

Micro/Ultra Filtration System *StamoClean CAT 430*

**Long-term Stable Membrane Filter for Immersion
Operation in Activated Sludge Basins or Wastewater**



Application

The CAT 430 is a patented ultra filtration system for process instruments in sewage treatment plants. CAT 430 can be used for all Endress+Hauser analyzers.

CAT 430 transports clear samples from the activated sludge basin to the measuring devices. Expensive pump installation in the activated sludge basin is no longer necessary.

Applications are:

- In activated sludge basins
- Outlets of sewage treatment plants

Your benefits

- Ultra filtration without the disadvantages of conventional ultra filtration
- No additional pump necessary
- Minimum energy consumption
- Minimum maintenance required
- Filtrate quantity can be optimised by number of filter elements
- Minimum dead volume ensuring a representative sample
- Large carrying distance up to 100 m
- Cleaning without chemicals

Function and system design

Measuring principle

The centrepiece of the system is a flat membrane filter element which is suspended directly in the wastewater basin or channel. A hose pump, located in a pump box on the rim of the basin, is connected to the filter element by means of a thin PE tube. The pump creates a vacuum between the membrane and the carrier plate of the filter element. This vacuum causes the filtrate to pass through the filter membrane. Suspended materials, particles, algae and bacteria are collected on the surface of the membrane. However, thanks to an alternating pumping action with time delays, the layer on the surface of the membrane is never allowed to build up which means that intervals of more than one month are achieved between cleaning cycles.

The minimum specified intervals must be maintained. Parallel connection of two or four filter elements means that the sampling quantity can be increased to up to 1 l/h approx. The hose pump pressure alone transports the sample from the pump box to the analyzer over a distance of 20 m. For distances up to 100 m, a sample transportation unit is used whereby a certain sampling quantity is transported to the analyzer by means of compressed air. A collecting vessel is used to collect the sample on the analyzer side. This vessel is mounted as close as possible to the analyzer and also serves to filter out air bubbles. The individual measuring devices draw in samples from this vessel while surplus samples can drain away by means of a tube attached to the centre of the collecting vessel.

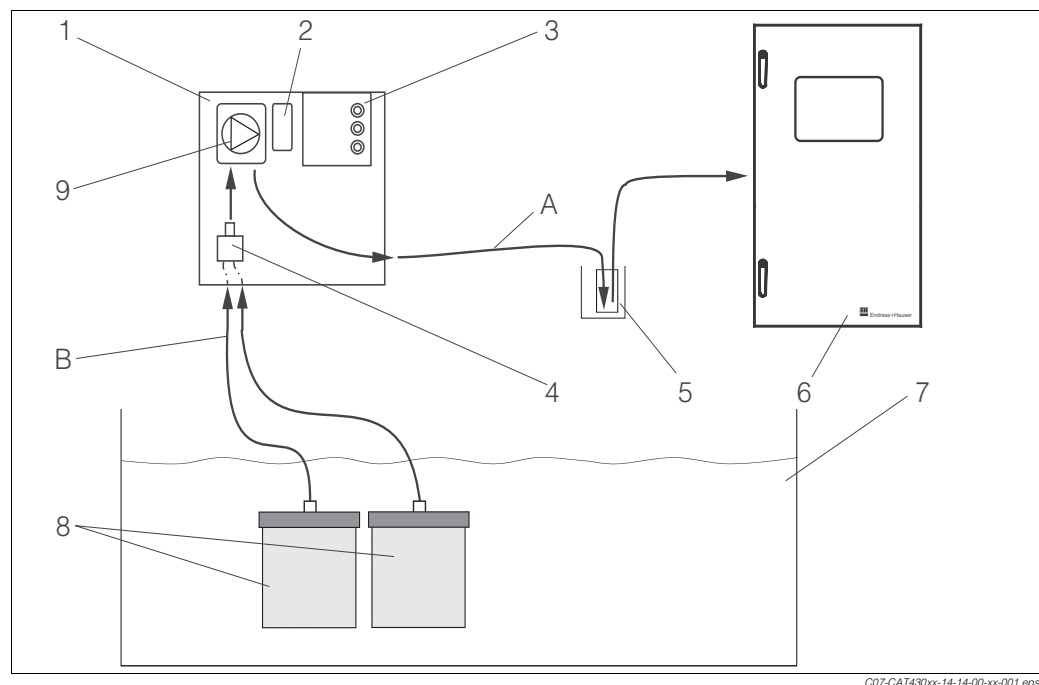
Measuring system

Version with hose pump

A complete measuring system comprises:

- a CAT 430 filter system
- a collecting vessel
- a CA 71xx analyzer

Optionally, a sensor with flow assembly can also be integrated into the measuring system. If an assembly with low dead volume and flow resistance is used (see "Accessories"), the sensor can be installed in line with the analyzer's inlet.



