruption, bribery, extortion, kickbacks, or similar matters which are applicable to Buyer's business activities in connection with this Contract, including but not limited to the U.S. Foreign Corrupt Practices Act of 1977, as amended (the "FCPA"). Buyer agrees that no payment of money or provision of anything of value will be offered, promised, paid or transferred, directly or indirectly, by any person or entity, to any government official, government employee, or employee of any company owned in part by a government, political party, political party official, or candidate for any government office or political party office to induce such organizations or persons to use their authority or influence to obtain or retain an improper business advantage for Buyer or for Hach, or which otherwise constitute or have the purpose or effect of public or commercial bribery, acceptance of or acquiescence in extortion, kickbacks or other unlawful or improper means of obtaining business or any improper advantage, with respect to any of Buyer's activities related to this Contract.

17. FORCE MAJEURE: Hach is excused from delays in delivery and performance of other contractual obligations under this Contract caused by acts or omissions that are beyond the control of Hach, including but not limited to Government embargoes, blockages, seizures or freeze of assets, delays or refusals to grant an export or import license or the suspension or revocation thereof, or any other acts of any Government; fires, floods, severe weather conditions, or any other acts of God; quarantines; labor strikes or lockouts; riots; strife; insurrections; civil disobedience or acts of criminals or terrorists; war; material shortages or delays in deliveries to Hach by third parties. In the event of the existence of any force majeure circumstances, the period of time for delivery, payment terms and payments under any letters of credit will be extended for a period of time equal to the period of delay. If the force majeure circumstances extend for six months, Hach may, at its option, terminate this Contract without penalty and without being deemed in default or in breach thereof.

18. NON ASSIGNMENT AND WAIVER: Buyer will not transfer or assign this Contract or any rights or interests hereunder without Hach's prior written consent. Failure of either party to insist upon strict performance of any provision of this Contract, or to exercise any right or privilege contained herein, or the waiver of any breach of the terms or conditions of this Contract will not be construed as thereafter waiving any such terms, conditions, rights, or privileges, and the same will continue and remain in force and effect as if no waiver had occurred.

19. LIMITATION OF LIABILITY. None of the Hach Indemnified Parties will be liable to Buyer under any circumstances for any special, treble, incidental or consequential damages, including without limitation, damage to or loss of property other than for the Products purchased hereunder; damages incurred in installation, repair or replacement; lost profits, revenue or opportunity; loss of use; losses resulting from or related to downtime of the products or inaccurate measurements or reporting; the cost of substitute products; or claims of Buyer's customers for such damages, howsoever caused, and whether based on warranty, contract, and/or tort (including negligence, strict liability or otherwise). The total liability of the Hach Indemnified Parties arising out of the performance or nonperformance hereunder or Hach's obligations in connection with the design, manufacture, sale, delivery, and/or use of Products will in no circumstance exceed in the aggregate a sum equal to twice the amount actually paid to Hach for Products delivered hereunder.

20. APPLICABLE LAW AND DISPUTE RESOLUTION: The construction, interpretation and performance hereof and all transactions hereunder shall be governed by the laws of the State of Colorado, without regard to its principles or laws regarding conflicts of laws. Buyer and Hach expressly exclude from this Contract the U.N Convention on Contracts for the International Sale Of Goods, 1980, and any successors thereto. If any provision of this Contract violates any Federal, State or local statutes or regulations of any countries having jurisdiction of this transaction, or is illegal for any reason, said provision shall be self-deleting without affecting the validity of the remaining provisions. Unless otherwise specifically agreed upon in writing between Hach and Buyer, any dispute relating to this Contract which is not resolved by the parties shall be adjudicated in order of preference by a court of competent jurisdiction (i) in the State of Colorado, U.S.A. if Buyer has minimum contacts with Colorado and the U.S., (ii) elsewhere in the U.S. if Buyer has minimum contacts with the U.S. but not Colorado, or (iii) in a neutral location if Buyer does not have minimum contacts with the United States.

21. ENTIRE AGREEMENT & MODIFICATION: These Terms & Conditions of Sale constitute the entire agreement between the parties and supersede any prior agreements or representations, whether oral or written. No change to or modification of these Terms & Conditions shall be binding upon Hach unless in a written instrument specifically referencing that it is amending these Terms & Conditions of Sale and signed by an authorized representative of Hach. Hach rejects any additional or inconsistent Terms & Conditions of Sale offered by Buyer at any time, whether or not such terms or conditions materially alter the Terms & Conditions herein and irrespective of Hach's acceptance of Buyer's order for the described goods and services.

* * *

HACH COMPANY

General Information

| | |
|----------------------|--|
| Organization Number | 0791976 |
| Name | HACH COMPANY |
| Profit or Non-Profit | P - Profit |
| Company Type | FCO - Foreign Corporation |
| Status | A - Active |
| Standing | G - Good |
| State | DE |
| File Date | 5/19/2011 |
| Authority Date | 5/19/2011 |
| Last Annual Report | N/A |
| Principal Office | 5600 LINDBERGH DRIVE LOVELAND, CO 80539 |
| Registered Agent | C T CORPORATION SYSTEM 306 W. MAIN STREET SUITE 512 FRANKFORT, KY 40601 |

Current Officers

Individuals / Entities listed at time of formation

Images available online

Documents filed with the Office of the Secretary of State on September 15, 2004 or thereafter are available as scanned images or PDF documents. Documents filed prior to September 15, 2004 will become available as the images are created.

Application for Certificate of Authority
(Corp) 5/19/2011

5/19/2011

2 pages

[tiff](#)

[PDF](#)

Assumed Names

Activity History

| Filing Add | File Date | Effective Date | Org. Referenced |
|------------|-----------------------|----------------|-----------------|
| | 5/19/2011 12:32:26 PM | 5/19/2011 | |

Microfilmed Images
