Source Water Monitoring

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Detect Changes in Water Quality

- Dissolved organic matter
- Intrusion of another source
  - Spring
  - Municipal or industrial waste
  - Acid mine drainage
  - Produced water from oil and gas drilling operations
  - Algal blooms
  - Reservoir stratification
- Storm events
- Unintentional or Malicious contamination of the source water
- Chemical or Oil Spills

HACH SOURCE WATER PANEL

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Select The Sensors You Need
Focus on Changes in Water Quality

- Select up to 6 sensors to connect to the versatile SC1000 Controller

Recommended

- pH probe
- LDO - Dissolved Oxygen probe
- Conductivity probe
- UVAS - UV Organic probe
- ORP probe

Optional

- Ammonia probe
- Solitax - Suspended Solids/Turbidity probe
- Oil in Water probe
- Nitratax – Nitrate probe

Rationale for parameter selection

Turbidity, High Range, SOLITAX™ t-line: May indicate some chemical compounds or increased bacterial levels (can measure suspended solids as well). Turbidity measurement is used to optimize the solids removal process.

Dissolved Oxygen, LDO: Sudden change may indicate toxic conditions that effect algal respiration or increased levels of bacteria using up the oxygen. For the day to day running of a plant, DO can be directly correlated to water quality. Different water sources or even water at different depths within a reservoir can result in different water quality.

Nitrate NITRATAX™ plus 5 mm: Nutrient level within water; agricultural runoff. If the incoming water exceeds 10 ppm, the plant will need to treat the water through blending, ion exchange or membrane filtration.

Oil n Water, FP360sc: The FP360sc can detect and measure polycyclic aromatic hydrocarbons (PAHs) from 1 ppb to 5000 ppb. This is approximately equivalent to a concentration of mineral oil between 0.1 to 150 ppm. The FP360sc is impervious to interferences by turbid water or natural organic and biological matter.

Rationale for parameter selection, cont.

pH sensor: Acid/base relationships within water. pH is also critical to many processes within the plant including coagulation, flocculation, softening and disinfection. pH is a parameter that in many plants is adjusted at various points during the water treatment process. It is a common parameter for raw water testing because of the critical nature of this measurement.

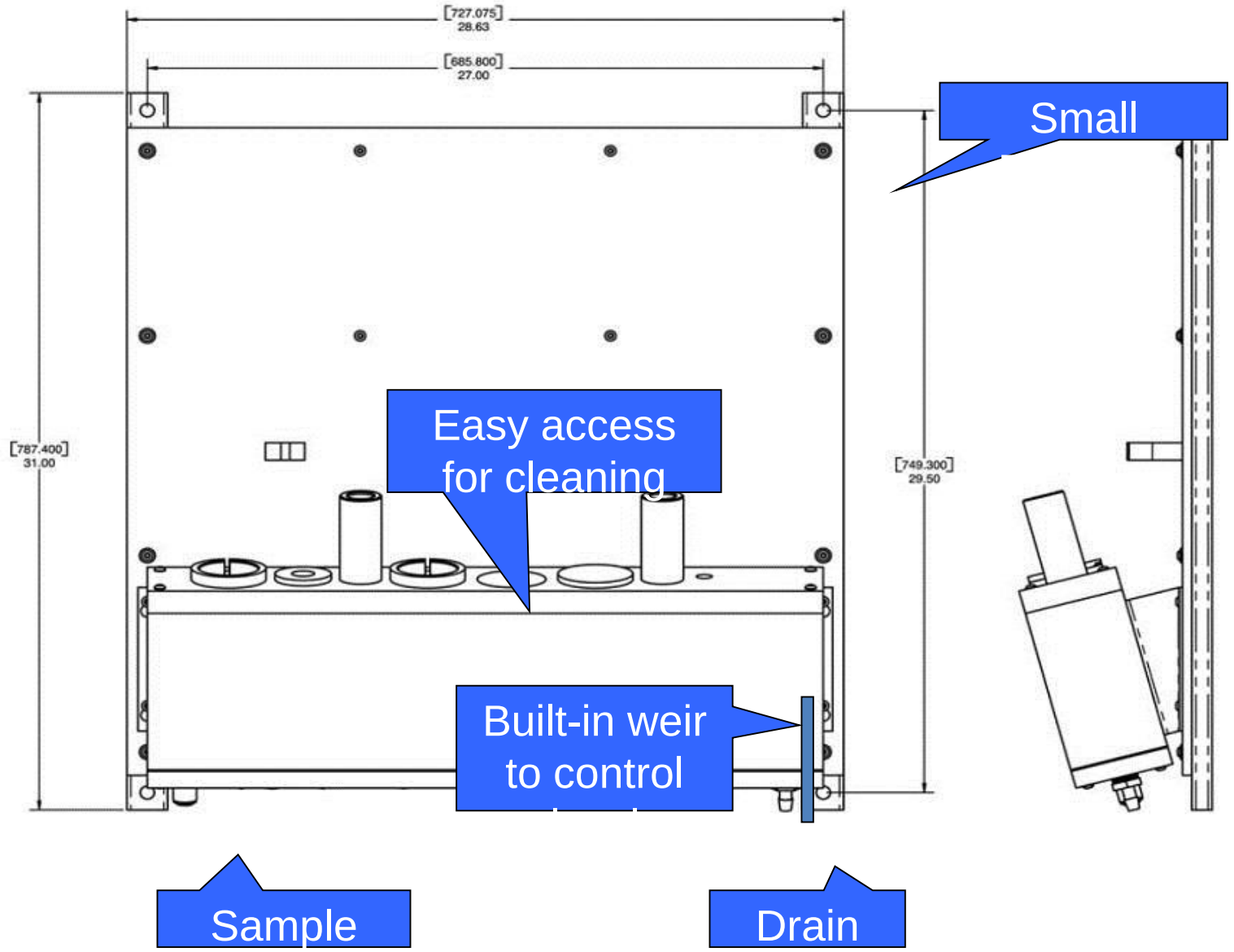
Conductivity, Inductive: May indicate presence of ionic species; measures the total ionic concentration in water

