



# Chemical-free measurement: COD, NO<sub>3</sub> and NO<sub>2</sub>

THE WTW SPECTRAL SENSORS



a xylem brand

# Reagent-free measurement directly in the process

## Innovative spectral measurement technique ...

The optical method of these sensors enables a continuous measurement of carbon- and nitrogen-parameters directly in the medium. For simultaneous measurement of several parameters the information of the whole spectrum is evaluated during the process. At the same time cross-sensitivities of single parameters and interferences such as turbidity are eliminated.



### Easy handling

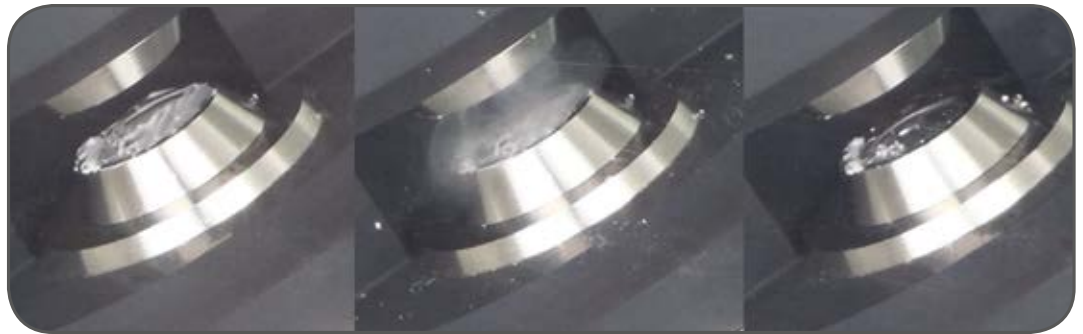
- No sample taking and preparation
- No reaction times
- Minimal cleaning effort

### Minimal operational costs

- No routine service necessary
- No use of reagents
- No spare parts such as wipers
- Integrated, maintenance-free ultrasonic cleaning

## ... with the unique WTW ultrasonic cleaning system

The integrated ultrasonic source induces oscillation of the measurement windows. The resulting movement of the surface prevents the attachment of dirt and fouling right from the start. This guarantees comparable and reliable measuring results during continuous operation.



Cleaning effect of the WTW ultrasonic cleaning technology

## ... extremely resistant

- Robust materials such as Titanium and Peek down to the last screw
- Integrated shock protection
- Usage even in corrosive media

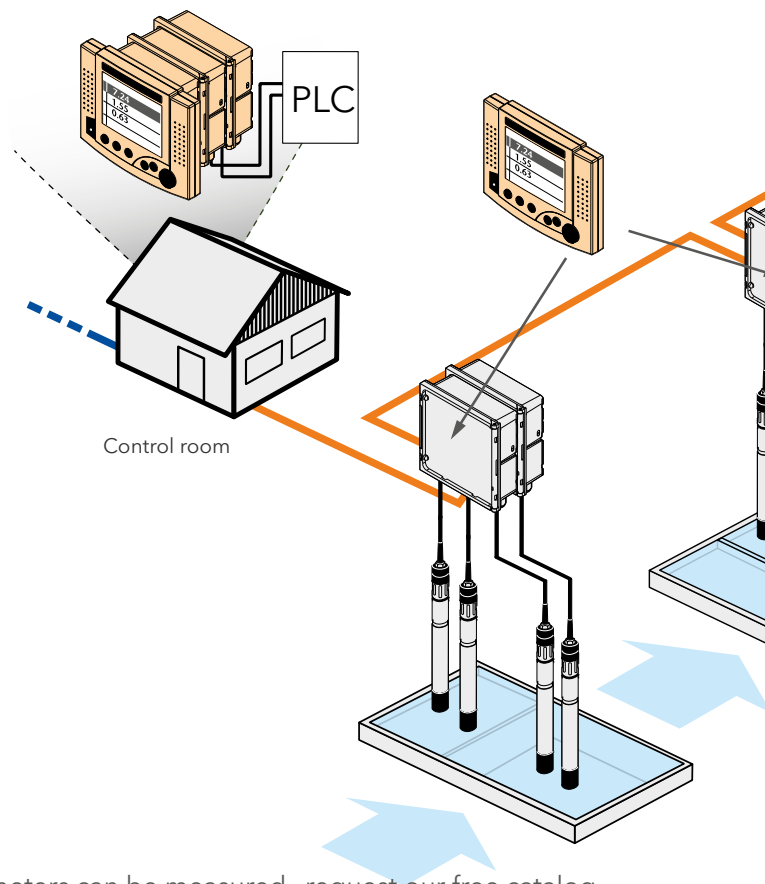


## High measuring accuracy

- Continuous measurement directly in the process
- Optimized referencing for excellent zero point and long term stability
- Compensation of interferences by evaluation of the whole measured spectrum

