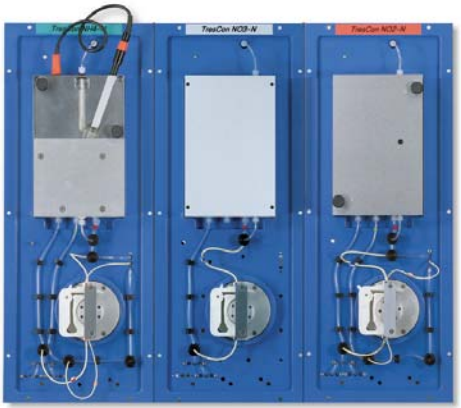
TresCon®

Total Nitrogen

NEW

Features

- On-line nitrogen parameter balancing
- N_{Total} determination in sewage treatment plant effluent
- Nitrate determination completely without nitrite overlayering
- Use of ammonium and nitrate measurement, with nitrite measurement if necessary



N_{Total} = NH_4-N (ammonium-nitrogen) + NO_3-N (nitrate-nitrogen) + NO_2-N (nitrite-nitrogen)

According to the German General Wastewater Management Regulations the definition of total nitrogen (N_{Total}) in the effluent of the biological stage of sewage treatment plants is "the sum of ammonium, nitrate and nitrite-nitrogen"[1].

Thanks to the modular design of the system, TresCon® is able to determine the N_{Total} parameter on-line.

This is done by determining the basic parameters ammonium-nitrogen (ISE), nitrate (UV) and nitrite (photometry) and then calculating the N_{Total} value. This means that TresCon® offers the possibility of continuously monitoring N_{Total} in sewage treatment plant effluent without a wet chemistry digestion.

	Measuring Range
	mg/l
N_{Total} (dissolved)	0.1 … 1000
NO_3-N (even with significant NO_2 content)	0.1 … 60
NO_3 (even with significant NO_2 content)	0.1 … 250

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Determination of N_{Total}

In practice the measurement of the nitrate-nitrogen and ammonium-nitrogen is frequently sufficient for the determination of the total nitrogen N_{Total}. Only when the sample contains significant amounts of nitrite-nitrogen, typically when the nitrite-nitrogen content > 5 – 10% of the nitrate-nitrogen, is it also necessary to use the nitrite analyzer module to take the nitrite-nitrogen into account.

The TresCon® controller processes the N_{Total} analysis values in exactly the same way as if they were the data from an independent TresCon® analyzer module, i.e. they are stored and can, for example, be assigned as required to relay or mA outputs and also provided with limits.

Determination of nitrate-nitrogen in the presence of large amounts of nitrite-nitrogen

In sewage treatment plants it may be necessary to determine nitrate-nitrogen in a sample containing comparatively high amounts of nitrite-nitrogen. Conventional measuring methods based on UV self-absorption cannot be used in this case as they always record the overlayering of the two substances; this is usually known as the NO_X-N value. In such cases the separate nitrite-nitrogen determination (photometric azo dye method) means that TresCon® offers the possibility of calculating the "real" nitrate-nitrogen concentration from the NO_X-N value.

This software function is contained in the TresCon® controller as the nitrogen balance. The measuring data obtained for nitrate-nitrogen are processed if they were the data from an independent TresCon® analyzer module, i.e. they are stored and can, for example, be assigned as required to relay or mA outputs and also provided with limits.

Technical Data

Resolution N_{Total} (mg/l) (Display)	Range: 0.1 ... 100 mg/l : 0.1 mg/l 100 ... 1000 mg/l : 1 mg/l
Resolution nitrate (mg/l) (Display)	Range: 0.1 ... 100 mg/l : 0.1 mg/l 100 ... 250 mg/l : 1 mg/l
Response time	< 5 min to measured value (after alteration in concentration at all module inputs)
Measuring interval	5 ... 30 min, depending on individual module settings
Calibration	Automatically for each module
Sample input (3 modules)	Max. approx. 0.8 l/h
	(Further information is given in the technical data for the individual modules)

Ordering information:

Depending on the analytical problem, two or three analyzer modules for the determination of nitrite, nitrate and ammonium-nitrogen are required for the N_{Total} determination or NO_3 determination without the NO_2 fraction. The individual ordering information is given in the descriptions of the individual modules on the previous pages.

[1] German General Wastewater Management Regulation on the minimum requirements for the discharge of wastewater into surface waters from 27 August 1991, Annex 1: Definition of the minimum requirements for communal sewage treatment plants