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Measuring system

- | | |
|--|--------------------------|
| 1 Pump box | 5 Collecting vessel |
| 2 Timer | 6 Analyzer |
| 3 Control unit | 7 Activated sludge basin |
| 4 Y-piece | 8 Membrane filter |
| A Filtrate line to the analyzer (PTFE 1.5/3 mm, < 20 m ¹) | 9 Hose pump |
| B Filtrate line from the filter elements (PE, 4.5 m (14.76 ft), with heating, max. length 17 m (55.78 ft)) | |

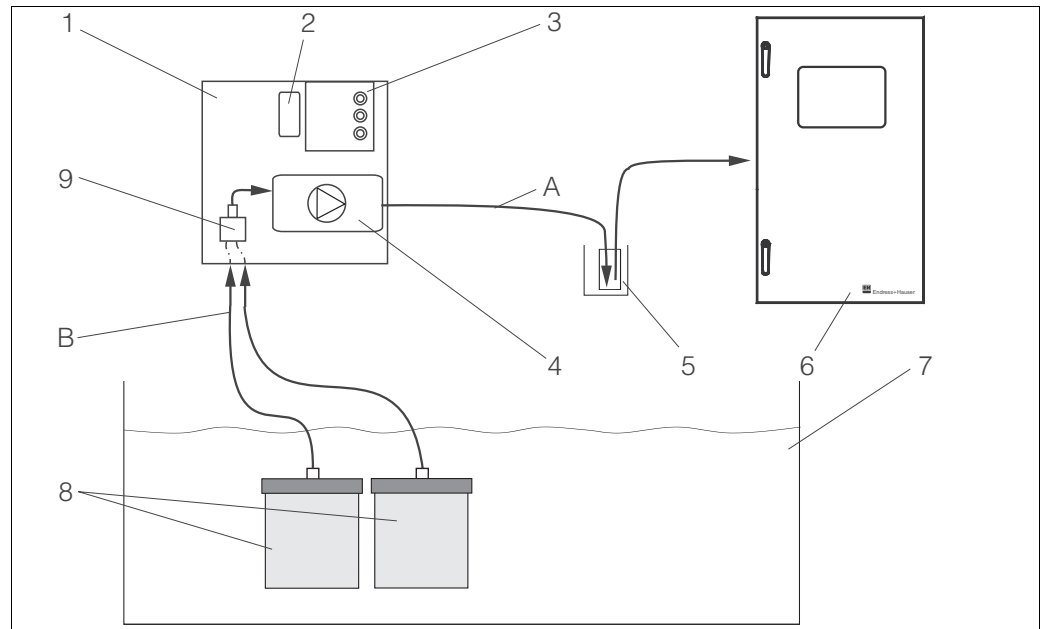
- 1) 0.06/0.12 inch, <65.62 ft

Version with diaphragm pump

A complete measuring system comprises:

- a CAT 430 filter system
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Measuring system

- | | |
|--|--------------------------|
| 1 Pump box | 5 Collecting vessel |
| 2 Timer | 6 Analyzer |
| 3 Control unit | 7 Activated sludge basin |
| 4 Diaphragm pump | 8 Membrane filter |
| A Filtrate line to the analyzer ¹ | 9 Y-piece |
| B Filtrate line from the filter elements (PE, 4.5 m (14.76 ft), with hose heating) | |

