Carbon

Carbon parameters:
COD, BOD, TOC, DOC, SAC, UVT

To measure the organic load of water, the parameters TOC, DOC, COD or BOD are used. The differences in these parameters show that these measurements are not identical and that the measured values therefore can not be the same.

Very often, SAC is used as a surrogate parameter. With the same sensor also UV transmission (UVT) can be measured and used as control parameter for disinfection plants.

Fields of application:

- Municipal wastewater (treatment plant)
  - Inlet
  - Biological Cleaning
  - Outlet
- Centrate water
- Micropollutant removal
- Surface waters
- Disinfection plants

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COD

Chemical Oxygen Demand – contains all substances that can be dissolved by chemical oxidation. It is at the same time the conventional parameter for the calculation of wastewater charges.

BOD

Biochemical Oxygen Demand – contains only the compounds that can be oxidated microbiologically.

TOC

Total Organic Carbon – a measure for the total organically bound carbon.

DOC

Dissolved Organic Carbon – dissolved organic share of TOC.

SAC

The SAC (spectral absorption coefficient) is a parameter that can be determined relatively easily. Many organic compounds have characteristical UV absorption spectrums. The intensity of the light attenuation can, therefore, be correlated with the organic load.

This correlation is significant in measuring media with low variations of composition concerning color, solids and their optical characteristics. Wastewater, however, contains many substances with completely different optical characteristics. For each substance, a different correlation factor concerning the carbon content applies.

UVT

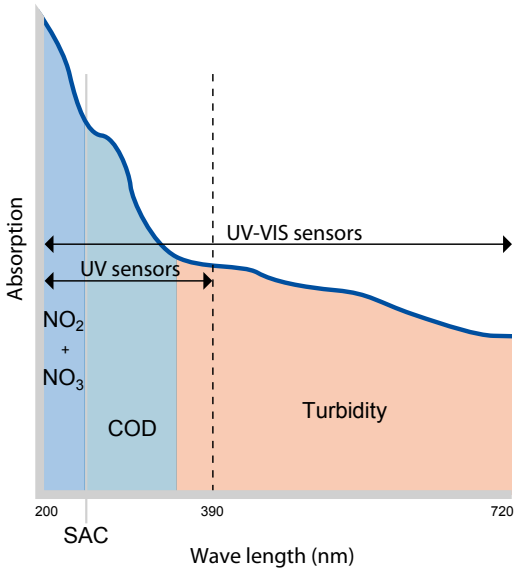
Additionally, UV transmission can be measured with the SAC sensor at 254 nm. UVT is particularly used to control disinfection plants.

Depending on the requirements, the turbidity can be compensated (UVT_{dis}) or not (UVT_{tot}).

Spectral Online Sensors

The CarboVis® and NiCaVis® sensors measure the total spectrum range from ultraviolet to long wave visible light (200–720 nm; UV-VIS sensors) or in the ultraviolet range (200–390 nm; UV sensors). The measured values are determined from the high information content of the spectral data. The calculation is based on methods and characteristics that were achieved from a multitude of measurements and longtime analyses. The user can, therefore, select algorithms that are adapted to the measuring site (inlet, biological tank, outlet) having a high correlation with the basic parameter COD.

The spectral procedure has an additional advantage: the turbidity of the test sample, which affects optical measurements, is optimally compensated over a wide wavelength range. Moreover, the spectral measurement provides an optimal compensation of the influence of existing nitrate and nitrite for the COD measurement.



Example spectrum of UV-VIS sensor

UV-VIS and UV Spectral Sensors

The chemical-free spectral measurement allows a precise determination of the COD, nitrate, nitrite and total suspended solids.

Due to the built-in ultrasonic cleaning system, a very long maintenance-free operation is possible. Accumulation of dirt and biofilm formation is gently but very effectively prevented in this manner.

High-tech materials such as titanium and peek ensure an easy use in almost all and even corrosive media.

