

# RTC-DN MODULE REAL-TIME DENITRIFICATION CONTROL SOLUTION

## Applications

- Municipal Wastewater
- Industrial Wastewater



## Denitrification. Under Control.

Hach®'s RTC-DN System optimizes the internal recirculation flow of the nitrate-containing water from effluent nitrification to the denitrification zone. Thereby the total nitrogen removal is improved and the risk of denitrification processes disturbing the sedimentation process in the final clarification tanks is reduced. Furthermore the energy consumption for aeration is minimized and there is also a regain of acid capacity, which is essential for buffering the acid formed during the nitrification process.

### Improved compliance based on stable total nitrogen effluent values

By controlling the internal recirculation flow of the nitrate-containing water from effluent nitrification to the denitrification zone the transfer of DO towards the anoxic zone is minimized and due to this also the total nitrogen concentration in the effluent is minimized.

### Utilize the full denitrification potential of your plant and reduce the energy consumption in the nitrification zone

Optimizing the internal recirculation flow the RTC-DN makes sure the full denitrification potential of a plant is used. Due to the DO recovery from denitrification the energy consumption for aeration is minimized.

### Gain additional acid capacity

During a well controlled denitrification step a maximum of acid capacity is generated, which is essential for buffering the acid formed during the subsequent nitrification process.

### Avoid denitrification in final sedimentation

An optimized consumption of the nitrate in the anoxic zone avoids nitrogen forming denitrification in the final clarifier which seriously interferes with the sedimentation process.

### Minimize cost for external C-dosing

Using RTC-DN with the dosing option optimizes dosing of carbon sources to make sure that given nitrogen limits are always achieved while at the same time the costs for dosing agents are reduced.

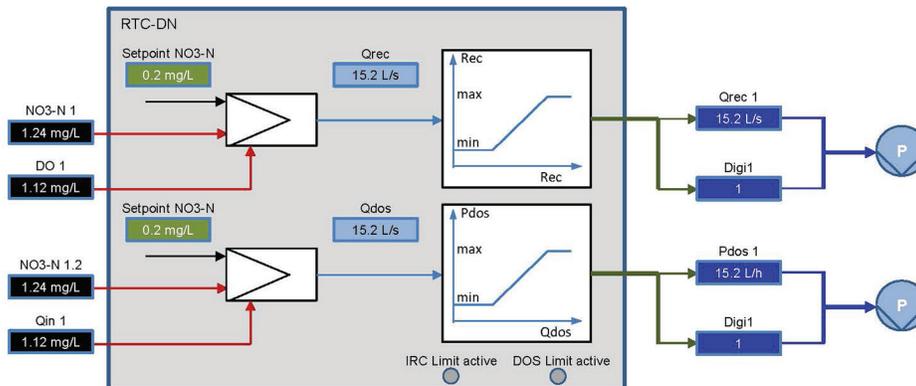
## Principle of Operation

For plants with pre-denitrification and 2 lanes the RTC-DN controller adjusts independently for each lane the internal recirculation flow rate from effluent nitrification to the pre-denitrification zone, ensuring that DO carryover from the nitrification zone is minimized and that the actual denitrification capacity is utilized as effective as possible. The calculation is based on the Nitrate concentration in the outlet of each denitrification zone and the flow rates for each lane. Measurements for the DO and  $\text{NO}_3\text{-N}$  concentration in the effluent of the nitrification zone can be considered in the calculation.

Alternatively the RTC-DN can adjust the internal recirculation in each lane flow to control the  $\text{NO}_3\text{-N}$  concentration effluent aeration.

If input signals for  $\text{NO}_3\text{-N}$ , DO or flow rate are not available, the system automatically switches to fallback strategies.

The RTC-DN control software can be combined with other control software modules and has to be hosted by a specific hardware.



## Order Information

### RTC-DN Module

#### LXZ521

RTC-DN Module, software only. To be used with LXV515.  
Control module for  $\text{NO}_3\text{-N}$  load dependent  $\text{O}_2$  control. Available as 1- or 2-channel version.

Note: The RTC-DN Module needs to be used in combination with the RTC-N Module.

#### LXV515

IPC Hardware

Please note: Using RTC Module requires SC1000 controller and RTC card.

### Be certain in your control with a first class Service Partner. Be confident with Hach Service.

Hach's Commissioning Service for RTC provides the insurance that your complete Real Time Control solution is installed and configured properly as well as optimized efficiently. During the commissioning period (Start Up phase, Commissioning phase, Hand over phase), Hach will thoroughly monitor your system and review and analyse your data remotely in order to provide guidance to optimize your RTC at its highest performance and efficiency levels for your application.

### HACH COMPANY World Headquarters: Loveland, Colorado USA

United States: 800-227-4224 tel 970-669-2932 fax orders@hach.com  
Outside United States: 970-669-3050 tel 970-461-3939 fax int@hach.com

[hach.com](http://hach.com)

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