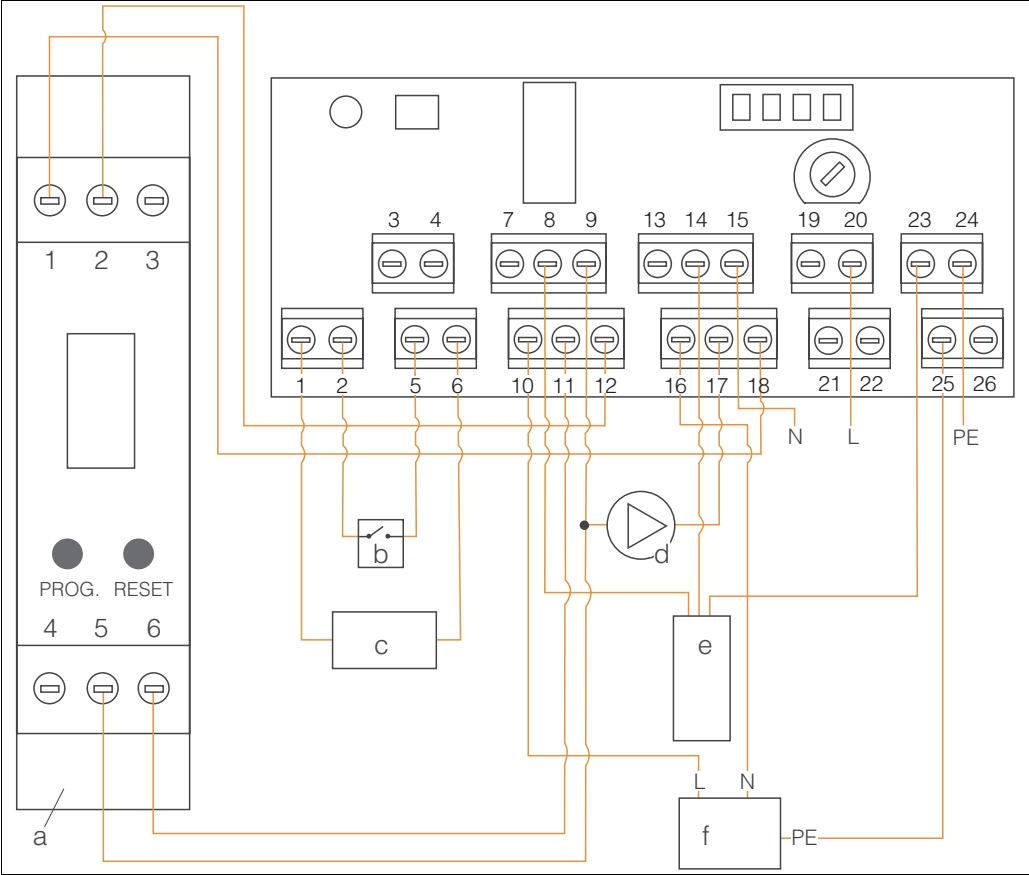
- 1) Two sample hoses are integrated in a protecting hose:
1 x 1.5/3 mm (0.06/0.12 inch) PTFE hose (standard) and 1 x 2/4 mm (0.08/0.16 inch) PE hose (spare).

Power supply

Control box connection	230 V AC, 50/60 Hz, 130 VA 115 V AC, 60 Hz
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Analyzer compartment	For electric band heater > 20 m (65.62 ft): 15 VA per meter electric band heater, socket 230 V AC, 50/60 Hz, earth leakage breaker protected
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Control unit terminal assignment



Control unit terminal block

a	Control	c	Filtrate hose heater 24 V	e	Electric band heater
b	Thermal switch 24 V	d	Pump	f	Housing heater

T ¹	Assignment	T ¹	Assignment	T ¹	Assignment
1	24 V to hose heater	10	Phase L housing heater	19	not connected
2	24 V from thermal switch	11	Phase L to control 6	20	Phase L mains supply
3	not connected	12	Phase L to control 2	21	not connected
4	not connected	13	Zero conductor (as required)	22	not connected
5	24 V to thermal switch	14	Electric band heater zero cond.	23	PE electric band heater
6	24 V to hose heater	15	Mains supply zero conductor	24	PE mains supply
7	Phase L from relay	16	Housing heater zero conductor	25	PE housing heater
8	Phase L electric band heater	17	Pump zero conductor	26	not connected
9	Phase L pump contin. operation	18	Control zero conductor		

1) T = terminal

You have to connect terminals 15, 20 and 24. You have also to connect terminals 8, 14 and 23 if using an electric band heater for the sample carrying tube. All other connections have been made at the factory.

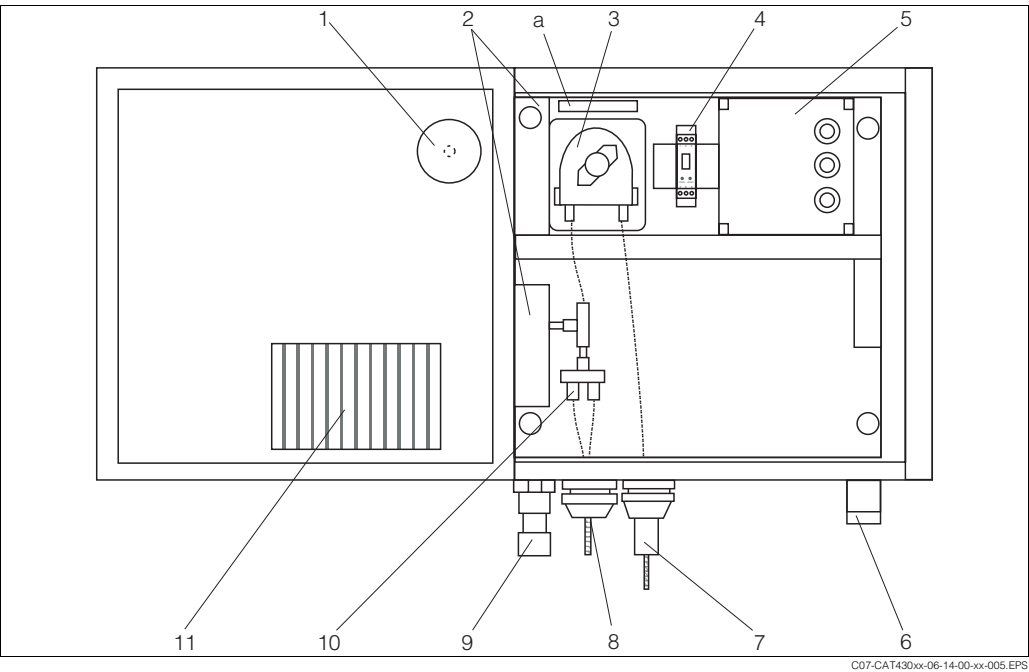
Performance characteristics

Filtrate volume with hose pump	approx. 250 ml/h per filter element	
Filtrate volume with diaphragm pump	approx. 450 ml/h per filter element	
Sample transportation distance with hose pump	max. 20 m (65.62 ft)	
Sample transportation with diaphragm pump	max. 100 m (328.10 ft)	
Separation performance	Precipitation of particles, colloids and high molecular substances (0.1 µm)	
Life cycle	approx. 1 to 2 years	
Cleaning interval	Filter element:	2 to 6 months, depending on contamination level
	PTFE hose:	1 to 2 months
	PE hose:	3 weeks
Chemical resistance	pH 1 ... 13	

