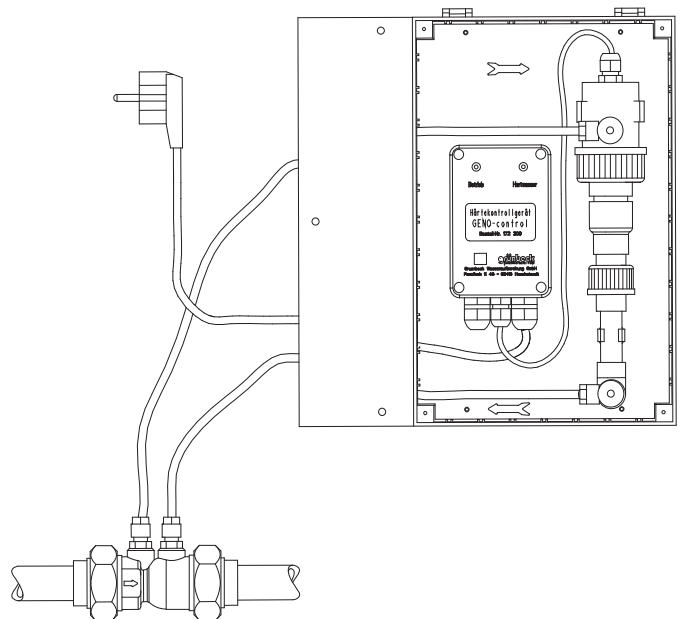


Operation Manual

Hardness Monitoring System GENO®-control



Edition August 2015
Order no.172 940 - inter

Grünbeck Wasseraufbereitung GmbH

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A company certified by TÜV SÜD
in accordance with DIN EN ISO 9001,
DIN EN ISO 14001 and SCC

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EC Declaration of Conformity

This is to certify that the system designated below meets the safety and health requirements of the applicable European guidelines in terms of its design, construction and execution.

If the system is modified in a way not approved by us, this certificate is void.

Manufacturer: Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1
89420 Hoehstaedt/Germany

Responsible for documentation: Markus Pöpperl

System designation: Hardness monitoring system

System type: GENO®-control


System number: Refer to type designation plate

Applicable EC guidelines: EMV (2004/108/EC)
EC Low Voltage Guideline (2006/95/EC)
RoHS (2011/65/EU)

Applied harmonised standards, in particular: DIN EN 61000-6-2, DIN EN 61000-6-3,
1st Guideline on Device and Product Safety
(Ordinance on the Marketing of Electrical Operating Materials to be used within specific voltage limits – 1. GPSGV).

Applied national standards and technical specifications, in particular:

Date/Signature of manufacturer: 04.08.2015

i. V. 
M. Pöpperl
Dipl.-Ing. (FH)

Function of signatory: Head of Department Product Realisation and Product Launch

General notes

Please read and observe these operating instructions carefully prior to installation and start-up of the hardness monitoring system.

The system will work to your full satisfaction for many years if you handle it with care and operate, inspect and maintain it according to these instructions.

The system may only be operated, maintained and repaired by persons who are familiar with this operation manual.

At installation, operation and maintenance please always consider the fact that drinking water requires special care and hygiene.

The use of original parts which can be ordered from your sanitary company, our customer service/authorised customer service or directly from headquarters will ensure the function and long service life of your system.

In case of inquiries, please specify the information shown on the type designation plate. Please copy the type designation and serial number from the designation plate to the table below.

Type	Hardness monitoring system GENO®-control
Serial no.	_____

You may order this operation manual separately: order no. 172 940-inter

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Please note

1. All Grünbeck products are made of high-quality materials to ensure a long and trouble-free service life.
The system will work to your full satisfaction for many years if you handle it with care and operate, inspect and maintain it according to this operation manual.
We will not be liable for damages caused by inexperienced handling, operation or repair of our systems.
Within the warranty period agreed upon, you must not tamper with or modify the system, unless explicitly authorised by us. In case of non-observance, the warranty will be void.
2. Spare parts can be ordered from your local customer service representative or our main factory.
3. In the installation room a floor drain must be available.
4. Monitor and inspect the system at the specified intervals to ensure a trouble-free operation.
5. In case of inquiries, please specify the order number and the type of system. This will enable us to answer your questions promptly and correctly.

1 Designated application

The automatic hardness monitoring system GENO®-control is designed for the monitoring of fully softened water. The hardness monitoring system GENO®-control protects systems installed downstream of the unit from hard water.

