

Technical data sheet

## Testomat® EVO TH

Online analysis unit for residual total hardness (water hardness)



### Range of application

The Testomat® EVO TH is qualified for monitoring and controlling the water quality in:

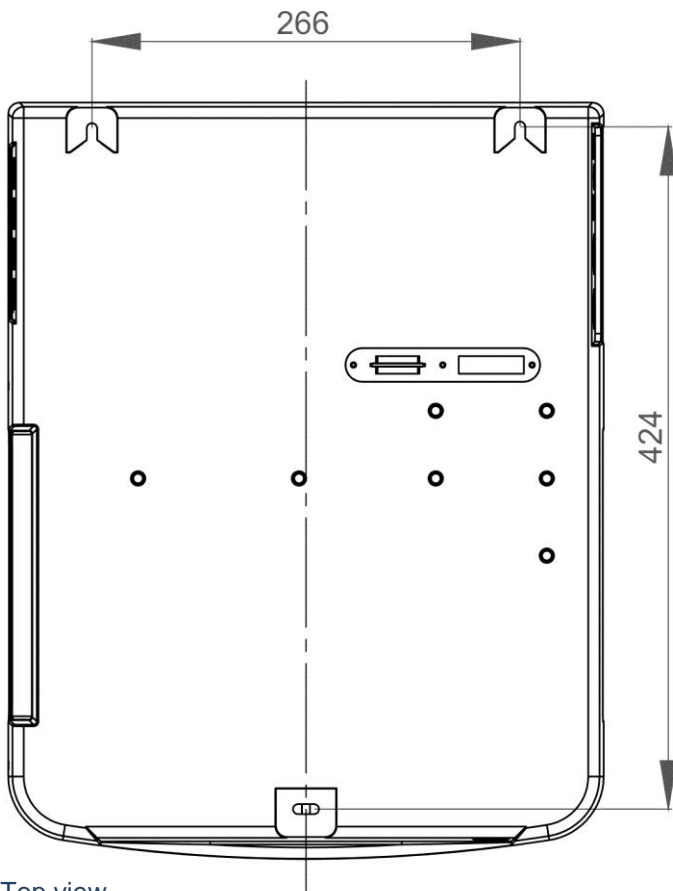
- Water treatment plants
- Industrial boilers
- Monitoring of process water
- Drinking water systems
- and much more

### Advantage:

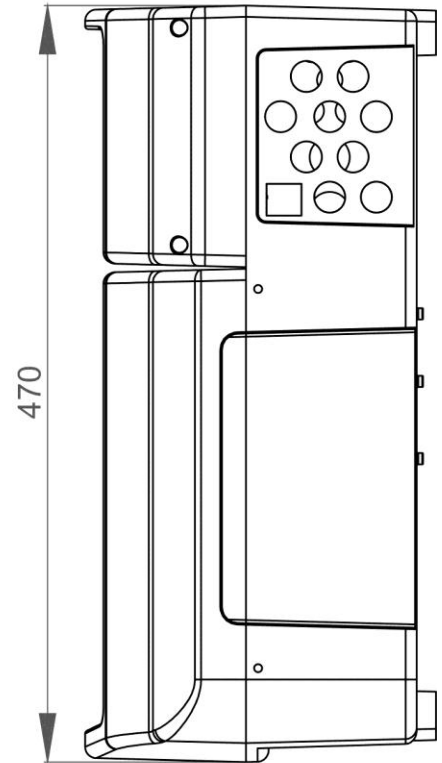
Online monitoring, data storage, data transfer via WLAN Access / 4-20 mA / RS232 interface. Energy saving, operating safety etc.

## Dimensions

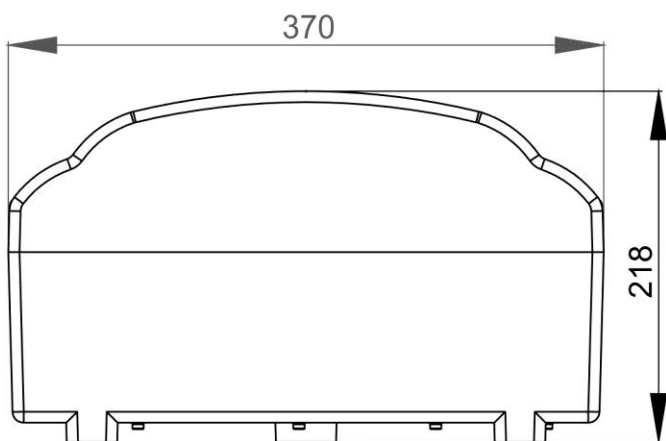
Rear view with mounting holes



Side view



Top view



## Features

- Measuring of total hardness with 4 types of indicator in a range of 0,05 to 25°dH
- Analysis initiation:
  - Time controlled (Interval pause justable from 0 to 99 minutes)
  - Volume controlled (water meter)
- Monitoring of exceeding or underrunning of the lower (LV1) and upper limit value (LV2), output relay LV1 with two-point switch function.
- Adjustable count of analysis repeats if limit value was exceeded.
- Programmable relay output (AUX) e.g. for connecting an external flush valve or controlling the switching before, during or after analysis for the adjusted time.
- Alarm output
- All relay outputs are neutral contacts.
- Input for standby (analysis stop)
- Input for water meter for volume controlled analysis initiation (IN1)
- Input for acknowledge an alarm (Ext. Ack.)
- Slot for an SD or SDHC Card:
  - recording measuring data and messages/alarm
  - import and export of settings (basic programming)
  - firmware update
  - optional: wireless enquiry of measured values with WLAN SD card
- Interfaces (unidirectional) for integration in process control:
  - Power output 0/4 – 20mA for analogue output of measuring values
  - RS232 interface for output of measuring values and messages/alarm
- Simple, menu-driven operating and programming
- Backlit graphic display (LCD)
- Display of measuring values in °dH, °f, ppm CaCO<sub>3</sub> or mmol/l
- Simple switching between several menu languages
- Monitoring of indicator amount (if it is enough for 72-hour-operation)
- High measuring accuracy provided by a precise piston dosing pump
- Extended operating periods due to 500 ml indicator storage bottle
- Optical recognition of water level when filling the measuring chamber
- Integrated self-test with continuous monitoring
- Error history for 20 messages