Installation

Installation instructions control box

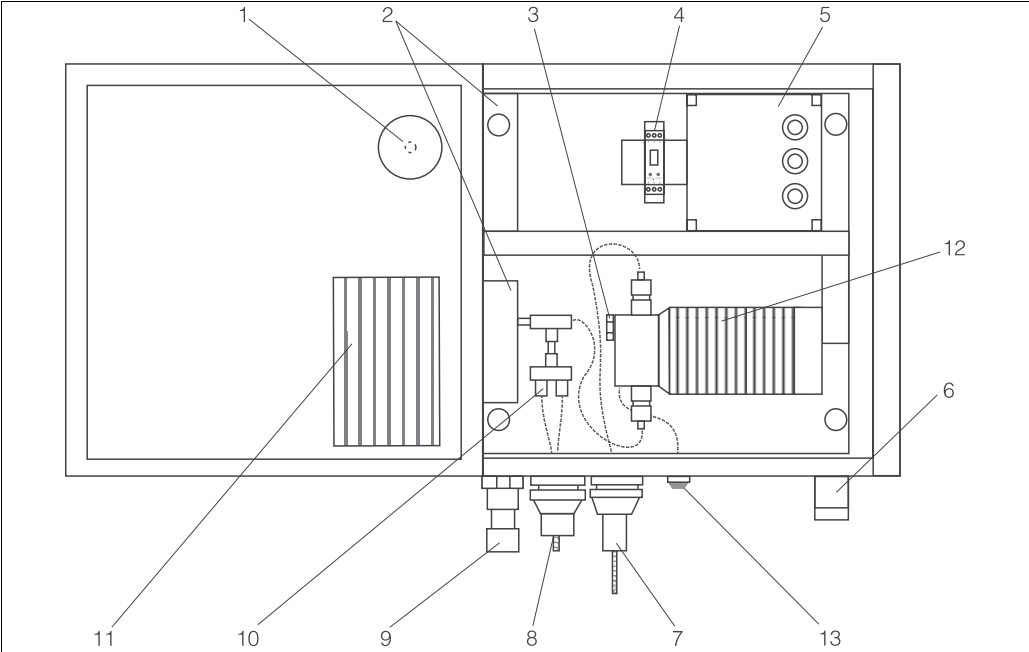
Version with hose pump



Control box

- | | | | |
|---|-------------------------------------|----|---|
| 1 | Manometer | 7 | Pg hose gland and filtrate line to the analyzer |
| 2 | Cable duct | 8 | Pg hose gland for filtrate line from filter |
| 3 | Hose pump | 9 | Pipe socket with micro thermostat |
| 4 | Timer | 10 | Y shaped fitting |
| 5 | Connection box | 11 | Housing heater |
| 6 | Pg cable gland for mains connection | a | Transport securing |

Version with diaphragm pump

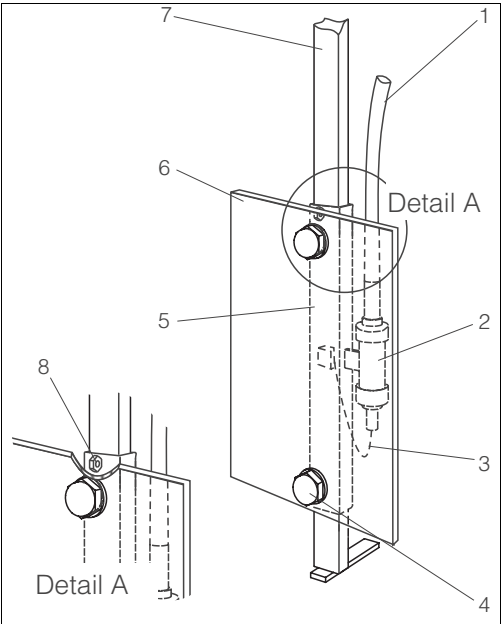


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Control box

- | | | | |
|---|--|----|---|
| 1 | Manometer | 8 | Pg hose gland for filtrate line from filter |
| 2 | Cable duct | 9 | Pipe socket with micro thermostat |
| 3 | Vent screw | 10 | Y fitting |
| 4 | Timer | 11 | Housing heater |
| 5 | Connection box (see "Electrical connection") | 12 | Diaphragm pump |
| 6 | Pg cable gland for mains connection | 13 | Vent |
| 7 | Socket and filtrate line to the analyzer | | |

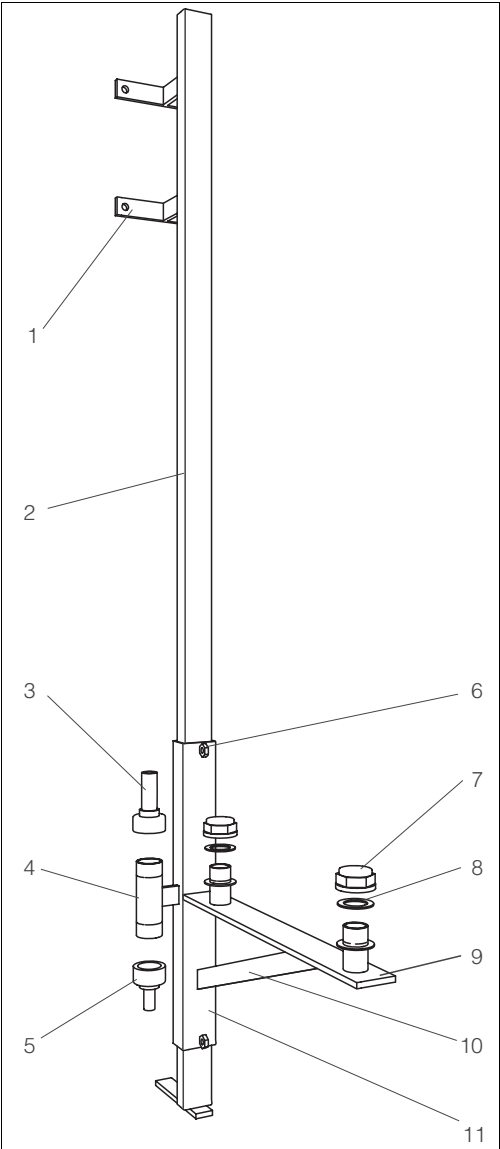
Installation instructions
filter elements



- | | |
|---|-----------------------|
| 1 | Filtrate line to pump |
| 2 | T-piece |
| 3 | Filtrate hose |
| 4 | PVC thread cap |
| 5 | Retaining slide |
| 6 | Filter element |
| 7 | Mounting guide pipe |
| 8 | Hexagon nut |

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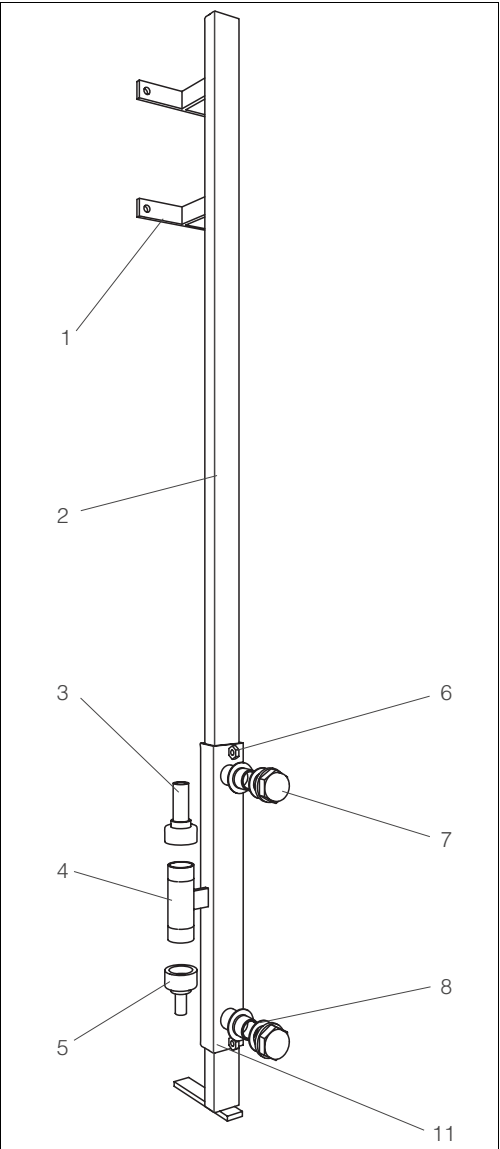
Slide with filter element and filtrate line



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Filter element holder for open channel

- 1 Wall mounting, flat steel 30 x 8 mm
- 2 Square pipe 50 x 30 x 3 mm
- 3 Thread adapter nut G1¼, hose nozzle D25
- 4 Taper nipple R1¼
- 5 Thread adapter nut G1¼, cable gland Pg 7
- 6 Hexagon nut M10



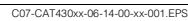
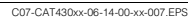
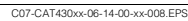
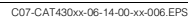
C07-CAT430xx-06-14-06-xx-002.EPS

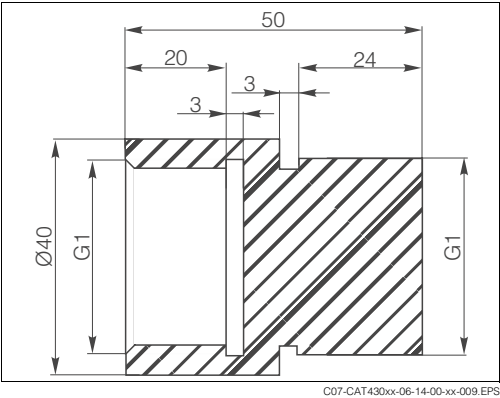
Filter element holder for basin

- 7 Cap G1
- 8 Flat seal 48 x 33 x 2 mm
- 9 Flat steel 60 x 8 mm
- 10 Flat steel 30 x 8 mm
- 11 Slide for filter element, square pipe 50 x 30 x 3 mm