ORP Sensor: May indicate sudden changes for oxidative or reducing species introduced into the water

Organics UVAS probe, 5mm: Useful for season changes and accidental spills of an organic nature such as diesel fuel. During periods of high rainfall, source waters may see an increase in decaying organic mater which will show up on the UVAS probe. Absorbance at 254nm may correlate with THM formation at chlorination, COD, BOD or TOC concentrations. When monitoring both at the source and after organics removal, UV254 may be used as an indicator of THM formation potential.

Communication

- Standard:
  - Outputs: Up to 12 0/4-20mA
  - Relays: Up to four SPDT, user configurable
- Optional:
  - Additional analog outputs and relays are available
  - MODBUS (RS485)
  - PROFIBUS DP
  - GSM cellular module
  - Ethernet service port


[727.075]
28.63
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27.00
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31.00
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29.50
Small
Easy access
for cleaning
Built-in weir
to control
Sample
Drain

- Easy to install adapters speed installation of sensors
- Plug sensor positions when not in use

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TECHNICAL DATA

Dimensions: 31" x 29"

Inlet Dimension: 3/8" FNPT, supplied with 1/2" OD tubing quick-connect fitting

Drain (Outlet) Dimension: 3/4" FNPT, supplied with 3/4" barb fitting

Flow Required: Up to 4,000 mL/minute

Minimum Flow Requirement: 900 mL/minute

Sample Pressure: 20 – 80 psig

Power: 90 - 240 Vac, for use worldwide

Certifications: UL/CSA/CE Compliant

Mounting: Wall or rack

Weight: 65 lbs.

Data Logging: About 28 days; first in, first out

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sc1000 MULTI-PARAMETER CONTROLLER

Plug and Play Operation

There's no complicated wiring or set up procedures with the sc1000 controller. Plug any Hach digital sensor into a Probe Module and it's ready for use. No special ordering or software configuration is needed.

Expandable and Upgradable

Add or change probes without having to change the controller. Fully upgradable software ensures that this system will not be obsolete.

Communication Options to Fit Any Application Need

The sc1000 controller features state-of-the art Modbus TCP/IP communications protocol for seamless integration into a network of devices that support TCP/IP sockets. Use a standard Ethernet cable or connect wirelessly using GSM/GPRS to communicate with your SCADA, PLC or other network.