# The appropriate sensor for your application

- Influent measurement
- Detection of influent peaks
- Control/regulation of recirculation
- Process optimization of the aeration
- Effluent control



## Integration in your IQ SENSOR NET\*



\*With the IQ SENSOR NET several additional parameters can be measured - request our free catalog "**On-line Instrumentation**" or visit our website [www.wtw.de/en/iqsn](http://www.wtw.de/en/iqsn) (For convenience use our QR code).

## Two spectral sensor types for distinct parameters:

### UV-VIS sensors (200-720 nm)

With these sensors C-parameters, Nitrate and optional TSS can be measured.

- Nitrate
- COD/TOC/DOC/BOD/SAC/UVT
- **TSS**

### UV-sensors (200-390 nm)

To distinguish between Nitrate and Nitrite these sensors with a higher resolution are required.

- Nitrate
- **Nitrite**
- COD/TOC/DOC/BOD/SAC/UVT

## The spectral sensors at a glance:

**CarboVis:** 1 2 3

Measuring parameters: COD/TOC/DOC/BOD/SAC/UVT, optional TSS

**NitraVis NI:** 1 2 3

Measuring parameters: Nitrate, Nitrite

**NiCaVis:** 3

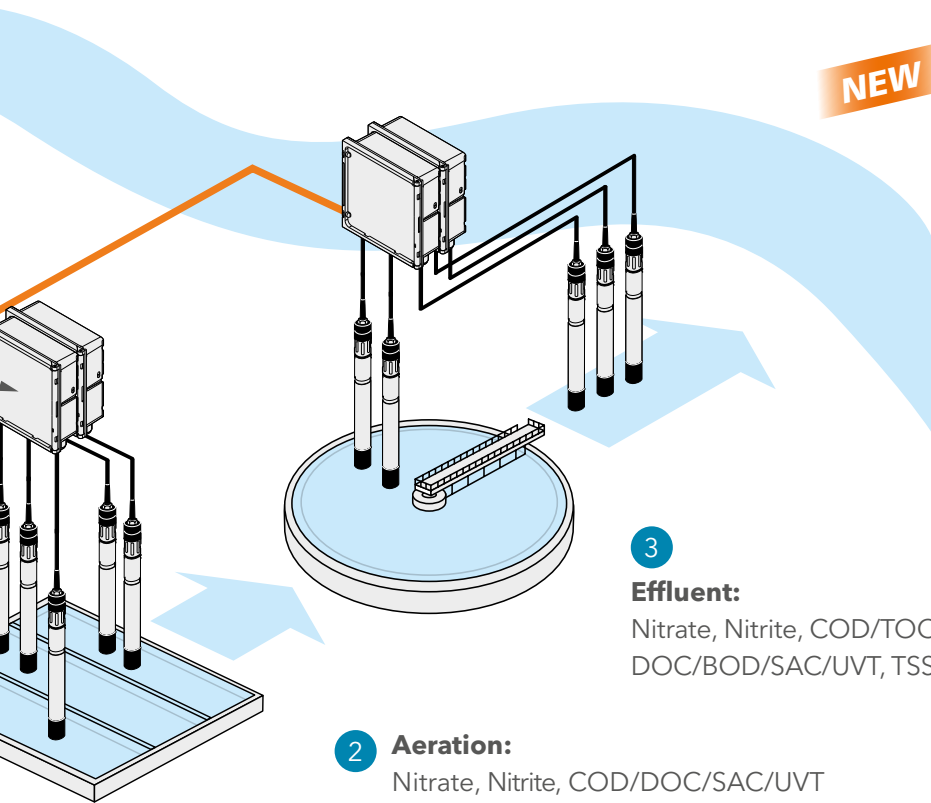
Measuring parameters: Nitrate, COD/TOC/DOC/BOD/SAC/UVT

**NiCaVis NI:** 1 2 3

Measuring parameters: Nitrate, Nitrite, COD/TOC/DOC/BOD/SAC/UVT

In wastewater treatment plants increased Nitrite values can be a sign for an optimization demand of the biological processes. With NitraVis NI and NiCaVis NI sensors processes in the aeration can be completely monitored and optimized.

