



**TOWN OF STRATFORD
PURCHASING DEPARTMENT
STRATFORD, CONNECTICUT**

BID No. 2015-039

Issued : July 17, 2015

Subject : UV Monitor Measurement & Control Instrumentation

The Town of Stratford through the Office of the Purchasing Agent, will receive SEALED BIDS for furnishing the equipment described in the accompanying specifications, in accordance with the instructions, conditions and reservations that follow:

A. CLOSING DATE:

Bids will be received until 11:00 am July 24, 2015, at which time they will be publicly opened and read. All bidders are invited to attend this public opening, which will be held immediately following the closing time specified above, in the Office of the Purchasing Agent, Room 202, Town Hall, 2725 Main Street, Stratford, CT 06615.

Any bid may be withdrawn prior to the above-scheduled time for receiving bids or authorized postponement thereof. Any bids received after the date and time specified shall NOT be considered. No bidder may withdraw a bid within 45 days after the actual opening thereof.

B. INSTRUCTIONS:

Bid proposals are to be submitted (**TWO COPIES**) in a sealed envelope and clearly marked with the bid number and description on the outside of the envelope, including all outer packaging (DHL, FedEx, UPS, etc).

Bids must be delivered to:

Purchasing Department
Stratford Town Hall – Rm 202
2725 Main Street
Stratford, CT 06615

C. CONDITIONS:

Bid Surety:

No bid surety is required.

Payment: Final payment will be made upon the acceptance of the completed work by an authorized representative of the Town of Stratford. NO partial payments will be made. Invoices covering the work specified herein should be forwarded to the Purchasing Department upon completion of the project.

Taxes: The Town of Stratford is exempt from all State and Federal taxes. Do not include these amounts in your quotation.

Addendums: All addendums will be posted on the town website, www.townofstratford.com. It is the responsibility of the bidder to check the website for any addendums before submitting their bid.

F.O.B. Destination: All prices quoted must be net delivered to destination.

Conflict of Interest: No public official or employee shall, while serving as such, have any financial interest or engage in any business, employment, transaction or professional activity or incur any obligation of any nature which is in substantial conflict with the proper discharge of his/her duties or employment in the public interest.

D. RESERVATIONS:

The Town of Stratford may consider informal any proposal not prepared and submitted to the Town in accordance with the provisions herein stated. The Town of Stratford reserves the right to reject any or all proposals or parts of proposals; to waive defects in same proposals; or to accept any proposal or part thereof deemed to be in the best interests of the Town of Stratford.

Michael Bonnar, Purchasing Agent

SPECIFICATIONS: See next page.

**TOWN OF STRATFORD
BID 2015-039
BID SPECIFICATIONS**

Page 1

Project Name **UV MONITOR – SENSOR**

PART 1 GENERAL

1.1 Section includes

A. Sensor for continuous monitoring of UV absorbance and percent transmittance in water.

1.2 Measurement Procedures

A. The method of measuring UV absorbance and percent transmittance will be by determining the Spectral Absorption Coefficient (SAC) at a wavelength of 254 nm using a 2-beam ultra-violet absorption technology with a 1, 2, 5, or 50 mm path length.

1.3 Alternates

A. Other instruments that do not use 2-beam absorption technology are not acceptable.

B. Instruments that require the use of reagents are not acceptable.

C. Instruments that are not in accordance with DIN 38404 C3 are not acceptable.

1.4 System Description

A. Performance Requirements

1. Measurement range:

a. 0.01 to 60 mm⁻¹ at 50 mm, or

b. 0.1 to 600 mm⁻¹ at 5 mm, or

c. 0 to 1500 mm⁻¹ at 2 mm, or

d. 2 to 3000 mm⁻¹ at 1 mm

2. Compensation: 550 nm

3. Measurement interval: 1 minute

1.5 Certifications

A. UL 61010A-1 (Listed by 3rd party OSHA accredited NRTL)

B. CSA C22.2 No. 1010.1 (Certified by 3rd party SCC accredited Lab)

C. Certified by Hach to EN 61010-1 (IEC1010-1) per 73/23/EEC, supporting test records by Intertek Testing Services.

1.6 Environmental Requirements

A. Operational Criteria

1. Sample flow rate: 0.5 L/hour minimum for bypass sensors

2. Sample pressure at inlet: 0.5 bar (7.25 psi) maximum for tank sensors

3. Sample temperature: 2 to 40 °C (35 to 104 °F)

4. Sample pH: 4.5 to 9 pH

1.7 Warranty

A. The product includes a one-year warranty from the date of shipment.

1.8 Maintenance Service

A. Scheduled maintenance:

1. Visual inspection: weekly
2. Calibration: Comparative measurement weekly (depending on ambient conditions)
3. Wiper blade: As per counter or yearly
4. O-ring through-flow unit replacement: yearly