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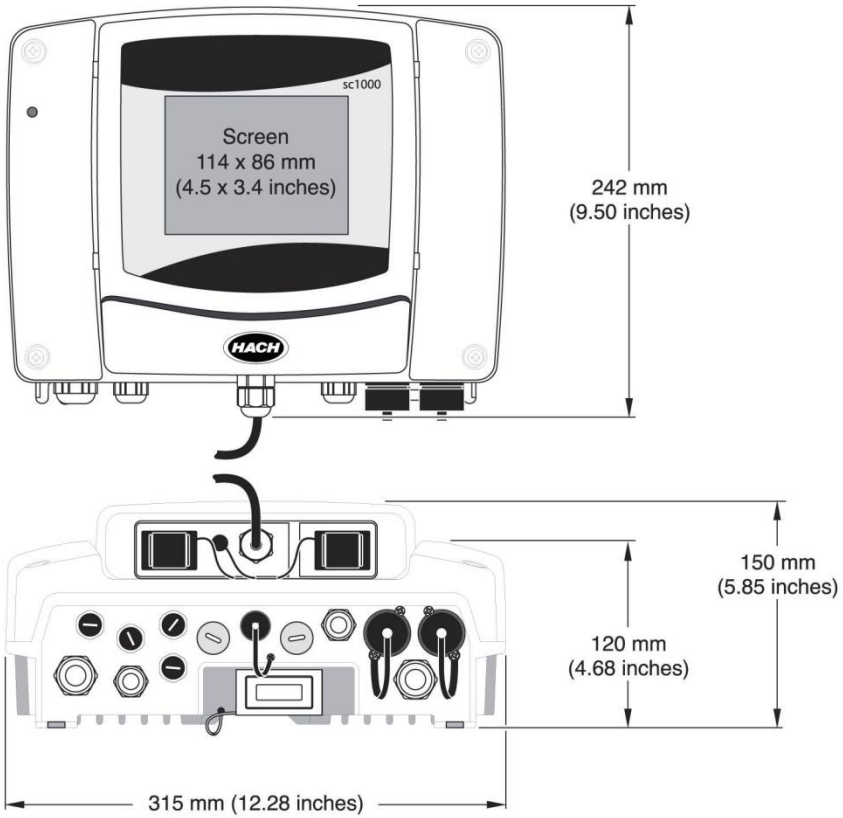
Sc1000 Display & Probe Modules



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TECHNICAL DATA

Operating Temperature Range: -20 to 55 °C (-4 to 131 °F), 0 to 95% relative humidity, non-condensing

Power Requirements (Voltage/Hz): 100 - 240 V AC, 24V DC, 50/60 Hz

Alarm: Low alarm point, low alarm point dead band, high alarm point, high alarm point dead band, off delay, and on delay

Relays: Up to four SPDT, user-configurable contacts rated 100 to 230 VAC, 5 Amp resistive maximum per probe module. Additional relays are available with additional probe modules.

Inputs: Up to 12 analog 0-20 mA, maximum impedance 500 Ohms per probe module. Additional analog inputs are available with additional probe modules.

Outputs: Up to 12 analog 0/4-20 mA, maximum impedance 500 Ohms per probe module. Additional analog outputs with additional probe modules. Optional digital communications via Modbus® (RS485) and Profibus® DP/V1.

Communication:

- Modbus® (RS485): Advanced communications/networking with PLC or SCADA system directly from analyzer
- Profibus® DP/V1 (certified)
- GSM/GPRS Quad-band cellular module (FCC and IC approved, EU and US only)
- Ethernet service port, RJ45, 10 MB/s

Mounting Configurations: Surface, panel, and pipe (horizontal and vertical) with optional sun shield

Enclosure Rating: IP65

Material Enclosures ABS (display module) and metal (probe module) enclosure with corrosion resistant finish

Dimensions Metric (H x W X D): 150 mm x 315 mm x 250 mm

Weight: Approximately 14.33 lbs. (6.5 kg) depending on configuration

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DISSOLVED OXYGEN: HACH LDO® PROBE, MODEL 2

No Calibration Required

The Hach LDO probe is ready to work in your process right out of the box with no calibration required for the entire 2-year life of the sensor cap.

No Membranes to Replace

There is virtually no maintenance with Hach's breakthrough luminescent technology. There are no membranes to replace, no electrolyte solution to replenish, and no anode or cathode to clean.

No Drift

A cutting-edge, 3D calibration procedure at the factory makes oxygen measurement with the Hach LDO probe more accurate than ever before.

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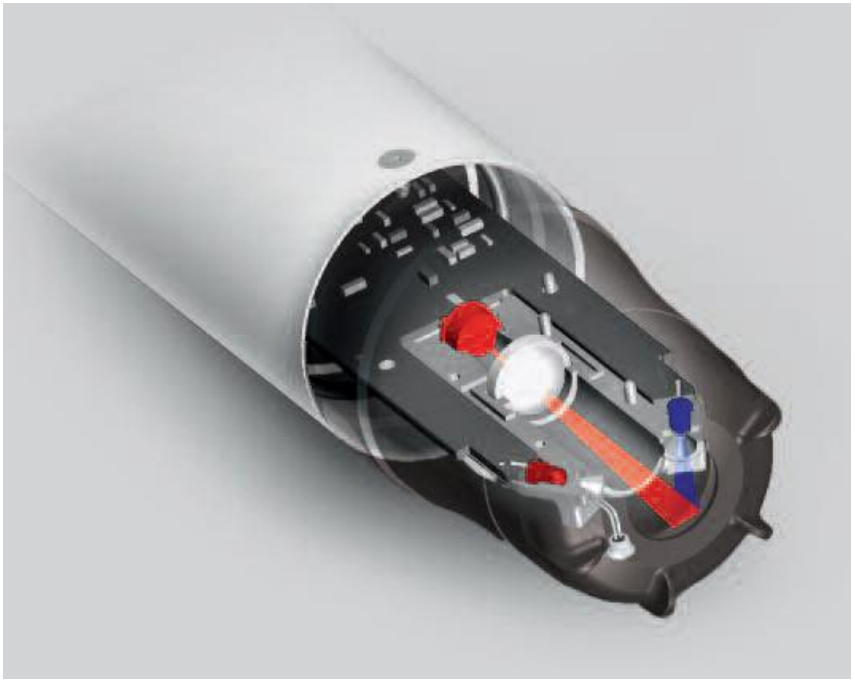
PRINCIPLE OF OPERATION

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 it takes 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.



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TECHNICAL DATA

Range 0 to 20.00 ppm
0 to 20.0 mg/L (or ppm)

Accuracy ± 0.05 ppm below 1 ppm
± 0.1 ppm below 5 ppm
± 0.2 ppm above 5 ppm

Response Time < 60 s

Resolution 0.01 ppm DO

Repeatability ± 0.1 (mg/L) ppm

Flow Rate None required

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

Cable Length 10 m

Dimensions (D x L) 1.9 in x 10 in (48.25 mm x 254 mm)

Weight 2.2 lbs.

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LDO Model 2
Field Service Partnership

Verification of Instrument performance/Maintenance

- Perform limited instrument cleaning.
- Review and evaluate user programmed parameters.
- Verify all instrument connections (including initial evaluation of the network topography).
- Evaluate all instrument alarm and warning conditions (internal to your Hach instrument)
- Verify instrument operating voltages.
- Inspect for signs of damage and/or leakage
- Perform diagnostics and communication to the LDO sensor thru the sc200, sc100 or sc1000 controller
- Replace LDO sensor cap and program calibration information into sensor
- Calibrate the LDO sensor following manual instructions
- Verify software and update as necessary

Repairs

- Perform required repair service including parts and labor as necessary
- Includes sending unit to the factory if unable to repair controller in the field at no additional charge.
- This instrument will go to the head of the bench repair queue.
- Abuse or Acts of God not covered.

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Differential pH & ORP Sensors

Differential Measurement Technique:

- This field-proven technique uses three electrodes instead of the two normally used in conventional pH sensors. Process and reference electrodes measure the pH differentially with respect to a third ground electrode. The end result is unsurpassed measurement accuracy, reduced reference junction potential, and elimination of sensor ground loops. These sensors provide greater reliability, resulting in less downtime and maintenance.

Replaceable Salt Bridge

- The unique, replaceable salt bridge holds an extraordinary volume of buffer to extend the working life of the sensor by protecting the reference electrode from harsh process conditions.

Differential Sensor Warranty

- Hach will replace any differential sensor that fails due to defects in materials or workmanship within one year from the date of shipment, and up to 30 months on a prorated basis for any failure.

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TECHNICAL DATA

DIFFERENTIAL pH

- **Measuring Range** -2 to 14 pH
- **Sensitivity** ±0.01 pH
- **Stability** 0.03 pH per 24 hours,
- non-cumulative
- **Operating Temperature** Digital Sensor: -5 to 70ºC
- (23 to 158ºF)
- Analog Sensor with Digital Gateway:
- 5 to 105ºC (23 to 221ºF)
- Immersion Sensor: 0 to 50ºC
- (32 to 122ºF)
- **Flow Rate** 3 m (10 ft.) per second, maximum
- **Sensor Pressure/** Digital: 6.9 bar at 70ºC
- **Temperature Limits** (100 psi at 158ºF)
- Analog: 6.9 bar at 105ºC
- (100 psi at 221ºF)
- **Built-in Temperature** NTC 300 ohm thermistor for
- **Element** automatic temperature compensation
- and analyzer temperature readout

DIFFERENTIAL ORP

- **Measuring Range** -1500 to +1500 mV
- **Sensitivity** ±0.5 mV
- **Stability** 2 mV per 24 hours, non-cumulative
- **Operating Temperature** Digital Sensor: -5 to 70ºC
- (23 to 158ºF)
- Analog Sensor with Digital Gateway: -
- 5 to 105ºC (23 to 221ºF)
- Immersion Sensor: 0 to 50ºC
- (32 to 122ºF)
- **Flow Rate** 3 m (10 ft.) per second, maximum
- **Sensor Pressure/** Digital: 6.9 bar at 70ºC
- **Temperature Limits** (100 psi at 158ºF)
- Analog: 6.9 bar at 105ºC
- (100 psi at 221ºF)
- **Built-in Temperature** NTC 300 ohm thermistor for
- **Element** analyzer temperature readout only—
- no automatic temperature compensation necessary for ORP measurement

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Differential pH Salt Bridge

Easily extend the life of your Hach differential sensors. By periodically replacing the salt bridge and standard cell solution, you can maximize the life of your Hach Differential Sensors.

For optimum performance, Hach recommends that differential sensor salt bridges be replaced every 6 months.

- Lowers Lifetime Cost of Process pH Sensors
- Salt bridge is field-replaceable
- Can be stored in the shipping solution until needed

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Inductive Conductivity Sensors

Wide Measuring Range

Hach's Inductive Conductivity Sensors measure 200 up to 2,000,000 microSiemens/cm. A built-in Pt 1000 RTD compensates the measured conductivity for changes in process temperature.

Low-maintenance Design

The inductive sensor design eliminates polarization and electrode coating problems that commonly affect conventional contacting electrode-type conductivity sensors.

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TECHNICAL DATA

Measuring Range

- From 200 microSiemens/cm up to
- 2,000,000 microSiemens/cm

Operating Temperature Range

- -10 to 200ºC (14 to 392ºF); limited only by sensor body
- material and mounting hardware; see below

Flow Rate

- 3 m (10 ft.) per second, maximum

Temperature Compensator

- Pt 1000 RTD

Principal of Operation

Inductive conductivity sensors induce a low current in a closed loop of solution, then measure the magnitude of this current to determine the solution's conductivity.

The conductivity analyzer drives Torroid A, inducing an alternating current in the solution. This current signal flows in a closed loop through the sensor bore and surrounding solution.

Torroid B senses the magnitude of the induced current which is proportional to the conductance of the solution. The analyzer processes this signal and displays the corresponding reading.

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pH, ORP and Conductivity Sensors Preventative Maintenance Agreement

- ***Verification of Instrument performance/Maintenance***
- □ Perform limited instrument cleaning
- □ Review and evaluate user programmed parameters
- □ Performance testing of pH sensor with pH buffers (as applicable)
- □ Performance testing of ORP sensor with ORP Test Solution (as applicable)
- □ Performance testing of conductivity sensor with conductivity standard (as applicable)
- □ Calibration of meter/sensor combination.
- □ Replace Salt Bridge and filling solution once per year (as applicable)

- ***Reporting/Certificate of Performance***
- □ Provide Hach Field Service Report with complete documentation of service performed and measurements/readings.
- □ Issue Certificate of Instrument Performance for each instrument that successfully passes final testing.

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FP360sc OIL-IN-WATER CONTINUOUS ONLINE MONITORING SENSOR

Minimal Maintenance

The FP 360 sc has no tubes, pumps, or valves that can foul or require constant maintenance interventions. Maintenance is limited to occasional wiping of the sensor's measurement window, calibration once every two years, and Xenon lamp replacement every four years.

Reduced Laboratory Testing

While laboratory testing is the ultimate method of measuring oil in water, it is a long and complex process that requires special equipment and trained lab personnel. The FP 360 sc provides a cost-effective, continuous online monitoring solution to maintain process control and avoid oil contamination with minimal laboratory testing.

High Sensitivity and Selectivity

The FP 360 sc can detect and measure polycyclic aromatic hydrocarbons (PAHs) from 1.2 ppb to up to 5000 ppb (µg/L). This is approximately equivalent to a concentration of mineral oil between 0.1 to 150 ppm (mg/L). Furthermore, the FP 360 sc method of detection makes it impervious to interferences by turbid water or natural organic and biological matter that impact online light scattering, UV absorbance, and VIS fluorescence instruments.

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Principle of Operation

The FP360sc measures intensity of fluorescence light at a wavelength of 360 nm emitted by polycyclic aromatic hydrocarbons (PAH) after UV irradiation of the sample at 254 nm. Since PAHs are components of most mineral oils, the FP360sc can detect the presence of oil contamination in surface, process, or industrial waters. In addition, since the intensity of the emitted light is proportional to the PAHs concentration, the FP360sc can be calibrated to measure oil concentration in stable matrices.

TECHNICAL DATA

- **Measurement Method** UV fluorescence method for polycyclic aromatic hydrocarbons (PAH)
- **Light Source** Miniature xenon flashlamp with interference filter
- **Detector** UV photodiode with interference filter; Compensation of daylight and flashlamp intensity fluctuations
- **Excitation** Wavelength 254 nm
- **Wavelength**
- **Range** Low Range:
- 0 - 50 ppb (µg/L) and 0 - 500 ppb (µg/L) (PAH)**
- 0.1 - 1.5 ppm (mg/L) and 0.1 - 15 ppm (mg/L) (oil)**
- High Range:
- 0 - 500 ppb (µg/L) and 0 - 5,000 ppb (µg/L) (PAH)**
- 0.1 - 15 ppm (mg/L) and 0.1 - 150 ppm (mg/L) (oil)**
- **Resolution** 0.1 ppb (µg/L) (PAH) in the lowest measuring range
- **Reproducibility** 2.5 % of measured value at constant temperature (PAH)
- **Response Time T90** 10 s
- **Calibration** Factory calibrated with UV fluorescence standard or process calibration with results of a grab sample analysis.
- **pH Value(s)** ≥ 4
- **Sample Temperature** 1 to 40 °C (33.8 to 104 °F)
- **Pressure Range** Max. 30 bar or 435 psi (measurement probe)
- **Material** Housing: stainless steel 316Ti (1.4571) or titanium
- **Dimensions**
- **Weight** Stainless steel: 6.17 lbs. (2.8 kg)
- Titanium: 4 lbs (1.8 kg)
- **Warranty** 1 year

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Solid Standards for Probes

- **500 ppb Probe**
  - **Solid standard set LZY740 Includes:**
- **Zero standard: LZY742 & Slope standard: LZY743 (approximately 1xx µg/L)**
- **5000 ppb Probe**
  - **Solid standard set LZY741 Includes:**
- **Zero standard: LZY742 & Slope standard: LZY744 (approximately 1xxx µg/L)**

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Verification with Solid Standard

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Verification Picture

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FP360
Field Service Partnership

- ***Verification of Instrument performance/Maintenance***
- □ Perform limited instrument cleaning
- □ Review and evaluate user programmed parameters
- □ Evaluate all instrument alarm and warning conditions (internal to your Hach instrument)
- □ Verify instrument operating voltages
- □ Replace gaskets once a year
- □ Calibrate Sensor
- □ Verify software version and update as necessary

- ***Repairs***
- □ Perform required repair service including parts and labor as necessary
- □ Includes sending unit to the factory if unable to repair controller in the field at no additional charge. This instrument will go to the head of the bench repair queue.
- □ Abuse or Acts of God not covered.

- ***Reporting/Certificate of Performance***
- □ Provide Hach Field Service Report with complete documentation of service performed and measurements/readings.
- □ Issue Certificate of Instrument Performance for each instrument that successfully passes final testing.

- ***Training***
- □ Provide basic end user training on general instrument operation and maintenance

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UVAS PLUS sc SENSOR

Continuous, Automatic Early Warning Systems

Use the Hach UVAS plus sc UV Absorbance/ %Transmittance Sensor to continuously protect plant treatment processes from high influent organic loads.

Self-cleaning Wiper System

The detector windows are automatically cleaned by a built-in wiper that eliminates surface films or particles that can diminish accuracy.

Self-diagnostics and Easy Maintenance

Diagnostic routines built into the UVAS plus sc sensor reduce the need for extensive calibration and maintenance. Only semi-yearly inspection and replacement of the wiper and seals as needed.

Principal of Operation

The Hach UVAS plus sc UV Absorbance / %Transmittance Sensor determines the Spectral Absorption Coe<cient (SAC) at a wavelength of 254 nm. Measurements can be expressed in absorption units (1/m), mE, AU, %T, %T/cm, mg/L, or ppm.

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TECHNICAL DATA

Measurement Technique UV absorption measurement (2-beam technique), reagent-free
Measurement Method SAC 254 in accordance with DIN 38404 C3
Measurement Path Length 1, 2, 5 and 50 mm 2, 5, and 50 mm
Measurement Range Choice of:

- 0.01 to 60 m–1 at 50 mm
- 0.1 to 600 m–1 at 5 mm
- 0 to 1500 m–1 at 2 mm

Compensation 550 nm
Measurement Interval ≥ 1 minute
Sample Temperature 2 to 40°C (35.6 to 104°F)
Sample pH 4.5 to 9 pH
Sensor Cable Length 10 m (32.8 ft.)
Control Function PID, time control, 2-point controller (with sc controller)
Inspection Interval 6 months
User Maintenance 1 h / month, typical
Dimensions 70 x 333 mm (2.75 x 13.11 in.) approximate
Weight 3.6 kg (7.9 lb.) approximate

UVASsc
Field Service Partnership

Verification of Instrument performance/Maintenance

- Perform limited instrument cleaning.
- Review and evaluate user programmed parameters
- Evaluate all instrument alarm and warning conditions (internal to your Hach instrument)
- Verify instrument operating voltages
- Evaluate Hach supplied sample conditioning equipment and probe mounting devices
- Verify Sensor operation
- Calibrate with Organic light filter standard or a sample specific calibration is performed.
- Replace wiper, wiper shaft O-rings and fittings once a year or as necessary during each visit at no additional charge.
- Verify software version and update as necessary

Repairs

- Perform required repair service including parts and labor as necessary
- Includes sending unit to the factory if unable to repair in the field at no additional charge. This instrument will go to the head of the bench repair queue.
- Abuse or Acts of God not covered.

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PA American – Hays Mine Treatment Plant

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Typical Installation

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HACH SOURCE WATER PANEL

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Probe from Hydromet for Algae

Fluorometers and Sondes for Cyanobacteria

This list is not an endorsement or recommendation of any product. Its purpose is to provide public water systems information and contacts on the types of meters and sondes available. This list should NOT be considered complete. If you are a vendor and would like to have your information added to this list, please send an email to linda.slattery@epa.ohio.gov .