Environment

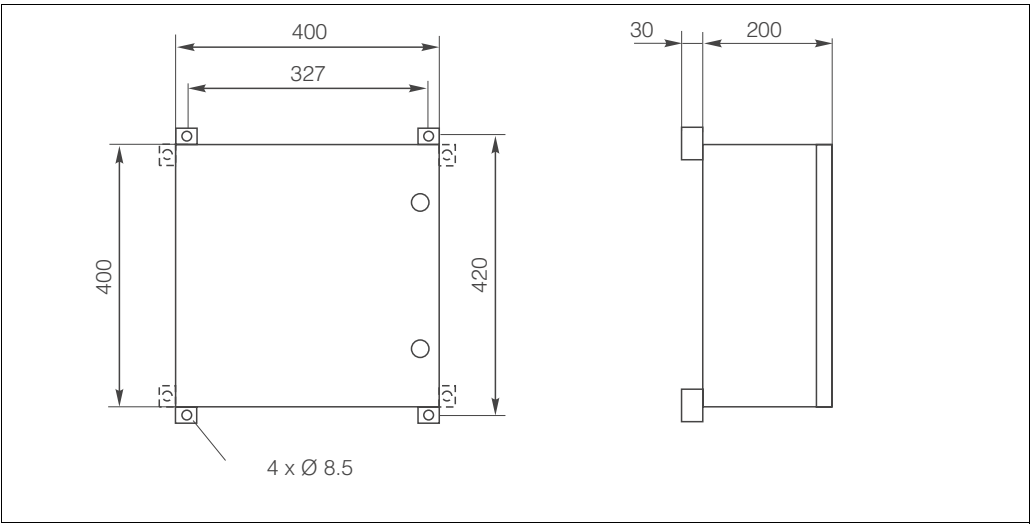
Ambient temperature range	–25 to 50 °C (–13 to 122 °F)
Air humidity	0 to 95 %, no splash water
Ingress protection	IP 54





Adapter for mounting a 2nd filter plate

Dimensions control box



Control box dimensions, left front view, right side view

Weight

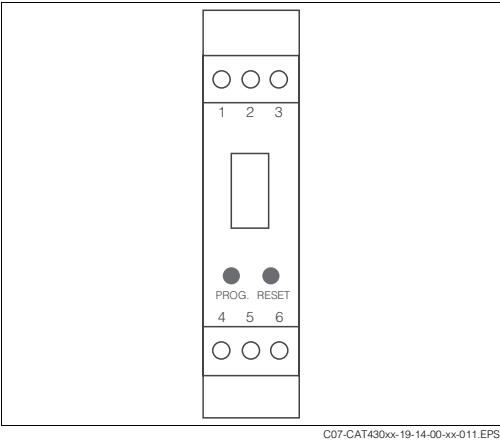
Control box with hose pump	12 kg (26.5 lb)
Control box with diaphragm pump	15 kg (33.1 lb)
Filter unit, 1 filter element	2 kg (4.4 lb)
Filter unit, 2 filter elements	4 kg (8.8 lb)
Filter element	1 kg (2.2 lb)
Filter element holders	18 kg (39.7 lb)

Materials

Housing heater	Resistance heater, 230 V, ~ 50 W, splash-proof, on Al-heat exchanger plate
Filter element	PVC carrier plate, PES membrane
Filter element holders	Stainless steel, 1.4301 (AISI 304)
Mounting guide pipe	Stainless steel, 1.4301 (AISI 304)

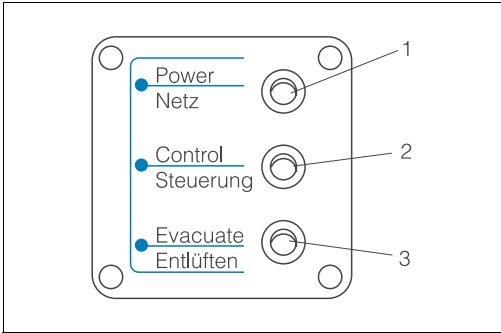
Human interface

Display and operating elements



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Timer: Trumeter 7955 X



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Operating elements

- 1 Heating / Power on
- 2 Control
- 3 Evacuate (pump continous operation)

Ordering information

Product structure

Sample volume									
A	250 ml/h; 1-2 StamoLys CA 7X, incl. 5 m hose to filter and pump box								
B	500 ml/h; 3-4 StamoLys CA 7X, incl. 5 m hose to filter and pump box								
Y	Special version acc. to customers specification								
Length of the sample tube (from pump box to analyzer)									
1	up to 20 m (65.62 ft), with hose pump								
2	up to 100 m (328.1 ft) with hose pump, 100 m (328.1 ft) hose, compressed air is needed								
3	up to 100 m (328.1 ft) with hose pump+internal compressor and 100 m (328.1 ft) hose								
4	up to 100 m (328.1 ft) with diaphragm pump and 100 m (328.1 ft) hose								
5	up to 100 m (328.1 ft) with diaphragm pump and 50 m (164.05 ft) hose								
9	Special version acc. to customers specification								
Fittings (from pump box to analyzer)									
A	Without sample hose heater								
D	With 8 m (26.24 ft) sample hose heater								
F	With 18 m (59.06 ft) sample hose heater								
Y	Special version acc. to customers specification								
Power supply									
0	230 V AC								
1	115 V AC								
Sampling between filter and pump box									
A	with heating								
B	without heating								
Mounting pump box									
2	Wall mounting								
3	Basin rim mounting and protection cover								
4	Special housing for additional CSM resp. CNM 750								
9	Special version acc. to customers specification								
Assembly									
A	No assembly								
Y	Special version acc. to customers specification								
CAT 430 -									complete order code



Note!
Please, order basin rim holders separately. See "Accessories".