B. Unscheduled maintenance

1. Cleaning as needed based on environmental conditions.

PART 2 PRODUCTS

2.1 Manufacturer

A. Hach Company, Loveland, CO

1. Model UVAS sc UV Absorbance / %Transmittance Sensor or approved equal

2.2 Manufactured Unit

A. The UVAS sc UV Absorbance / %Transmittance Sensor consists of:

1. Sensor:
 - a. Stainless steel housing
 - b. Self-cleaning wiper system

2.3 Equipment

- A. The detector window of the sensor is automatically cleaned by a built-in wiper that eliminates surface films or particles.
- B. The sensor operates with diagnostic routines to reduce calibration and maintenance.

2.4 Components

A. Standard equipment:

1. Sensor
2. Cable
3. Manual

B. Dimensions:

1. 13.11 inches long (333 mm)
 2. 2.75 inches diameter (70 mm)
- C. Weight: 7.9 pounds (3.6 kg)

D. Connectors: 32.8 feet (10 m) cable

2.5 Accessories

- A. Bypass panel
- B. Mounting hardware

PART 3 EXECUTION

3.1 Preparation

- A. Bypass panel can be used for non-immersion applications.
- B. UVAS sc sensors cannot be used in sea water.

3.2 Installation

- A. Contractor will install the sensor 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.
 - 1. Town will schedule a date and time for start-up.

3.3 Manufacturers Service and Start-Up

- A. This bid will include the manufacturer's services to perform start-up on instrument to include basic operational training and certification of performance of the instrument.
- B. Bid will include a manufacturer's Service Agreement that covers all the manufacturer's recommended preventative maintenance, regularly scheduled calibration and any necessary repairs beginning from the time of equipment startup through to end user acceptance / plant turnover and the first 12 months of end-user operation post turnover.
- C. Items A and B are to be performed by manufacturer's factory-trained service personnel. Field service and factory repair by personnel not employed by the manufacturer is not allowed.
- D. Use of manufacturer's service parts and reagents is required. Third-party parts and reagents are not approved for use.

END OF SECTION

TOWN OF STRATFORD
BID 2015-039
BID SPECIFICATONS

Project Name: **UV Monitor System – Controller**

Page 1

PART 1 GENERAL

1.1 Section includes:

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

1.2 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.

D. The controller accepts 4 different analog sensor modules in any combination to measure the following:

1. pH/DO module

- a. Differential pH/ORP
- b. Combination pH/ORP
- c. Dissolved oxygen

2. Conductivity module

- a. Contacting conductivity
- b. Inductive conductivity

3. Flow module

- a. UltraSonic flow
- b. Paddle wheel flow

4. Analog mA IN module

1.3 Alternates

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

1.4 System Description

A. Performance Requirements

B. pH/ORP sensor module

1. Measurement range:

- a. -2.0 to 14.0 or -2.00 to 14 pH
- b. -2.100 to 2.100 mV

2. Repeatability: $\pm 1\%$ of range

3. Response time: 0.5 s

4. Temperature range:

- a. PT100/PT1000: -20 to 200 °C
- b. NTC300: -20 to 110 °C
- c. Manual: -25 to to 400 °C

C. DO sensor module

1. Measurement range:

- a. 0 to 40 ppm
- b. 200% saturation

2. Repeatability: $\pm 0.05\%$ of range

- 3. Response time: 0.5 s
- 4. Temperature range: 0 to 50 °C

D. Contacting conductivity sensor module

- 1. Measurement range:
 - a. Conductivity: 0 to 2.000, 0 to 20.00, 0 to 200.0 or 0 to 2,000 $\mu\text{S}/\text{cm}$ (0 to 2.000, 0 to 20.00 or 0 to 200.0 mS/cm)
 - b. Resistivity: 0 to 19.99 $\text{M}\Omega\cdot\text{cm}$ or 0 to 999.9 $\text{k}\Omega\cdot\text{cm}$
 - c. TDS: 0 to 9999 ppm (0-9999 ppb)
- 2. Repeatability:
 - a. 0 to 20 $\mu\text{S}/\text{cm}$, $K=1$: 0.02 mS/cm
 - b. 20 to 200,000 $\mu\text{S}/\text{cm}$, $K=1$: $\pm 1\%$ of reading
- 3. Response time: 0.5 s
- 4. Temperature range: -20 to 200 °C

