

SYCON 2702 in detail

Functional principle

The SYCON 2702, based on the SYCON series, is an online analyser for the automatic determination of water parameters using the colourimetric titration method. A colour reaction is generated by adding an indicator to the water sample. Depending on the indicator used, the device evaluates the intensity of the colour. The SYCON 2702 calculates the concentration of the water constituent based on the colour change of the sample during the addition of the indicator. The device can only determine one parameter at a time. The parameter and measuring range are determined by the indicator used.

General specification

Parameters	Value / Range
Power supply	(230 VAC version) 100 - 240 VAC (50/60 Hz) (24 V AC/DC version) 21.6 - 26.4 V AC/DC (50 Hz)
Power consumption	25 VA (maximum) 8 VA (measuring mode) 3.5 VA (standby)
Load capacity	Load capacity of the relays with internal power supply 1 A from terminals 5 to 8 Load capacity of the relays with external power supply 2.5 A
Protection class	Open wall mounting IP43 Mounting in housing IP54
Storage temperature	0 °C - 45 °C
Ambient temperature	10 °C - 45 °C
Sample water temperature	5 °C - 40 °C
Air humidity	20 - 90 % RH (without ice or condensation)
Inlet water pressure	min: 0.5 bar - max: 5 bar - recommendation 1 - 2 bar
Inlet water in general	clear, colourless, free of solids, without gas bubbles
Water quality requirements for measuring water hardness	pH: 4 - 10 Iron: < 3 ppm Copper: < 0.2 ppm Aluminium: < 0.1 ppm Manganese: < 0.2 ppm Acid capacity: KS 4.3 < 5 mmol/l



Note on oxidising agents:

Oxidising agents such as calcium hypochlorite, chlorine, chlorine dioxide, sodium hypochlorite or ozone above the limit values permitted in "TrinkwV 2012" attack the dye contained in the indicator and interfere with the measurement. An exact determination of the water hardness is therefore no longer guaranteed. An activated carbon filter installed upstream of the analyser can remove these oxidising agents from the sample water and thus enable the water hardness to be determined correctly.

The capacity of an activated charcoal filter is used up during operation. The activated carbon filter must therefore be replaced at regular intervals. The effectiveness of the activated charcoal filter can be checked using Caldur® test sets.

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Technical data

Parameters	Value / Range	
Installation	Wall mounting in closed rooms	
Dimensions	without housing:	274 x 275 x 129 mm (W x H x D)
	with housing:	332 x 345 x 190 mm (W x H x D)
Weight	without housing:	approx. 1.9 kg
	with housing:	approx. 3.8 kg

Analysis properties

Parameters	Value / Range		
Measuring method	Titration with colour change		
Measuring ranges	Total hardness	Carbonate hardness	
	°dH	0,012 ... 30	0,3 ... 22,5
	°f	0,021 ... 53,6	0,5 ... 40,2
	ppm CaCO ₃	0,21 ... 535,7	5,4 ... 401,8
	mmol/l	0,0021 ... 5,36	0,11 ... 8,04
	°e	0,015 ... 38,6	0,39 ... 28,9
	°Ж	0,0043 ... 10,7	0,21 ... 16,1
	The measuring range is defined by the indicator used. The entire measuring range of the total hardness is achieved by using different indicators. <i>(The following units are available for the analysis value: °dH, °f, ppm CaCO₃, mmol/l, °e, °Ж these are shown in the display).</i>		
Accuracy	Measurement accuracy: ± 5 % of the maximum measured value of the respective indicator used Repeatability: ± 2.5 % of the maximum measured value of the respective indicator used Please note: Depending on the ingredients in the water, there may be shifts in the measured value that affect the accuracy of the measurement. In such cases, we recommend carrying out a hardness measurement by hand titration and calibrating the analyser to this measured value.		
Current interface	± 0.3 mA		
Indicator consumption	approx. 0.05 - 0.5 ml / analysis, depending on the measured water hardness		
Measurement duration	approx. 3 min, depending on the water hardness and the set rinsing time		
Number of analyses	approx. 10,000 analyses / 500 ml indicator for soft water. Consumption depends on the measured water hardness and the indicator used.		
Durability of the indicators	At least 2 years if stored properly (< 25 °C, dark)		
Water consumption	approx. 1 l / analysis at 2 bar. The water consumption varies depending on the inlet pressure and the set rinsing time.		

Inputs/outputs

Parameters	Value / Range
2 relay outputs	max. 250 VAC / VDC; max. 1 A (Further information can be found on page 1) as potential-free outputs NC/NO The relays provide the following functions: <ul style="list-style-type: none">• Limit value alarm• Device error
Signal input	Galvanically isolated contact input <ul style="list-style-type: none">• Start analysis• Flow monitor• Interval reset
Analogue output	0 - 20 mA / 4 - 20 mA Resolution: < 100 µA

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Max. load: 750 Ω

Maintenance intervals

Interval	Maintenance work
every 6 months	Cleaning the measuring chamber
	 In the case of high ambient and water temperatures or water with a high organic load, the cleaning intervals may need to be shortened.
every 30,000 analyses or after 2 years of operation	Cleaning the measuring chamber (as above), Installation Maintenance set: Changing the hose pump cassette and seals

Indicators for monitoring the total hardness

Designation Indicator	Measuring ranges			Item no. 500ml bottle	Item no. 4 x 500 ml bottles
	°dH	ppm CaCO ₃	°f		
H25-0,02	0,012 ... 0,12	0,21 ... 2,14	0,021 ... 0,214	32-084 115	32-484 115
H25-0,05	0,02 ... 0,2	0,36 ... 3,57	0,036 ... 0,357	32-084 125	32-484 125
H25-0,1	0,03 ... 0,3	0,54 ... 5,36	0,054 ... 0,536	32-084 135	32-484 135
H25-0,2	0,06 ... 0,6	1,1 ... 10,7	0,11 ... 1,07	32-084 145	32-484 145
H25-0,3	0,09 ... 0,9	1,6 ... 16,1	0,16 ... 1,61	32-084 155	32-484 155
H25-0,5	0,15 ... 1,5	2,7 ... 26,8	0,27 ... 2,68	32-084 165	32-484 165
H25-1	0,3 ... 3,0	5,4 ... 53,6	0,54 ... 5,36	32-084 175	32-484 175
H25-2	0,6 ... 6,0	10,7 ... 107,1	1,1 ... 10,7	32-084 185	32-484 185
H25-3	0,9 ... 9,0	16,1 ... 160,7	1,6 ... 16,1	32-084 195	32-484 195
H25-5	1,5 ... 15	26,8 ... 267,9	2,7 ... 26,8	32-084 205	32-484 205
H25-10	3 ... 30	53,6 ... 535,7	5,4 ... 53,6	32-084 215	32-484 215

(The following units are available for the analysis value: °dH, °f, ppm CaCO₃, mmol/l, °e, °Ж these are shown in the display)

Indicators for monitoring carbonate hardness

Designation Indicator	Measuring ranges			Item no. 500 ml bottle	Item no. 4 x 500 ml bottles
	°dH	mmol/l	°f		
C25-1	0,3 ... 7,5	0,11 ... 2,68	0,5 ... 13,4	32-086 125	32-486 125
C25-1,5	0,5 ... 11,5	0,16 ... 4,11	0,8 ... 20,5	32-086 135	32-486 135
C25-2	0,6 ... 15,0	0,21 ... 5,36	1,1 ... 26,8	32-086 145	32-486 145
C25-3	0,9 ... 22,5	0,32 ... 8,04	1,6 ... 40,2	32-086 155	32-486 155

(The following units are available for the analysis value: °dH, °f, ppm CaCO₃, mmol/l, °e, °Ж these are shown on the display).



The measured value to be monitored should be as close as possible to the centre of the indicator's measuring range.

One bottle of indicator is sufficient for approx. 10,000 analyses if the measuring point is in the lower range of the indicator type used.

The exact number of possible analyses with one indicator bottle depends on the respective degree of hardness and the indicator used.

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Drawing wall bracket

The SYCON 2702 must be installed in an upright position. There are four 6 mm holes in the wall bracket for attaching the analyser.

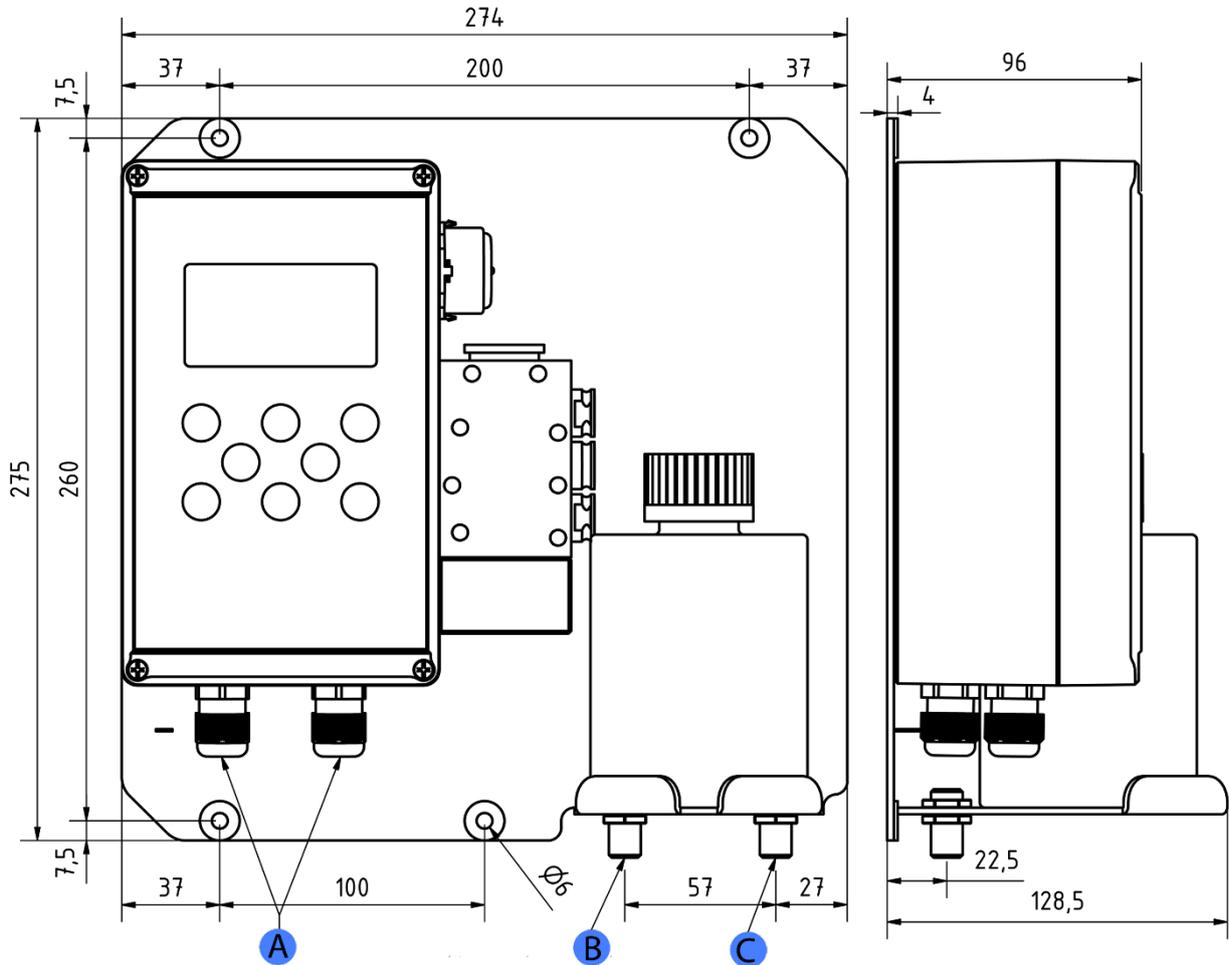


Illustration 1 Drilling plan for mounting the analyser without housing

Position	Description of the
A	Cable glands for the electrical connection
B	Water inlet - connection for hose with 6 mm outer diameter
C	Water drain - connection for hose with 6 mm outer diameter

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Drawing housing

The analyser is optionally supplied with a suitable housing. As an accessory pack, you will receive 4 mounting brackets with 6.5 mm holes, which are attached to the back of the housing.