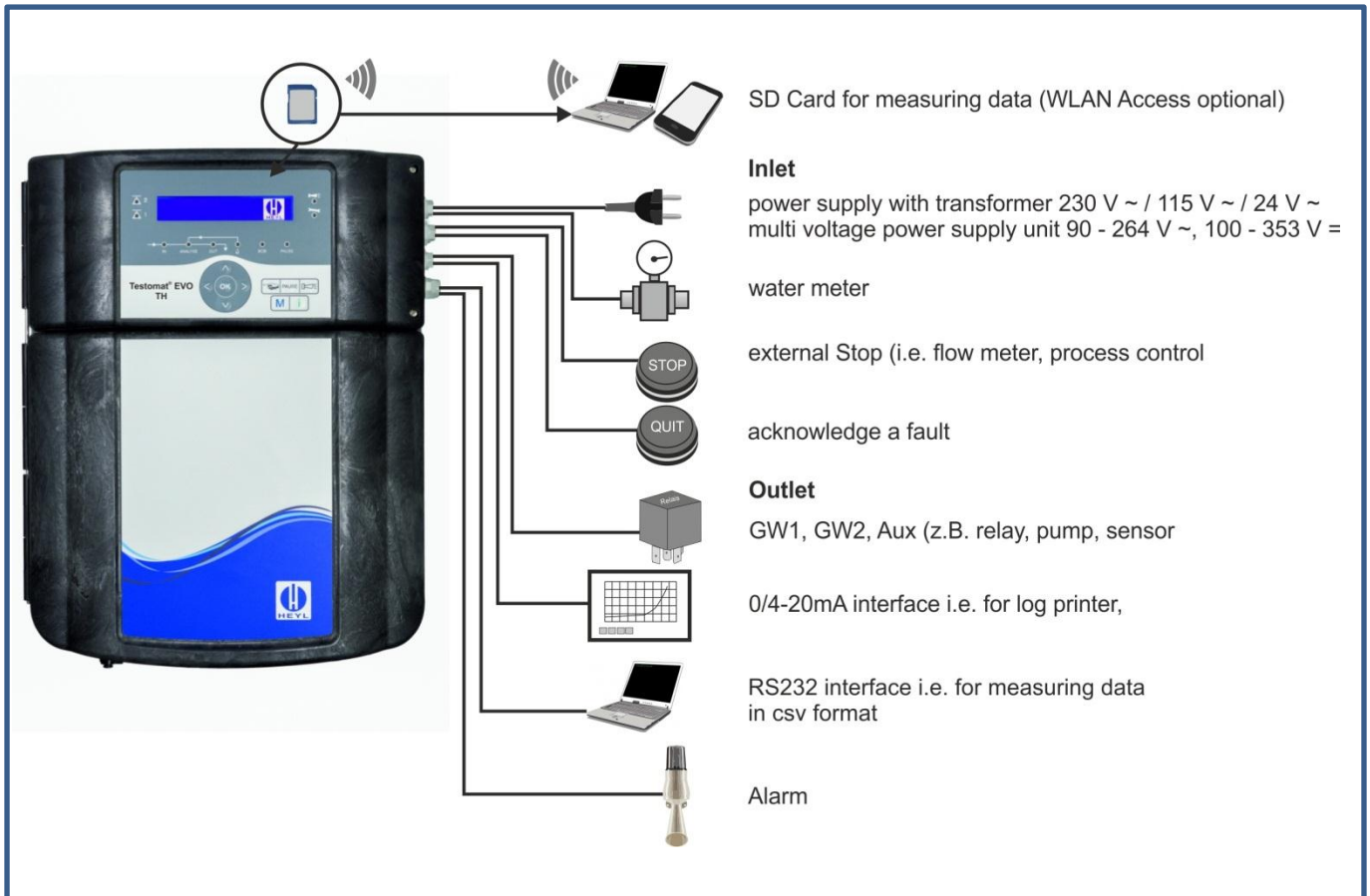
## Functionality

The analysis unit Testomat® EVO TH is an online analysis unit, which determines residual total hardness (water hardness) in water via titration and following photoelectrical evaluation. The indicator is pumped into the water filled measuring chamber by a piston dosing pump until the colour changes. The measuring value will be calculated with the amount of metering strokes.

### Overview of new features (in comparison with Testomat ECO®)

- Integrated SD card for
  - Log of data, alarm, error messages
  - Firmware update
  - Import and Export of settings
- Optional: WLAN Access for wireless write access on SD card
- Transfer of measuring date and status via RS232 interface
- Optional is the connection of a fieldbus converter or a converter for telecommunication networks.

## Electrical connections



## Communication

### Telephone network

Measuring data and alarms incl. time stamp can be output via RS232 interface to an external converter.

Insys offers e.g. gateways for analogue and ISDN networks, GSM, GPRS and HSPA mobile networks, SDSL.

### Fieldbus

Deutschmann offers converter for the following fieldbusses:

BACnet, CANopen, DeviceNet, EtherCAT, EtherNet Powerlink, EtherNet/IP, Ethernet TCP/IP, Fast Ethernet, LONWorks62, MPI, Modbus RTU, Modbus-TCP, Profibus, Profinet, ASCII, 3964R, RK512.

The user must implement the open protocol of the Testomat unit into his selected converter.

### WLAN Access

The Testomat® EVO TH can be equipped with a special SD card, which provided a WLAN access. PCs, notebooks or smartphones can be connected via web browser (capable of javascript) and receive messages/alarms and measuring data in CSV format.

The browser can furthermore display the measuring data online as a graphic or calculate a graphic display of the last recorded monthly data.