E. Inductive conductivity sensor module

- 1. Measurement range:
 - a. Conductivity: 0 to 200.0 or 0 to 2,000 $\mu\text{S}/\text{cm}$ (0 to 2.000, 0 to 20.00, 0 to 200.0 or 0 to 2,000 mS/cm) (0 to 2.000 S/cm)
 - b. % concentration: 0-99.99 or 0-200.0%
 - c. TDS: 0 to 9999 ppm
- 2. Repeatability:
 - a. $> 500 \mu\text{S}/\text{cm}$: $\pm 0.5\%$ of reading
 - b. $\leq 500 \mu\text{S}/\text{cm}$: $\pm 2.5 \mu\text{S}/\text{cm}$
- 3. Response time: 1 s
- 4. Temperature range: -2 to 200 °C

F. Ultrasonic flow sensor module

- 1. Measurement range:
 - a. Flow rate: 0 to 9999, 0 to 999.9, or 0 to 99.99 with selectable flow rate units (gal., ft.3, acre-ft., liter, m3) and multiplier
 - b. Volume: 0 to 9,999,999 with selectable volume units (gal., ft.3, acre-ft., liter, m3)
 - c. Depth: 0 to 1200.0 in., 0 to 100.0 ft., 0 to 30,000 nm or 0 to 30.00 m
- 2. Repeatability: $\pm 0.1\%$ of span

G. Paddle wheel flow sensor module

- 1. Measurement range:
 - a. Flow rate: 0 to 9999, 0 to 999.9, or 0 to 99.99 with selectable flow rate units (gal., ft.3, acre-ft., liter, m3) and multiplier
 - b. Volume: 0 to 9,999,999 with selectable volume units (gal., ft.3, acre-ft., liter, m3)

1.5 Certifications

- A. EMC: CE compliant for conducted and radiated emissions CISPR 11 (Class A limits), EMC Immunity EN 61326-1 (Industrial limits)
- B. Safety: General Purpose UL/CSA 61010-1 with cETLus safety mark

1.6 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

1.7 Warranty

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

1.8 Maintenance Service

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

PART 2 PRODUCTS

2.1 Manufacturer

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

2.2 Manufactured Unit

1. The controller provides connections for up to 29 Hach digital and analog sensor families for 15 different parameters.
2. The controller is available with the following power requirements:
 - a. 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.
 - b. 24 Vdc powered: 24 Vdc, -15%, +20%; 16 W with 7 W sensor/network card load, 34 W with 25 W sensor/network card load (optional Modbus RS232/RS485 or Profibus DPV1 network connection).
3. The controller uses a menu-driven operation system.
4. The controller display is graphic dot matrix LCD with LED backlighting.
5. The controller is equipped with a real-time clock.
6. The controller is equipped with two security levels.
7. The controller is equipped with a data logger with RS-232 capability.
8. The controller is equipped with an SD card reader for data download and controller software upload.
9. 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
10. 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
11. The controller can be equipped with four additional 4-20 mA outputs with a maximum impedance of 500 ohms.
12. The controller can be equipped with the following forms of communication:
- a. MODBUS RS-232
 - b. MODBUS RS-485
 - c. Profibus DP
13. All user settings of the controller are retained for 10 years in flash memory.
14. The controller is equipped with a system check for:
- a. Power up test (monitoring and shutdown)
 - b. Total power draw
 - c. Memory devices
 - d. Temperature mother board

2.3 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

2.4 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.)

2.5 Accessories

- A. Weather protection shield
- B. Sun screen
- C. RS-232 / RS-485 MODBUS output card
- D. PROFIBUS DP output card
- E. Additional mA output card

PART 3 EXECUTION

3.1 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.)

3.2 Installation

- A. Contractor 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.
 - 1. Town will schedule a date and time for start-up.

Town of Stratford

BID 2015-039

**UV MONITOR
MEASUREMENT AND CONTROL INSTRUMENTATION
BID SHEET**

Description Cost	Net Unit
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UV monitor sensor and control panel	\$ _____
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Pole mounting hardware	\$ _____
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Warranty upgrade to include: Instrument start-up, all parts, labor, and travel for on-site repairs, 2 on-site calibrations per year. Factory recommended maintenance (Including required parts), unlimited technical support calls, and free firmware updates. On-site response for "down" Instrument repairs within 3 business days M-F.	\$ _____
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Submitted by: _____

Company: _____

Address: _____

City,State,Zip: _____

Phone: _____ **Email:** _____

Comments: