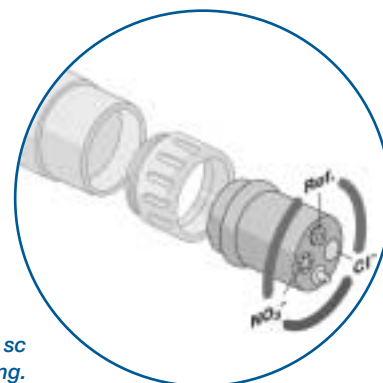# NO3D sc Nitrate Sensor
with CARTRICAL™ Technology

Hach's innovative technology, CARTRICAL makes the NO3D sc the easiest to maintain nitrate ISE sensor for continuous trending.

Features and Benefits

WW

A New Approach to ISE Technology—CARTRICAL

The Hach NO3D sc Nitrate Sensor uses an ion-selective electrode (ISE) to detect nitrate ions (NO_3^-) directly in the aeration basin as nitrate nitrogen (NO_3-N). A differential electrode is used as the reference electrode for superior stability. The most probable interference is from chloride ions (Cl^-) which is compensated through the use of an integrated chloride ISE to correct the nitrate value. Other interferences are further reduced using CARTRICAL technology, which calibrates each electrode individually and calibrates all three electrodes to each other. A temperature sensor is also included to improve accuracy.

Compact Cartridge Simplifies Maintenance

The NO3D sc sensor uses a calibrated sensor cartridge that should be replaced approximately twice a year (in typical operating conditions). No electrolyte or reagents to change. Cartridge replacement only takes minutes—just remove the old cartridge, plug in the new, and enter the sensor code. Maintenance is also minimized because sample pumps, valves, tubing, or filtration devices are not needed.

Insitu—No Sample Preparation

The NO3D sc sensor is designed for immersion directly in the nitrification/de-nitrification steps of the aeration basin eliminating the need for sample preparation. It installs quickly outdoors without special housing. The sensor can easily be relocated to various locations for greater knowledge about the process.

Economical Continuous Measurement

Real time measurements of nitrate in the aeration basin can be used to more effectively control the nitrification/de-nitrification process. The cost-effective alternative makes the NO3D sc the perfect tool for providing more visibility into daily trends to enable optimization of nutrient removal.

Automatic Cleaning System

An optional air cleaning unit is available for the NO3D sc sensor. Air is directed at each of the three electrodes individually for optimal cleaning. A compact compressor is available to provide pressurized air for the cleaning unit with weather-proof housing suitable for tank-side installation without additional structural requirements.

Plug and Play with Hach sc Digital Controllers

The Hach NO3D sc Nitrate Sensor is "plug and play" ready to use with the Hach sc Controllers. Complicated wiring or set-up procedures are not necessary. The sc100™ controller can accept up to two sensors while the sc1000™ controller can accept up to eight sensors.

Applications

- *Municipal wastewater treatment plants with less than 30% industrial waste*

- *Monitoring of the nitrogen removal process of the aeration basin (profile multiple trains)*

- *Control feeding of external carbon sources to support the de-nitrification*

HACH®

Be Right™

Specifications*

Measurement Method
Ion-selective electrodes for nitrate and chloride with differential reference electrode and temperature sensor

Range
0 to 1000 mg/L NO_3-N

Accuracy
5% of measured value ±0.2 mg/L (with standard solution)

Detection Limit
0.2 mg/L

Response Time
Less than 3 minutes (T90)

Operating Temperature
-20 to 45°C (-4 to 113°F)

Sample Temperature
2 to 40°C (35 to 104°F)

Sample pH
5 to 9

Sensor Immersion Depth
0.3 to 3.0 m (1 to 10 ft.) maximum

Sample Pressure
0.3 bar (4.4 psi) maximum

Storage Temperature
Sensor: -20 to 60°C (-4 to 140°F)
Sensor Cartridge: 5 to 40°C (41 to 104°F)

Calibration
Sensor cartridge, calibrated (sensor code contains factory calibration in code form)

Entry of sensor code calibrates the sensor

No standard solutions needed

1- or 2-point inline matrix correction adapts sensor to the wastewater matrix

Certifications
CE approved

Sensor Construction
316 stainless steel with Ryton® ends

Dimensions
48 x 361 mm (1.9 x 14.2 in.)

Cable Length
Standard: 10 m (33 ft.)

Optional Extensions: 7.6 m (25 ft.), 15.2 m (50 ft), or 30.5 m (100 ft.)

Maximum Total Length: 100 m (328 ft.)

Weight
1.3 kg (2.9 lbs.)

Warranty
1 year

Ryton® is a trademark of Phillips Petroleum Company.