## Maintenance

The device is low-maintenance. The following maintenance works should be observed in the indicated intervals:

Maintenance work	Quarterly	Semi-annually	Triquarterly	Annually	Biennially / Triennially
Cleaning sight-glass windows	X				
Cleaning measuring chamber and measuring chamber holder	X				
Cleaning the receiver optics		X			
Cleaning the controller/filter housing		X			
Cleaning the waste water line	X				
Checking the dosing pump incl. suction and pressure hoses		X			
Electrical and hydraulic connections		X			
Renewing the sealing kit (40124) and sight-glass windows				X	
Recommendation: Allow the manufacturer to overhaul the dosing pump					X

### Annual requirement (8760 days) of indicator TH2005, in 500 ml bottles

Water hardness (°dH)	Interval (as a result of idle time and flush times/AUX) minutes							
	0	2	5	10	30	60	90	200
0,05	32	16	9	5	2	1,0	0,7	0,3
0,10	63	32	18	11	4	2,0	1,4	0,6
0,20	110	55	32	18	7	3,6	2,4	1,1
0,30	158	79	45	26	10	5,1	3,4	1,6
0,40	205	102	59	34	13	6,6	4,5	2,0
0,50	237	118	68	39	15	7,6	5,1	2,3

## Technical data

### Operating pressure

1 to 8 bar /  $1 \times 10^5$  to  $8 \times 10^5$  Pa

or

0.3 to 1 bar /  $0.3 \times 10^5$  to  $1 \times 10^5$  Pa  
(after removing the valve body)

Sample water temperature	10-40°C
Ambient temperature max.	40°C
Length of analysis approx.	1-5 min
Load of relay contacts	240 VAC, 4A
Width x height x depth	470 x 370 x 218 mm
Weight approx-	9 kg
Power supply	230 VAC, 115 VAC, 24 VAC $\pm$ 10%, 50-60 Hz or with multi voltage power supply unit 90 - 264 VAC, 100 - 353 VDC
Power consumption	max. 25 VA, without external load
Degree of protection	IP65
Conformity	EN 61326-1, EN 61010-1

## Measuring range and resolution

		Parameter/Indicator type			
		Water hardness			
		TH 2005	TH 2025	TH 2100	TH 2250
Unit	<b>°dH</b> (resolution)	0,05 - 0,50 (0,01)	0,25 - 2,50 (0,05)	1,0 - 10,0 (0,2)	2,5 - 25,0 (0,5)
	<b>°f</b> (resolution)	0,09 - 0,89 (0,02)	0,45 - 4,48 (0,1)	1,8 - 17,9 (0,4)	4,5 - 44,8 (1,0)
	<b>ppm CaCO<sub>3</sub></b> (resolution)	0,89 - 8,93 (0,2)	4,5 - 44,8 (0,9)	18 - 179 (3,8)	45 - 448 (10)
	<b>mmol/l</b> (resolution)	0,01 - 0,09 (0,002)	0,04 - 0,45 (0,01)	0,18 - 1,79 (0,04)	0,45 - 4,48 (0,1)

## Order numbers

Device alternatives	Art. no.
<b>230 VAC</b>	100700
<b>100 – 240 VAC (multi voltage power supply unit)</b>	100701
<b>24 VAC</b>	upon request

## Accessories

Indicator type	Range	Art. no:
<b>TH2005</b>	Water hardness 0,05 - 0,5 °dH	152005
<b>TH2025</b>	Water hardness 0,25 - 2,5 °dH	152025
<b>TH2100</b>	Water hardness 1,0 - 10,0 °dH	152100
<b>TH2250</b>	Water hardness 2,5 - 25,0 °dH	152250

Spare parts	Art. no.
<b>Retrofit kit for water inlet *)</b>	040123
<b>Maintenance lab T2000 Heyl</b>	270335

### \*) retrofit kit for water inlet, Art. no. 040123

If fabric-reinforced pressure hoses (e.g. for existing installations) are used, please replace the plug connector at the controller and filter housing with a plug for the quick-release coupling (not included).



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