Spectral sensor with multifunctional slide and Shock-Absorption-Rings

- Low maintenance due to integrated ultrasonic cleaning
- Measurement of COD, BOD and many more
- No reagents, no consumabels

IP 68 · 2 Year Warranty · TD *D2.11, D2.13, D2.15, D2.16, D2.26*

Ordering Information

Model	Description	Order No.
CarboVis® 701 IQ	Spectral UV-VIS probe to measure COD_{tot}, $COD_{diss.}$, TOC, BOD, DOC, $SAC_{tot.}$, $SAC_{diss.}$ and UVT_{254} in the inlet and the aeration with integrated ultrasonic cleaning, multifunctional slide and shock-absorption-rings, without connecting cable (order SACIQ separately)	481048
CarboVis® 705 IQ	Like CarboVis® 701 IQ, but for the measurement in the drain	481050
CarboVis® 701 IQ TS	Spectral UV-VIS probe to measure COD_{tot}, $COD_{diss.}$, TOC, BOD, DOC, $SAC_{tot.}$, $SAC_{diss.}$, UVT_{254} and suspended solids in the infeed and the stimulation with integrated ultrasonic cleaning, multifunctional slide and shock-absorption-rings, without connecting cable (order SACIQ separately)	481049
CarboVis® 705 IQ TS	Like CarboVis® 701 IQ TS, but for the measurement in the drain	481051
CarboVis® 705 IQ TS Co	Like CarboVis® 705 IQ TS, but with Color	481065
NiCaVis® 705 IQ	Spectral UV-VIS probe for measuring nitrate, COD_{tot}, $COD_{diss.}$, TOC, BOD, DOC, $SAC_{tot.}$, $SAC_{diss.}$ and UVT_{254} in the drain/outlet with integrated ultrasonic cleaning, multifunctional slide and shock-absorption-rings, without connecting cable (order SACIQ separately)	481052
NiCaVis® 705 IQ TS	Like NiCaVis®705 IQ, but with TS	481053
NiCaVis® 705 IQ TS Co	Like NiCaVis® 705 IQ TS, but with Color	481066
NiCaVis® 701 IQ NI	Spectral UV sensor for the measurement of nitrite. nitrate. $COD_{tot.}$, $COD_{diss.}$, TOC, BOD, DOC, $SAC_{tot.}$, $SAC_{diss.}$, UVT_{254} in the inlet and in the aeration with integrated ultrasonic cleaning. multifunctional slide and shock-absorption-rings. without connecting cable (order SACIQ separately)	481054
NiCaVis® 705 IQ NI	Like NiCaVis® 701 IQ NI. but for the measurement in the drain/outlet	481055
UV 701 IQ SAC	Optical SAC and UVT sensor (254 nm) to measure higher concentrations with integrated ultrasonic cleaning, multifunctional slide and shock-absorption-rings, without connecting cable (order SACIQ separately)	481036
UV 705 IQ SAC	Like UV 701 IQ SAC, but to measure lower concentrations	481038
NiCaVis® 705 IQ SF	Spectral UV-VIS sensor (60 mm) for the measurement of Nitrate, COD, TOC, BOD, DOC, SAC, UVT_{254} and TS in surface water bodies with integrated ultrasonic cleaning.	481058
NiCaVis® 705 IQ SF Co	Like NiCaVis® 705 IQ SF, but with Color	481060
NiCaVis® 705 IQ NI SF	Spectral UV-VIS sensor (60 mm) for the measurement of Nitrate, Nitrite, COD, TOC, BOD, DOC, SAC, UVT_{254} and TS in surface water bodies with integrated ultrasonic cleaning.	481059