The free space available for opening the appliance should be at least 450 x 350 mm (W x H).

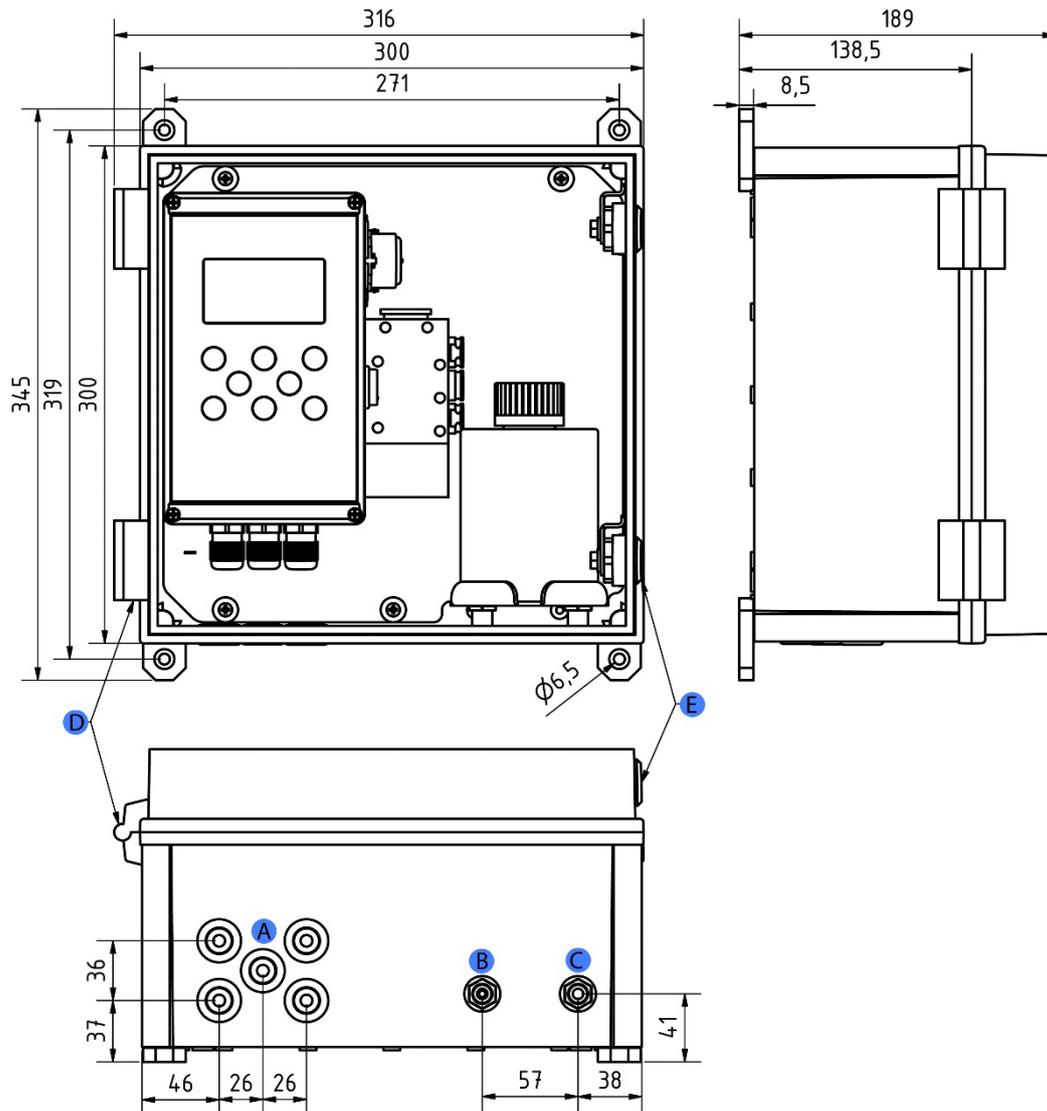


Illustration 2 Drilling plan for mounting the analyser in the housing

Position	Description of the
A	Cable bushings for the electrical connection
B	Water inlet - connection for hose with 6 mm outer diameter
C	Water drain - connection for hose with 6 mm outer diameter
D	Door hinge
E	Door locks