2 Function

The differential pressure transmitter which is installed in the soft water pipe creates a slightly lower differential pressure when there is flow. Thus, a partial flow passes the hardness sensor installed in the bypass and is then returned to the main flow.

In case of hard water leakage the sensor will be charged. This causes the special resin in the hardness sensor to shrink. A transmitter with Reed contact activates the optical alarm signal „hard water“. At the same time, the volt.-free contact can be used to emit an optical or acoustical signal and/or to shut-off the reverse osmosis system.

3 Design

Electronic control via a transmitter unit with Reed contact and indication of operation mode via two LEDs. The transmission of an alarm signal to a central control station is possible.

Differential pressure transmitter for draining and returning the required measuring water.

Hardness sensor with special resin to check the measuring water for hard water leakage. The system is screened and designed according to EMV regulations. The power supply is effected via Euro plug with a supply line of 1.5 m.

4 Scope of supply

Automatic hardness monitoring system, complete with plastic housing and transparent cover, consisting of:

- Hardness sensor on the basis of resin expansion/shrinkage
- Spare sensor
- Connecting hoses with shut-off valves
- Transmitter unit with Reed contact
- Control unit
- Operation manual

5 Installation requirements

Please observe local and general guidelines and regulations as well as technical specifications.

The installation site must be frost-proof and ensure the protection of the system against chemicals, dyes, solvents and steam/vapors. The ambient temperature as well as the radiation temperature near the system must not exceed 40 °C.

Within 1.5 m from the system a separate socket (230 V / 50 Hz) for electrical power supply is required.

6 Technical specifications

Hardness monitoring system		GENO®-control		
Connection data				
Nominal connection diameter (adhesive socket)		Ø25 mm / DN 20		
Power supply		230 V / 50 Hz		
Protection		IP 54		
Alarm signal output		volt.-free change-over contact		
Max. load		250 V / 5 A		
LED display		operation hard water		
Performance data				
Max. operating pressure [bar]		10		
Max. flow [l/h]		2500		
Max. pressure loss [bar]		0.2		
Dimensions and weights				
Measuring water pipes [mm]		1000		
Overall dimensions [l x d x h1 resp. H2] [mm]		280 x 140 x 300 resp. 600		
Consumption data				
Power consumption		1.8 VA		
Ambient data				
Max. water temperature [°C]		35		
Order no.		172 300		
		Differential pressure transmitter ¾"	Differential pressure transmitter 1¼"	Differential pressure transmitter 2"
Installation dimensions [E] without screw connections [mm]		72	95	125
K _v -value (Δp=1.0 bar) [m ³ /h]		8	28	65
Order no.		172 303	172 305	172 309
		Spare sensor		
Order no.		172 304		

7 Installation

- Install flow fitting in soft water pipe. Observe direction of water flow!
- Mount GENO®-control vertically to wall near flow fitting.
- Connect hoses as shown in drawing (refer to fig.: 1.1).
- Connect additional control functions to the terminals 1 – 2 - 3 (volt.-free contact) at the control unit (refer to fig. 1).

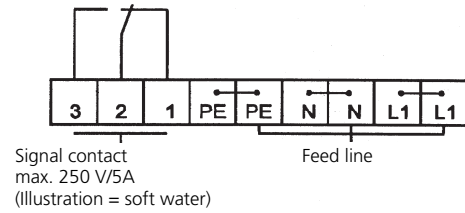


Fig. 1: Circuit diagram

8 Start-up

- Make sure that soft water is available.
- Insert plug into socket (230 V / 50 Hz). The lamp „operation“ lights up.
- Slowly open both shut-off valves and check joints for water tightness.
- Electrical connection of reverse osmosis system

Terminal GENO®-control	1	2	3
Terminal GENO®-OSMO-MSR		X1/116	3K1 42
Terminal HL-300 or.HL-X		X1/21	X1/29
Terminal RO/AVRO 125 K		X8/22	X8/23
Terminal GENO®-OSMO-X		66	67

