Technical Information
TI 219C/07/en/09.02
51502581

Ammonium Analyzer
StamoLys CA 70 AM

Compact photometric analysis system for the ammonium measurement in sewage treatment plants

Application

- Monitoring and optimising the cleaning capacity of wastewater treatment plants
- Monitoring activated sludge basins
- Monitoring wastewater treatment plant outlets

Your benefits

- Direct reaction in photometer at constant temperature
- Low system volume required due to short distances
- Low reagent requirement
- Small sample volume
- Three selectable measuring ranges
- User-friendly interface
- Sample stream monitoring and plain text error menu
- Measured value storage using integrated data logger
- Automatic self-cleaning
- Automatic calibration
- With two channel version: measurement sequencies programmable

Quality made by Endress+Hauser

ISO 9001

Endress+Hauser

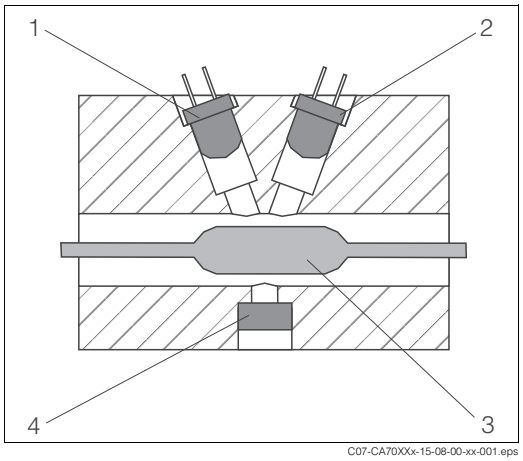
The Power of Know How

Function and system design

Measuring principle

Photometric principle

After sample conditioning, the Analyzer sample pump conveys a defined part of the filtrate to a mixing vessel. The reagent pump adds reagent at a specific ratio. As a result of the reaction, the sample turns a characteristic colour. The photometer determines the sample absorption of an emitted light at a specific wavelength (s. Fig., Pos. 2). The wavelength is parameter specific. The absorbed light intensity is proportional to the concentration of the specified parameter in the sample (Pos. 3). Additionally, the absorption of a reference light is determined to receive a genuine measuring result. The reference signal is subtracted from the measuring signal to prevent any effects due to turbidity, contamination and ageing of the LEDs.
The temperature in the photometer is controlled thermostatically so that the reaction is reproducible and takes place within a short period of time.



1 Reference LED
2 Emitter LED
3 Detector
4 Sample

Photometric principle

Indophenol blue method for ammonium determination acc. to ISO 11732

Sodium dichlor-isocyanurate and sodium salicylate form a blue dye in conjunction with ammonium.
The absorption is determined at a wavelength of 660 nm. The intensity of absorbed light is proportional to the ammonium concentration in the sample.
The reference wavelength is 880 nm.

Sample conditioning

Analyzer in connection with membrane filtration (StamoClean CAT 430, optionally)

A membrane filter element is suspended directly into the wastewater basin or channel. A hose pump is located in a pump box on the basin rim.The pump creates a vacuum between the membrane and the carrier plate of the filter element. This vacuum makes the filtrate pass through the filter membrane. Suspended materials, particles, algae and bacteria are collected on the surface of the membrane.
Due to an alternating pumping periods, intervals of more than one month are achieved between cleaning cycles. Parallel connection of two or four filter elements increases the sampling quantity up to 1 l/h approx.
The hose pump pressure transports the sample to a collecting vessel near the analyzer over a distance of 20 m. For distances up to 100 m the sample is transported to the collecting vessel by means of compressed air. The analyzers suck the needed sample volume from the collecting vessel.