For technical data please see datasheets D2.11, D2.13, D2.15, D2.16 and D2.26

Alternatives and accessories see brochure "Product Details" and website

Information about IQ Sensor Net system see from page 48

Spectral sensors for nitrogen see from page 32

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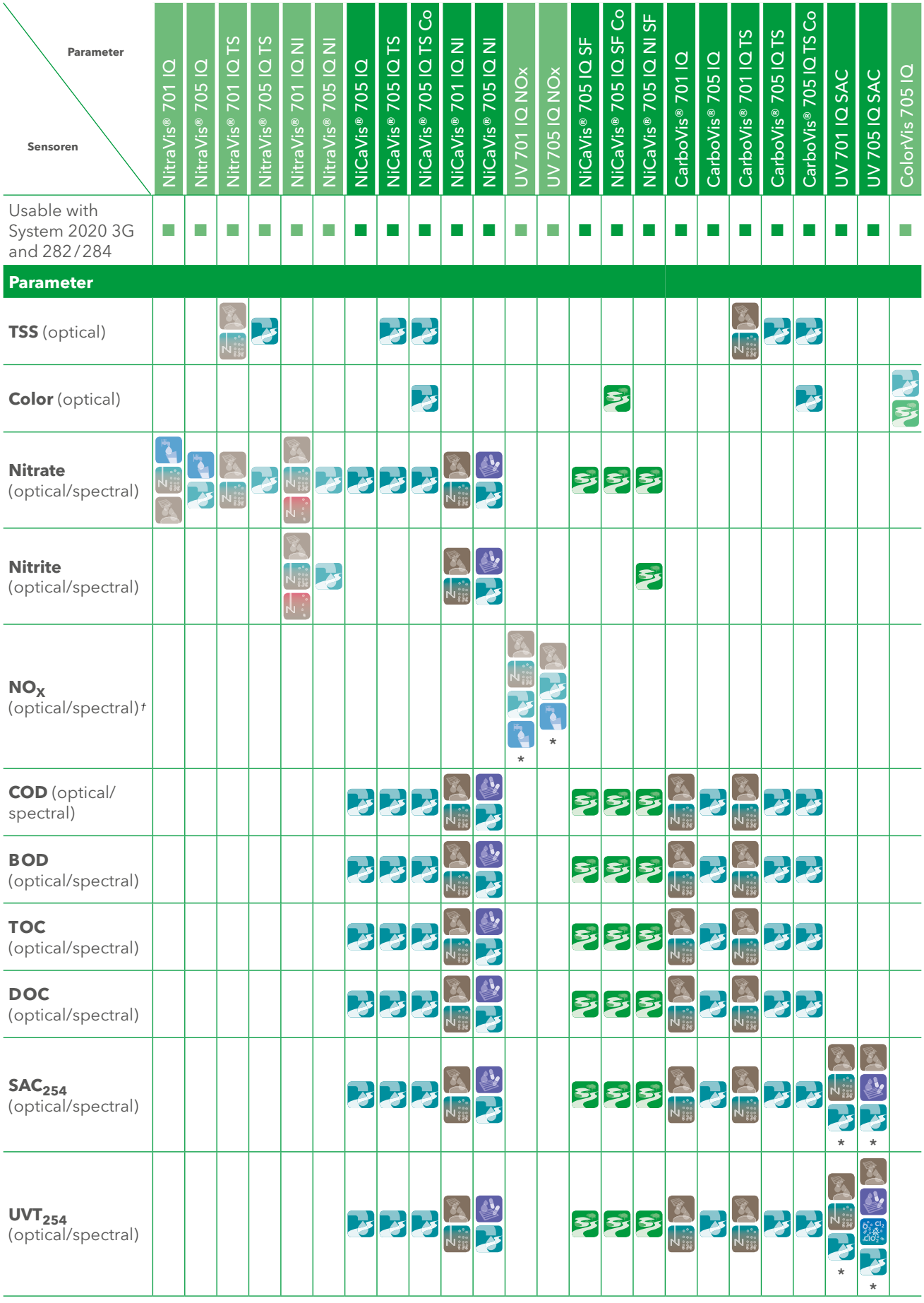

** Gap size for inlet and outlet depends on concentrations*
† Nitrite and Nitrate are included in the measured value