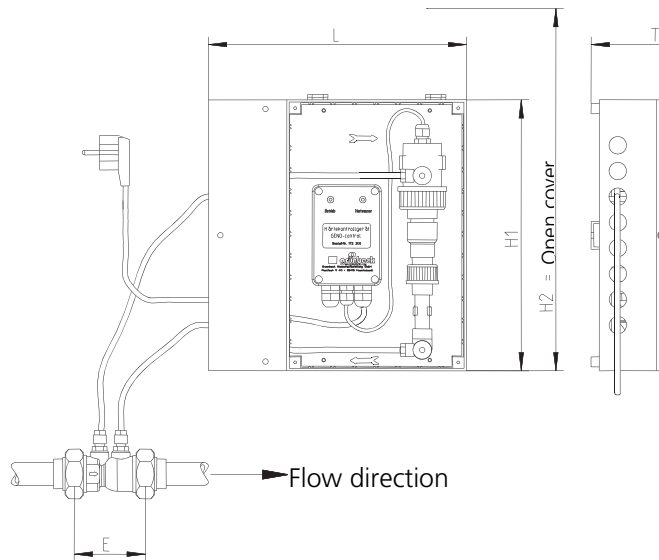


Fig. 1.1: GENO®-control installation diagram dimension drawing

9 Troubleshooting

- Lamp „hard water“ is blinking.
- Close shut-off valves (both angle valves) at top resp. bottom.
- Unscrew screw connections and replace sensor (spare sensor refer to fig. 2).
- Prior to restart, make sure that soft water is available. Only then, open water inlet at the GENO®-control unit.

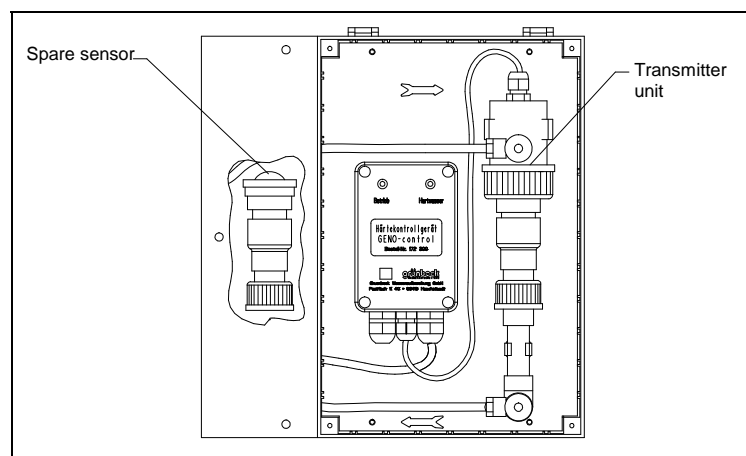


Fig. 2: GENO®-control spare sensor



Note: Prior to installation, the replacement sensor must be rinsed with soft water. It should always be kept humid during storage.

10 Information regarding the regeneration of the hardness sensor

The hardness sensor may be regenerated by our customer service technician (when loaded with hardness, the transmitter resin bed is curved inwards).

- Rinse sensor in brine (withdraw from brine tank) for approx. 1 minute. → Inward curving increases.
- Rinse sensor thoroughly with permeate or soft water for approx. 2 minutes. → Transmitter resin bed curves outwards.
- Store sensor in a PE-bag until the next exchange.



Attention! Hardness sensor must be kept humid during storage!

11 Release times of the GENO®-control system

Depending on the withdrawal volumes and hardness, the release times of the GENO®-control unit are appropriately inert.

Flow rate l/h	Water hardness °Gh	Inlet pressure bar	Outlet pressure bar	Release time min.
30	3	3	2.9	110 - 270
30	15	3.1	2.9	15 - 25
100	3	3	2.9	90 - 120
100	15	3.2	3.1	10 - 20
500	3	3	2.9	70 - 110
500	15	3	2.9	8 - 20
1000	3	3	2.9	50 - 90
1000	15			10 - 20
2000	3	3.5	3.3	60 - 120
2000	15	2	1.8	6 - 16

Table: Release times



Note: The GENO®-control unit is not / only restrictively suitable upstream of systems/processes that continuously need water with a total hardness of < 0.1 °Gh (refer to table: release times).

12 Maintenance

The maintenance of the hardness monitoring system GENO®-control has to be performed every 6 months.

- Exchange sensor for a regenerated one. Regenerate installed sensor as described in point 10.
- Check the proper functioning of the transmitter by pushing the interior transmitter metal slightly upwards with your finger while the sensor has been removed. The GENO®-control system must indicate operation (green LED).
- In case transmitter metal has gone done (dismantled sensor), the GENO®-control system must signal hard water (red LED lights up).



Note: We recommend replacing the sensor every two years at the latest due to the aging of the resin.