Scope of delivery**Version with hose pump**

The scope of delivery comprises:

- 1 Pump box, complete with filtrate line connected, length 4.5 m (14.75 ft), hose heating 24 V
- 2 Hose clamps 44 - 49 mm (1.73 - 1.93 inch), set screw M8
- 4 Plastic brackets
- 1 Cushion with screw
- 1 Collecting vessel with PE hose 10/8 mm (0.31/0.39 inch), length 2.5 m (8.2 ft)
- 1 PE hose roll 4/2 mm (0.16/0.08 inch), length 2.5 m (8.2 ft)
- 1 PVC hose roll 4/2 mm (0.16/0.08 inch), length 2.0 m (6.65 ft)
- 1 or 2 Filter plate(s) (depending on ordered version)
- 1 or no assembly (depending on ordered version)
- 1 Filtrate line with PE filtrate hose 4/2 mm(0.16/0.08 inch), min. length 20 m (65.62 inch) depending on ordered version
- 1 Acceptance certificate
- 1 Mini screw driver
- 1 Dummy plug
- 2 Silicon hose nozzles
- 2 Tierap
- 1 Operating Instructions BA 317C/07/en

Version with diaphragm pump

The scope of delivery comprises:

- 1 Pump box, complete with filtrate line connected, length 4.5 m (14.75 ft), hose heating 24 V
- 2 Hose clamps 44 - 49 mm (1.73 - 1.93 inch), set screw M8
- 4 Plastic brackets
- 1 Cushion with screw
- 1 Collecting vessel with PE hose 10/8 mm (0.31/0.39 inch), length 2.5 m (8.2 ft)
- 1 PE hose roll 4/2 mm (0.16/0.08 inch), length 2.5 m (8.2 ft)
- 1 PVC hose roll 4/2 mm (0.16/0.08 inch), length 2.0 m (6.65 ft)
- 1 PTFE hose roll 3/1.5 mm (0.12/0.06 inch), length 2.5 m (8.2 ft)
- 1 or 2 Filter plate(s) (depending on ordered version)
- 1 or no assembly (depending on ordered version)
- 1 Filtrate line with PE filtrate hose 4/2 mm(0.16/0.08 inch), min. length 20 m (65.62 inch) depending on ordered version
- 1 Acceptance certificate
- 1 Allen key 4 mm (0.16 inch)
- 1 Allen key 4 mm (0.16 inch) with handle, length 200 mm (7.87 inch)
- 1 Fitting 3 mm (0.12 inch)
- 1 Dummy plug
- 1 Operating Instructions BA 380C/07/en

Certificates and approvals**CE approval****Declaration of conformity**

The product meets the legal requirements of the harmonised European standards.
Endress+Hauser confirms compliance with the standards by affixing the **CE** symbol.

Accessories

- ☐ Adapter for mounting a 2nd filter plate,
order no. 51511355 (2 adapters needed per filter plate)
- ☐ Filter element holder with vertical retaining slide, 1.50 m, for basin
order no. 51511353
- ☐ Filter element holder with vertical retaining slide, 1.80 m, for basin
order no. 51511354
- ☐ Filter element holder with horizontal retaining slide, 1.50 m, for open channel
order no. 51511373
- ☐ Filter element holder with horizontal retaining slide, 1.80 m, for open channel
order no. 51511374
- ☐ Flow assembly with reduced dead volume
order no. 51509332

Documentation

- ❑ StamoClean CAT 430 with hose pump,
Operating Instructions, BA338C/07/en, order no. 51508731
- ❑ StamoClean CAT 430 with diaphragm pump,
Operating Instructions, BA380C/07/en, order no. 51514215
- ❑ StamoLys CA 71 AM, Analyzer for Ammonium,
Technical Information, TI353C/07/en, order no. 51512286
- ❑ StamoLys CA 71 NO, Analyzer for Nitrite,
Technical Information, TI355C/07/en, order no. 51512290
- ❑ StamoLys CA 71 PH, Analyzer for Phosphate,
Technical Information, TI356C/07/en, order no. 51512292

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