OhioEPA

Updated 3/26/2015

Provider/U.S. Distributer	Equipment Name	Measures Chlorophyll	Chlorophyll range	Measures Phycocyanin	Phycocyanin range	Power source	Computer Interface	Total Approximate Cost	Additional Supplies	Additional Information
Handheld Fluorometers / Analyzers										
Beagle Bioproducts beaglebioproducts.com	Handheld Dual Channel Fluorometer	Yes, not sure if chlorophyll-*a* or total	0.25-2,500 ppb	Yes	10-100,000 ppb	4-AA batteries or 5V DC adapter	USB, can retrieve up to 3 assays	$1,495 plus $150 for each standard	0.2 mL tubes	Small handheld model, inexpensive. Will need to purchase calibration standards and calibrate before each use.
Modern Water modernwater.com	AlgaeChek Ultra Fluorometer	Yes	0-100 ug/L	Yes	0-100 ug/L	Digital RS232 or Analog 0-5V dc	Requires a laptop or tablet	$4,000-$7,000, dependent on use for in-line, in-situ, or portable	Cable and USB interface	Low cost, easy to use with options for spot testing using the portable kit, in-line or in-situ. A data logger is required for in-line and in-situ. Can test up to 3 parameters including chlorophyll a, phycocyanin, phcoerythrin and turbidity.
OTT Hydromet (Hach Co.) ott.com	Hydrolab DS5	Yes, chlorophyll-*a*	0-500 ug/L	Yes	200-2,000,000 cells/ml	Internal battery pack - 8 C cells	Serial (or USB adapter), PDA, or handhelp display	$11,000	Handheld display ($1,600)	Sonde can have up to 5 additional sensors added. Includes internal datalogger.
PP Systems (aka bbe moldaenke) ppsystems.com	AlgaeTorch	Yes, total	0-200 ug/L	Indirectly, through chlorophyll-a fluorescence	0-200 ug/L	12V Rechargeable battery	USB, data software for Windows; GPS	$8,500, plus sensor performance attachment ($370), and Telescopic rod to 10 m ($442)	Optional sensor performance attachment to check integrity of LED's; telescoping rod to 10m	Turbidity sensor included, calculates a compensation factor. Factory calibrated; needs calibration ~ every 2 yrs. GPS sensor for each sampling point.
Turner Designs turnerdesigns.com	Trilogy Lab Fluorometer	Yes, in vivo and extracted	0-300 ug/L, 0.025 ug/L min	Yes	0-150,000 cells/ml, 150 cells/ml min	AC power source	ASCII output through a 9-pin serial cable	$8,145 (includes extended warranty)	10mm x 10mm square cuvettes	Snap-in modules so it can be used for more than just algae; touch screen user interface. Lab use only
Turner Designs turnerdesigns.com	AquaFluor Fluorometer	Yes, in vivo OR extracted	0-300 ug/L, 0.3-0.5 ug/L min	Yes	0-150,000 cells/ml, 150 cells/ml min	4-AAA batteries	Internal datalogger	$3,048 (includes internal datalogger, chlorpophylll and phycocyanin channels, standards, and extended warranty	10mm x 10mm square cuvettes	Small handhelp model, inexpensive. Will need to purchase calibration standards and calibrate before each use.
YSI ysi.com fondriest.com	EXO1 Water Quality Sonde	Yes	0-400 ug/L	Yes	1-100 ug/L	2 D batteries (internal), or 9-16.5 V DC (external)	Handheld display or USB adapter for PC	$12,325 (2 sensors + handheld display and cable)	Handheld display ($2,800); 10 m cable ($595)	Can be used with the handheld display or PC and measure chlorophyll and phycocyanin at depth. Can get up to 4 probes. Should be serviced every 90 days.

Hydromat Blue-Green Algae Probe

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TECHNICAL DATA

- The blue-green algae sensor from Hydrolab is based on the Turner Designs Cyclops-7 submersible fluorometer. Two versions are available, one for phycocyanin and one for phycoerythrin.
- Blue green Algae Sensor Range
- Low sensitivity: 150 ....2,000,000 cells/mL
- Med. sensitivity: 150 ....200,000 cells/mL
- High sensitivity: 150 ....20,000 cells/mL
- Accuracy ± 3% for signal level equivalents of 1 ppb rhodamine WT dye or higher using a rhodamine sensor
- Resolution = 1 cell/mL

Questions ??

- Don’t see a sensor you’re interested in. Call us.
- Please don’t assume it is not available.
- All panels are customizable to meet your needs

- Contacts:
  - Ted Simmons tsimmons@hach.com
    - 970-531-4322

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