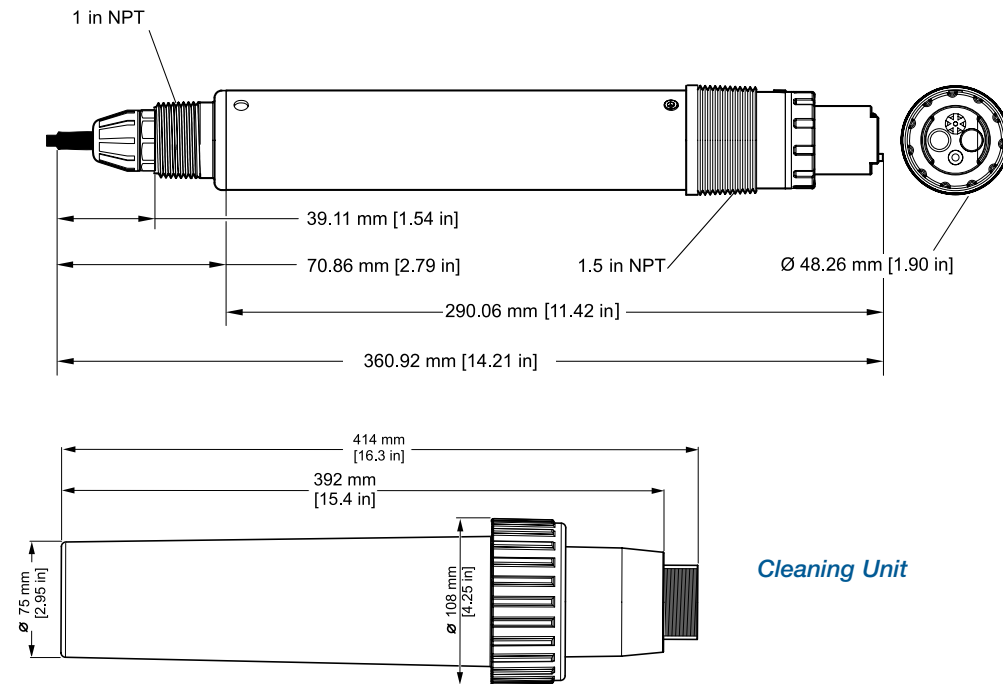**Specifications subject to change without notice.*

Real time readings provide continuous trending of the nitrate concentration which have been confirmed by lab comparison measurement.
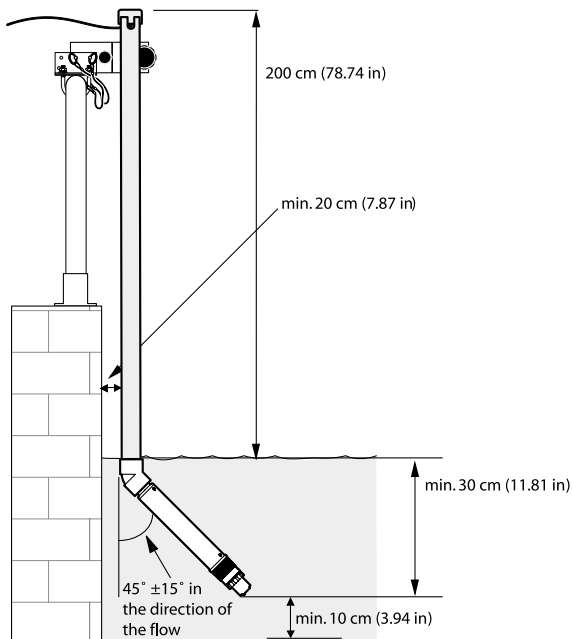
Engineering Specifications

1. The nitrate sensor shall consist of a digital sensor designed to connect to a universal controller.
2. The nitrate sensor shall be a continuous-reading sensor that utilizes Ion-Selective Electrode (ISE) technology for nitrate with differential reference electrode and temperature sensor.
3. The sensor cartridge shall be factory calibrated with all electrodes calibrated to each other and integrated in a one-piece design.
4. The sensor body shall be 316 stainless steel with ends made of Ryton®. All parts of the sensor shall be corrosion resistant and fully-immersible.
5. The measurement range shall be 0 to 1000 mg/L NO_3-N.
6. The sensor shall compensate for the interference effects of chloride and temperature.
7. The sensor shall operate without the requirement of sample conditioning.
8. The sensor shall be offered with optional cleaning device that encloses the entire sensor.
9. The optional cleaning device can either take compressed air from the plant supply or from an onsite compressor supplied by the manufacturer.
10. The sensor shall be furnished with a choice of rail or chain mount kit.
11. The sensor shall be capable of performing a one or two-point inline matrix correction to adapt the sensor to the wastewater matrix.
12. The sensor shall be the NO3D sc Nitrate Sensor, manufactured by Hach Company.