**NEW**



**1 Influent:**  
Nitrate, Nitrite, COD/TOC/DOC/BOD/SAC/UVT, TSS

**2 Aeration:**  
Nitrate, Nitrite, COD/DOC/SAC/UVT

**3 Effluent:**  
Nitrate, Nitrite, COD/TOC/DOC/BOD/SAC/UVT, TSS

For additional applications please contact our Technical Support.

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## Two gap sizes for higher and lower parameter concentrations:



**Variant 701**  
1 mm  
Optimal for  
Influent and aeration  
(higher concentrations)



**Variant 705**  
5 mm  
Optimal for  
effluent  
(lower concentrations)

# Technical Data

Measuring principle	Spectral Measurement in the UV-VIS range (200 - 720 nm) / UV range (200 - 390 nm)						
	CarboVis 701 IQ (Ts)	CarboVis 705 IQ (Ts)	NitraVis 701 IQ NI	NitraVis 705 IQ NI	NiCaVis 705 IQ	NiCaVis 701 IQ NI	NiCaVis 705 IQ NI
<b>Applications</b> (municipal wastewater)	influent, aeration, effluent	effluent	influent, aeration, effluent	effluent	effluent	influent, aeration, effluent	effluent
<b>Measuring range</b> (total) *	COD: 0 ... 20,000 mg/l TOC: 0 ... 20,000 mg/l SAC: 0 ... 5,000 m <sup>-1</sup> DOC: 0 ... 12,500 mg/l BOD: 0 ... 8,000 mg/l UVT: 0.0 ... 100.0 %	COD: 0.0 ... 800.0 mg/l TOC: 0.0 ... 500.0 mg/l SAC: 0.0 ... 600.0 m <sup>-1</sup> DOC: 0.0 ... 500.0 mg/l BOD: 0.0 ... 500.0 mg/l UVT: 0.0 ... 100.0 %	NO <sub>3</sub> -N: 0.0 ... 150.0 mg/l NO <sub>2</sub> -N: 0.00 ... 75.00 mg/l	NO <sub>3</sub> -N: 0.00 ... 50.00 mg/l NO <sub>2</sub> -N: 0.00 ... 25.00 mg/l	NO <sub>3</sub> -N: 0.00 ... 50.00 mg/l COD: 0.0 ... 800.0 mg/l TOC: 0.0 ... 500.0 mg/l SAC: 0.0 ... 600.0 m <sup>-1</sup> DOC: 0.0 ... 500.0 mg/l BOD: 0.0 ... 500.0 mg/l UVT: 0.0 ... 100.0 %	NO <sub>3</sub> -N: 0.0 ... 150.0 mg/l NO <sub>2</sub> -N: 0.00 ... 75.00 mg/l COD: 0 ... 20,000 mg/l TOC: 0.0 ... 600.0 m <sup>-1</sup> DOC: 0 ... 20,000 mg/l SAC: 0 ... 5,000 m <sup>-1</sup> BOD: 0 ... 12,500 mg/l UVT: 0.0 ... 100.0 %	NO <sub>3</sub> -N: 0.00 ... 50.00 mg/l NO <sub>2</sub> -N: 0.00 ... 25.00 mg/l COD: 0.0 ... 800.0 mg/l TOC: 0.0 ... 500.0 mg/l SAC: 0.0 ... 600.0 m <sup>-1</sup> DOC: 0.0 ... 500.0 mg/l BOD: 0.0 ... 500.0 mg/l UVT: 0.0 ... 100.0 %
<b>Measuring range suspended solids</b> (optional)	influent: 0.00 ... 15.00 g/l TSS  effluent: 0 ... 4,500 mg/l TSS	effluent: 0.0 ... 900.0 mg/l TSS	—	—	—	—	—
<b>Materials</b>	Housing: Window:	Titanium 3.7035, PEEK Sapphire glass					
<b>Pressure Resistance</b>	≤1 bar						
<b>Ambient Conditions</b>	Operating temperature: 32 °F ... 113 °F (0 °C ... +45 °C) Storage temperature: 14 °F ... 122 °F (-10 °C ... +50 °C)						
<b>Flow velocity</b>	≤3 m/s						
<b>pH range</b>	pH 4 ... pH 12						
<b>Salt Content of Medium</b>	< 5,000 mg/l (Chloride)						
<b>Dimensions</b>	31.57 x 2.36 in. (802 x 59.9 mm length x diameter)						
<b>Weight</b>	7.8 kg						
<b>Warranty</b>	2 years for defects in quality						

\* The quoted measuring ranges are theoretically possible. In practice, real measuring ranges exist that are given by the limits of photometric determination. The limits are significantly influenced by the light scattering due to solids and the absorption of accompanying substances (sample matrix).

## Ordering information

All sensors with integrated WTW ultrasonic cleaning system, multifunctional slide and shock-absorption-rings, without connection cable (SACIQ order separately).

UV-VIS sensors	Description	Order No.
CarboVis 701 IQ	UV-VIS sensor for in-situ measurement of COD, TOC, DOC, BOD, SAC and UVT in the influent, aeration and effluent of municipal wastewater treatment plants.	481 048
CarboVis 701 IQ TS	UV-VIS sensor for in-situ measurement of COD, TOC, DOC, BOD, SAC, UVT and TSS in the influent, aeration and effluent of municipal wastewater treatment plants.	481 049
CarboVis 705 IQ	UV-VIS sensor for in-situ measurement of COD, TOC, DOC, BOD, SAC and UVT in the effluent of municipal wastewater treatment plants.	481 050
CarboVis 705 IQ TS	UV-VIS sensor for in-situ measurement of COD, TOC, DOC, BOD, SAC, UVT and TSS in the effluent of municipal wastewater treatment plants.	481 051
NiCaVis 705 IQ	UV-VIS sensor for in-situ measurement of Nitrate, COD, TOC, DOC, BOD, SAC and UVT in the effluent of municipal wastewater treatment plants.	481 052
<b>UV sensors</b>		
NitraVis 701 IQ NI	UV sensor for in-situ measurement of Nitrate and Nitrite in the influent, aeration and effluent of municipal wastewater treatment plants.	481 056
NitraVis 705 IQ NI	UV sensor for in-situ measurement of Nitrate and Nitrite in the effluent of municipal wastewater treatment plants.	481 057
NiCaVis 701 IQ NI	UV sensor for in-situ measurement of Nitrate, Nitrite, COD, TOC, DOC, BOD, SAC and UVT in the influent, aeration and effluent of municipal wastewater treatment plants.	481 054
NiCaVis 705 IQ NI	UV sensor for in-situ measurement of Nitrate, Nitrite, COD, TOC, DOC, BOD, SAC and UVT in the effluent of municipal wastewater treatment plants.	481 055

Accessories for ...

... the vertical installation



(Sensor holder EH/U 170 in combination with swing mounting assembly EH/F 170-1,5)

Model	Order No.
EH/F 170-1,5	109 272
EH/U 170	109 320

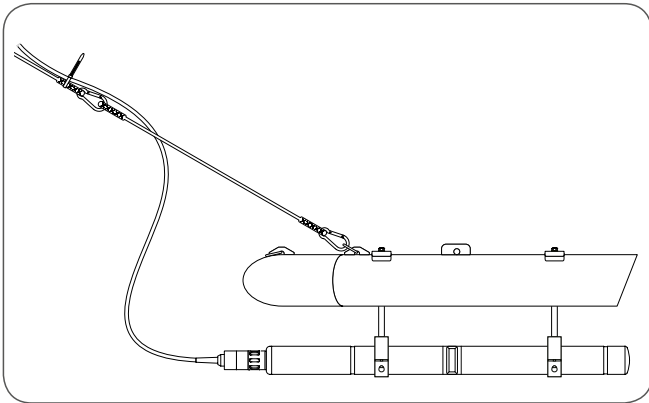
... the horizontal installation



(Supplement kit Vis Set/EH in combination with swing mounting assembly EH/F 170-1,5)

Model	Order No.
EH/F 170-1,5	109 272
Vis Set/EH	481 073

... for widely fluctuating water levels



(Float S200 with supplement kit VIS Set-F)

Model	Order No.
S 200	108 540
VIS Set-F	481 080

... for flow-through measurement



(Flow-through vessel VIS FT-1)

Model	Order No.
VIS FT-1	480 080



For additional accessories see our brochure **"Product Details"** for Online Instrumentation or go to [www.wtw.de/en/onl-accessories](http://www.wtw.de/en/onl-accessories).

# What can Xylem do for you?

We're 12,900 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

**For more information on how Xylem can help you, go to [www.xyleminc.com](http://www.xyleminc.com)**



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