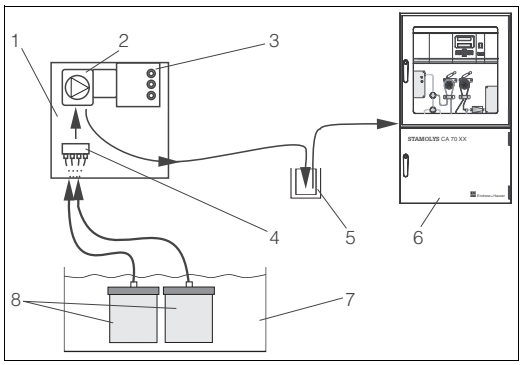
Analyzer without E+H sample conditioning

Before analysis, the sample has to be conditioned and to be transported to an external or to the delivered collecting vessel.

Measuring system

A complete measuring system complies:
- An analyzer StamoLys CA 70
- A sample conditioning system (optionally):
  – Micro filtration / ultra filtration StamoClean CAT 430 or StamoClean CAT 411
  – Backwash filter StamoClean CAT 220
  – Customer specific solution
- Wall mounting set (optionally)
- Collecting vessel (optionally)

Micro / ultra filtration



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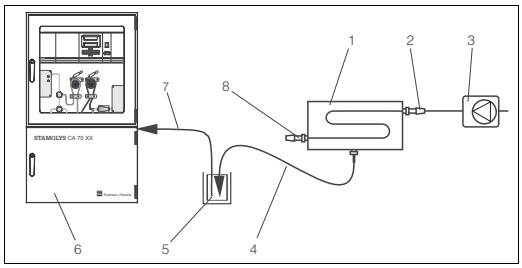
Measuring with StamoClean CAT 430

1 *Hose pump box*
2 *Hose pump*
3 *Control unit*
4 *Collecting unit (optionally)*
5 *Collecting vessel*
6 *Analyzer*
7 *Aeration basin*
8 *Membrane filter*



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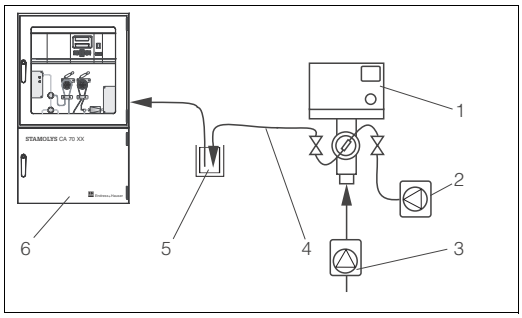
Measuring system with StamoClean CAT 411

1 *StamoClean CAT 411*
2 *Inlet*
3 *Sample pump or hydraulic main*
4 *Filtrate line*
5 *Collecting vessel*
6 *Analyzer*
7 *Sample line analyzer*
8 *Outlet*

Backwash filter



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Measuring system with StamoClean CAT 220

1 *StamoClean CAT 220*
2 *Compressor or compressed air*
3 *Sample pump or hydraulic main*
4 *Sample out*
5 *Collecting vessel*
6 *Analyzer*

Input

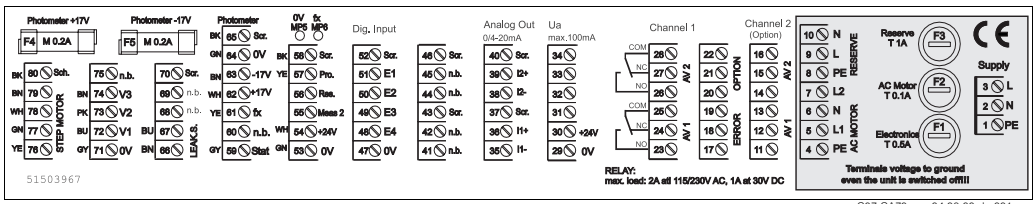
Measured variable	NH_4-N [mg/l]
Measuring ranges	0.1 ... 5 mg/l (AM-A) 0.2 ... 15 mg/l (AM-B) 0.2 ... 100 mg/l (AM-C)
Wavelength	660 nm (AM-A und AM-B) 565 nm (AM-C)
Reference wavelength	880 nm

Output

Output signal	0/4 ... 20 mA
Signal on alarm	2 limit contacts (per channel), 1 system alarm contact
Load	max. 500 Ω
Data interface	RS 232 C
Load capacity	30 VA max. 48 V AC, 30 V DC at 0.5 A

Power supply

Electrical connection



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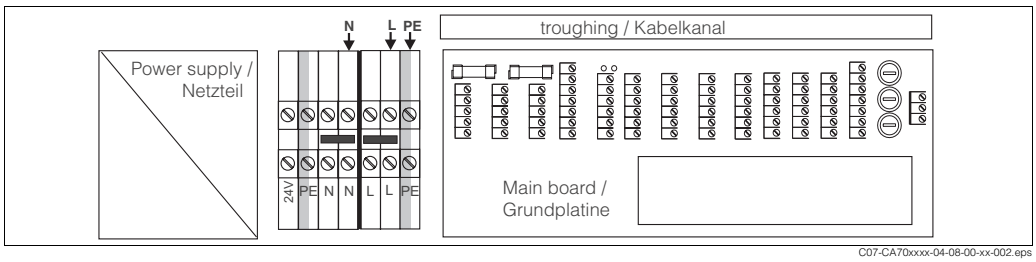
Connection sticker CA 70



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Power supply reagent cooling device

Supply voltage	115 V AC / 230 V AC ±10%, 50/60 Hz
Power consumption	without reagent cooling ca. 40 VA with reagent cooling ca. 200 VA

Current consumption	without reagent cooling with reagent cooling	ca. 0.15 A ca. 0.9 A
Fuses	medium time-lag 0.2 A, time-lag 0.5 A	

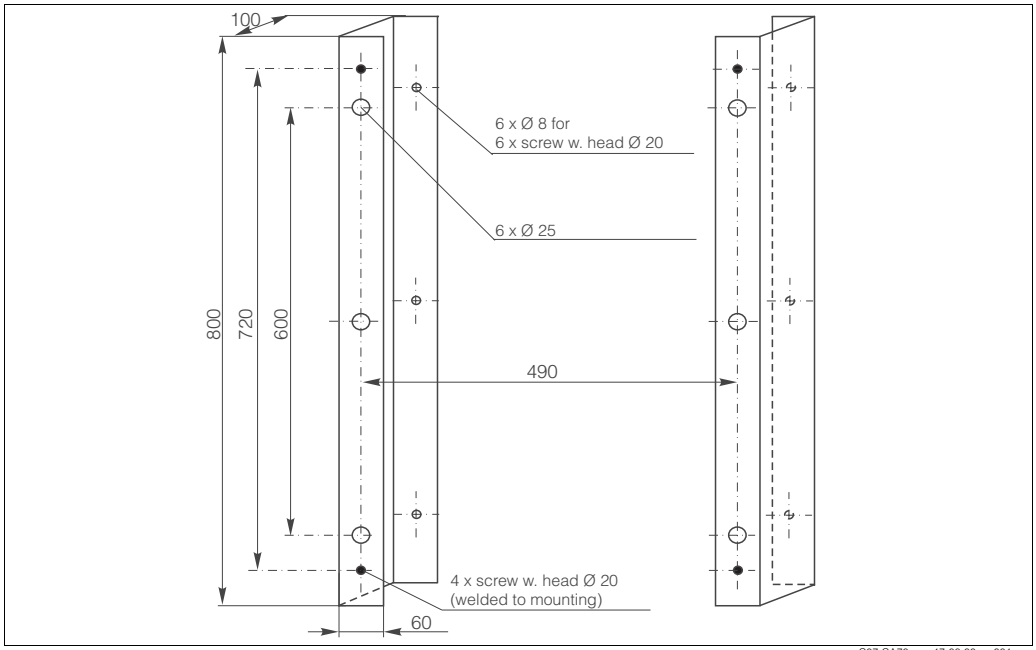
Performance characteristics

Response time t_{100}	Reaction time + flushing time + waiting time (minimum waiting time = 0 min)
Maximum measured error	3 % of measuring range scope
Measuring interval	2 ... 120 min
Measuring time	3 minutes
Sample requirement	15 ml per measurement
Reagent requirement	2 x 0.5 ml per measurement
Calibration interval	0 ... 72 h
Flushing interval	0 ... 72 h
Maintenance interval	3 month
Servicing requirements	15 minutes a week

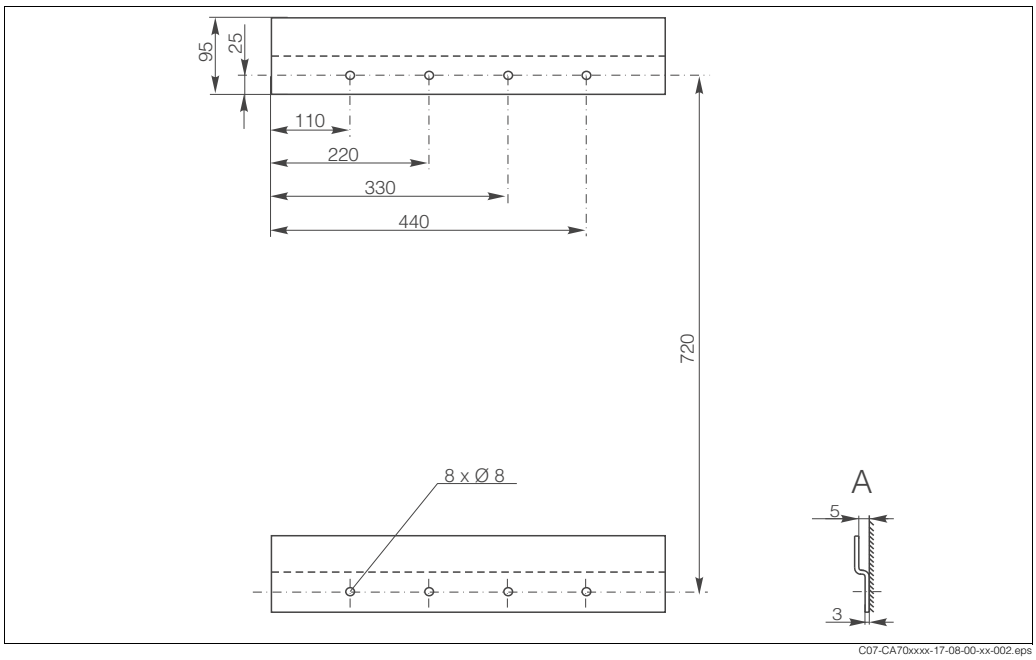
Installation

Installation instructions

Wall mounting set (Accessories, with reagent cooling essentially)



Wall mounting set for analyzer with reagent cooling device



Wall mounting set for analyzer without reagent cooling device

Environment

Ambient temperature limit

5 ... 40 °C (with temperatures > 25 °C a reagent cooling device is essential)

Ingress protection

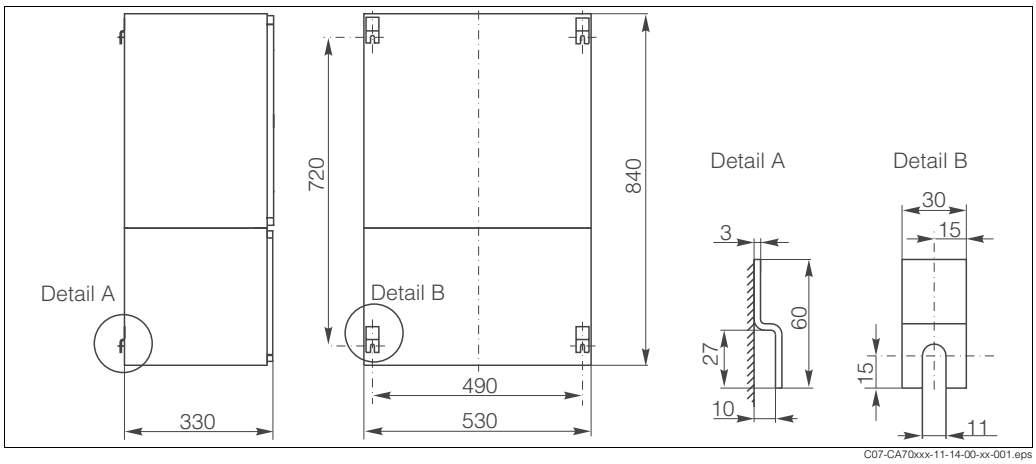
IP 43

Process

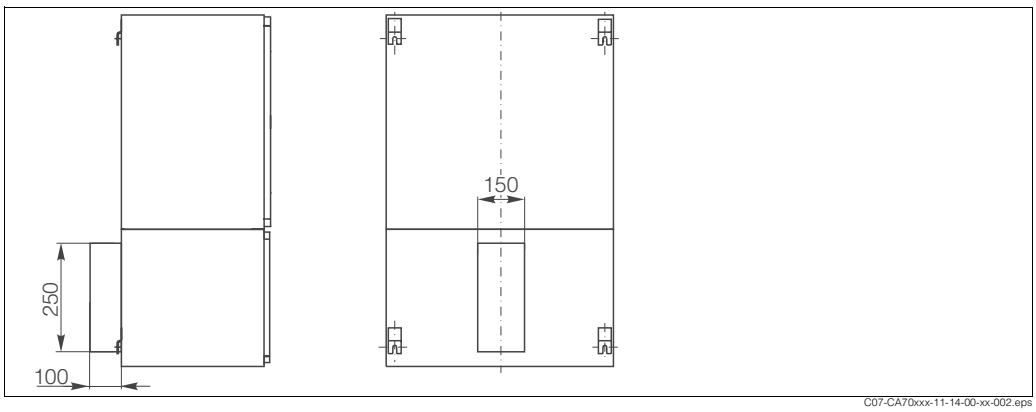
Sample flow rate	min. 5 ml per min
Consistence of the sample	low solid content (< 50 mg/l)
Sample requirement per measurement	20 ml
Sample inlet	pressureless

Mechanical construction

Design, dimensions



CA 70 dimensions



Reagent cooling device dimensions

Weight	Without reagent cooling	ca. 40 kg
	With reagent cooling	ca. 50 kg
Materials	Housing	Stainless Steel 1.4573 (AISI 316 Ti)
	Front windows	Plexiglas®
	Endless hose	C-Flex®, Norprene®
	Pump hose	Tygon®, Viton®

Connection sample line

One channel version

Internal collecting vessel

Connection	hose ID 3.2 mm

External collecting vessel

Connection	hose ID 1.6 mm
Max. distance from collecting vessel to analyzer	1 m
Max. height difference from collecting vessel to analyzer	0.5 m

Two channel version

With option "collecting vessel": two external collecting vessels on a PVC plate mounted

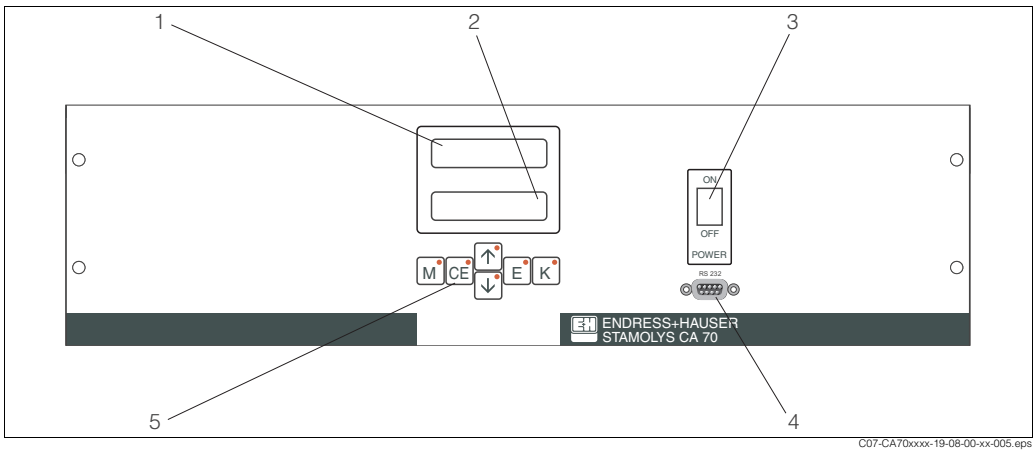
Connection collecting vessel to analyzer	2 x hose ID 1.6 mm
Connection collecting vessel to customer specific sample inlet	2 x hose ID 3.2 mm
without collecting vessel	2 x hose ID 1.6 mm

Sample outlet

Connection	hose ID 6.4 mm – Max. length of closed loop 1 m – Open outlet mounted falling – No combination of several devices to a closed-loop system
Min. volume per meas.	20 ml

Human Interface

Display and operating elements



Display and operating elements CA 70

1 LED display (measured value)
2 LC display (measured value + status)
3 Toggle switch on/off
4 RS 232 serial interface
5 Operating keys with indicator LEDs

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.

Test reports

Quality certificate
Depending on the order code you receive a quality certificate.
With the certificate Endress+Hauser confirms compliance with all technical regulations and the successful testing individually for your product.

Ordering information

Product structure

	Measuring range							
	A	Measuring range 0.1 ... 5 mg/l						
	B	Measuring range 0.2 ... 15 mg/l						
	C	Measuring range 0.2 ... 100 mg/l						
	Y	Special version acc. to customers specification						
		Sample transfer						
		1	Sample transfer from one measuring point (one channel version)					
		2	Alternating sample transfer from two measuring points (two channel version)					
		9	Special version acc. to customers specification					
			Power supply					
			0	Power supply 230 V AC				
			1	Power supply 115 V AC				
			9	Special version acc. to customers specification				
				Collecting vessel				
				A	Without collecting vessel			
				B	With collecting vessel			
				Y	Special version acc. to customers specification			
					Equipment			
					1	Without reagent cooling device		
					2	With reagent cooling device		
					9	Special version acc. to customers specification		
						Communication		
						A	RS 232 + 0/4 ... 20 mA	
						Y	Special version acc. to customers specification	
							Additional equipment	
							1	Quality certificate
							9	Special version acc. to customers specification
CA 70 AM-								**complete order code**

Accessories

Installation accessories

- ❑ Wall mounting set for version without reagent cooling device; order no. 51503061
- ❑ Wall mounting set for version with reagent cooling device; order no. 51503063

Reagents and standard solutions

- ❑ Reagent set activ, per 5 l reagent AM1+AM2; order no. CAY140-V50AAE
- ❑ Reagent set inactiv, per 5 l reagent AM1+AM2; order no. CAY140-V50AAH
- ❑ Cleaning agent R; order no. CAY141-V10AAE
- ❑ Standard solution 5 mg/l NH_4 - N; order no.CAY142-V10C05AAE
- ❑ Standard solution 10 mg/l NH_4 - N; order no.CAY142-V10C10AAE
- ❑ Standard solution 15 mg/l NH_4 - N; order no.CAY142-V10C15AAE
- ❑ Standard solution 20 mg/l NH_4 - N; order no.CAY142-V10C20AAE
- ❑ Standard solution 30 mg/l NH_4 - N; order no.CAY142-V10C30AAE
- ❑ Standard solution 50 mg/l NH_4 - N; order no.CAY142-V10C50AAE

Documentation

- ❑ Technical Information StamoClean CAT 430, TI 338C/07 (order no. 51508729)
- ❑ Technical Information StamoClean CAT 411, TI 349C/07 (order no. 51508785)
- ❑ Technical Information StamoClean CAT 220, TI 317C/07 (order no. 51509817)

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