Dimensions

The Hach NO3D sc Nitrate Sensor can be mounted using the Rail Mount or Chain Mount Kit (see ordering information), with or without the optional cleaning unit.
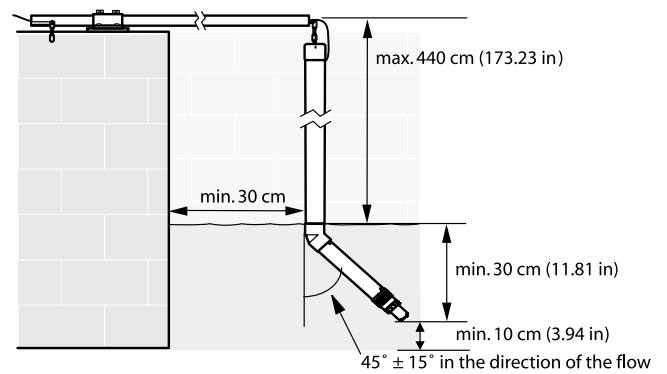
1 in NPT

39.11 mm [1.54 in]

70.86 mm [2.79 in]   1.5 in NPT   Ø 48.26 mm [1.90 in]

290.06 mm [11.42 in]

360.92 mm [14.21 in]

414 mm [16.3 in]

392 mm [15.4 in]

Ø 75 mm [2.95 in]

Ø 108 mm [4.25 in]

Cleaning Unit

Installation Examples

200 cm (78.74 in)

min. 20 cm (7.87 in)

min. 30 cm (11.81 in)

45° ±15° in the direction of the flow

min. 10 cm (3.94 in)

Note: Ensure the sensor cannot make contact with the tank wall

Rail Mount

max. 440 cm (173.23 in)

min. 30 cm

min. 30 cm (11.81 in)

min. 10 cm (3.94 in)

45° ± 15° in the direction of the flow
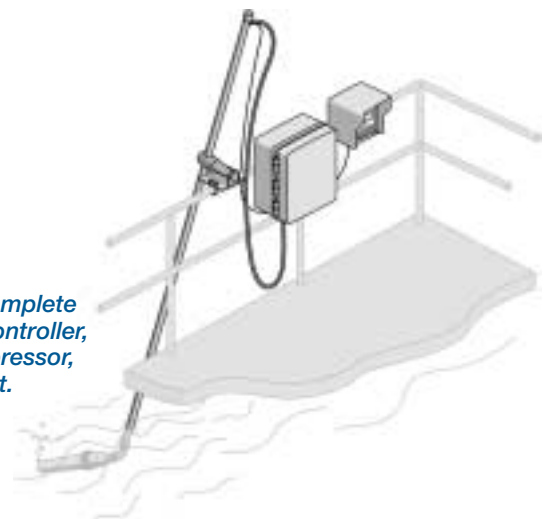
Note: Ensure the sensor cannot make contact with the tank wall

Chain Mount

NO3D sc sensor as complete system with Hach sc controller, sensor, optional compressor, and cleaning unit.

Ordering Information

LXV442.99.00002	NO3D sc Nitrate Sensor, includes 10 m (32.8 ft.) integral cable and a calibrated sensor cartridge

Mounting Kits

6184900	Rail Mount Kit
LZX914.99.12400	Chain Mount Kit

Accessories

LZY331	Cleaning Unit
6860000	High Output Air Blast Cleaning Compressor, 115 Vac
6860100	High Output Air Blast Cleaning Compressor, 230 Vac

Replacement Parts

6188401	Calibrated Sensor Cartridge
6188300	Test-Cartridge

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

Model sc100™ Controller

(see Lit. #2463)

The Model sc100 Controller receives data from one or two sensors. Its "plug and play", mix-and-match operation lets it fit into any facility or workflow. Digital communication with any Hach digital sensor or probe is simple and reliable.

Model sc1000™ Controller

(see Lit. #2403)

Get the same great features as the sc100 Controller above— "plug and play", all digital operation and communication—but with the Hach sc1000 Controller, up to eight Hach sensors can be used with one controller in any combination. The sc1000 Controller is also expandable and upgradeable to easily adapt to your needs.

Instrumentation for nitrogen removal...

NITRATAX™ sc Probe Family

(see Lit. #2464)

NH4D sc Ammonium ISE Probe

(see Lit. #2583)

AMTAX™ sc Ammonia Analyzer

(see Lit. #2487)

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

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