



LIMES⁺: *The new generation of hardness monitoring*

- > for water softening plants
- > for reverse osmosis systems



Drinking water



Raw water



Waste water



Boiler water



Cooling water

Safety reliably produced.

 **RLS Wacon**
analytics GmbH

The LIMES[→] hardness control series

Retrofitting possible at any time (Plug & Measure)

All units can be ordered individually and are not linked to the purchase of a reverse osmosis system.

- All models can be combined for everyone, at any time and for all systems!
- Existing connections of a resin expansion sensor can be used without any problems.
- The acquisition costs are comparable to those of a commercially available resin expansion sensor.

Features of all Limes hardness control devices

- More reliable and accurate monitoring of water hardness than with resin expansion sensors
- Long-time proven measuring method for water hardness determination
- No wear of the sensor
- Monitoring of a defined limit value
- Control with four multicolored LED displays for operation, fault, limit value exceeded and pending service

LIMESBASE

- Low-priced model to start with - can be easily upgraded to LIMESPLUS at any time
- Continuous monitoring of the soft water for a softening or a reverse osmosis plant
- Fault signal as potential-free change-over contact in case of a hardness breakdown (e.g. for automatic regeneration triggering)

LIMESPLUS (in addition to the above)

- Operating cost-efficient hardness control unit with additional adjustment possibilities compared to the LIMESBASE
- Input for floating contact for interrupting the analysis interval when the system is at a standstill
- Extensive diagnostic options for convenient service



Features

LIMESBASE LIMESPLUS

Parameters

Number limit values water hardness	4	4
Size bottle reagent (ml)	750	750
Reagent shelf life in months	24	24
Number of analyses per bottle	10.000	10.000

Digital contacts

Input	no	yes
Limit value alert	yes	yes
Device fault	yes	yes

Functions

Adjustable flushing time	no	yes
First value suppression	yes	yes
Adjustable analysis interval	no	yes
Available analysis intervals		
Description in min	10	5/10/20/30
Diagnostic mode	optional	yes

Safety reliably produced.



Functional principle

As in a chemical laboratory, the Limes devices independently take a water sample from the sample line. Reagent is then added to the water sample.

In the case of soft water, the water sample is colored green. In case of a hardness breakthrough, the sample is colored red. The full color sensor installed in the unit detects this coloring of the water sample in the measuring chamber. The internal control switches the output signals depending on the measurement result.

The hardness monitoring units LIMESBASE and LIMESPLUS are your personal analysis laboratory.

No service necessary after hardness breakthrough

Nothing has to be exchanged after a limit value has been exceeded. All monitoring units continue to measure directly and can repeat the measurement or continue the measurement on request. Thus, there is no failure of the plant after a hardness breakthrough, since maintenance and servicing take place independently of the regeneration. **Maintenance and service can be planned!**

Dry hands during service

As part of the six-monthly maintenance, the measuring cell and the pump are replaced without tools. As a cost-effective alternative, the measuring cell can optionally be disassembled and only the wearing parts have to be replaced. **You choose between convenience and price!**

The LIMES[®] hardness control series

General specifications	Value / range
Power supply	100 - 240 V 50 / 60 Hz
Power consumption	15 VA (in operation)
IP-protection class	IP43 - with cover IP54
Ambient temperature	10 - 45 °C (LHV-7.0: 15 - 45°C)
Measuring water temperature	5 - 40 °C
Humidity	20 - 90 % RF non-condensing

Technical data	Value / range
Dimensions	With cover: 250 x 360 x 110 mm (W x L x D) Without cover: 250 x 360 x 60 mm (W x L x D)
Weight	With cover: 2.1 kg Without cover: 1.8 kg
Relay outputs	2 relays 2.5 A / 250 VAC 2.5 A / 100 VDC Potential-free outputs NC/NO > Limit value alarm > Device fault
Signal input	Input for potential free contact
Inlet / outlet connection	Hose 1/4" outer diameter
Optional connection set	R 3/4", R 1", R 1 1/4", R 1 1/2", R 2"

Analysis properties	Value / range
Measuring principle	Colorimetric method
Measuring accuracy	±15 % of the limit value of the used reagent
Limit range	0.1 °dH 0.5 °dH 3.0 °dH 7.0 °dH
Reagent range	ca. 3 months or up to 10.000 analyses per 750 ml reagent bottle
Shelf-life reagent	24 months
Inlet water pressure	Approx. 0.5 ... 5 bar With an inlet pressure over 2 bar a pressure reducer/choke must be used.
Water sample	Clear, colorless, free of solids, without gas bubbles, pH 4 ... 10.5, Iron < 3 ppm, copper < 0.2 ppm, Alu. < 0.1 ppm, manganese < 0.2 ppm, Acid capacity KS4.3 < 5 mmol/l

Our product range:

Water hardness measurement

With our analyzers of the SYCON series you can also monitor the function of your ion exchangers and reverse osmosis systems. For steam boiler houses we offer you an analyzer with approval for BoB operation. For each of your applications, you can obtain an optimized instrument with an individually configurable range of functions from RLS Wacon analytics.



Sample coolers

You will find coolers in our assortment that allow you to take samples for manual analysis. We also offer pre-coolers for analytical instruments. Body and cooling coil are made of stainless steel (type 1.4571) and are approved for a nominal pressure up to 16 bar.



Reagents

We can supply you with the right reagent for your analyzer. We will gladly send you an overview of the available reagents for your SYCON analyzer. In addition to the reagents of RLS Wacon analytics, our delivery program also includes compatible reagents for the analyzers of other manufacturers.



Test sets

We offer a wide range of test sets for the determination of water parameters. Besides many common quick tests for the control of residual hardness, total hardness, chlorine content and iron concentration you will also find many test sets which are needed for niche applications.

The RLS Wacon analytics GmbH is a family-owned enterprise based in Hildesheim, Germany. For more than 40 years, we are developing and manufacturing robust and safe measurement and sensor technology for demanding applications. We hereby consistently focus on quality and well-known products. Our particular interest is the dialogue with customers, partners and suppliers. That's how **safety is reliably produced.**

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