



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical Information

Stamosens CNM750 / CNS70

Online nitrate determination

Photometric analysis system for the determination of nitrate



Application

- Monitoring of nitrate content in the outlet of wastewater treatment plants
- Monitoring and optimizing denitrification processes
- Monitoring of potable water treatment plants
- Nitrate measurement in natural waters

Your benefits

- Economy-priced and ecological measuring process:
 - No sampling or conditioning system required
 - No chemicals required
 - Service friendly design
- Measured value preparation in the sensor:
 - Low interference susceptibility on signal transfer
 - Very short response time
 - In-situ calibration
- Recognition of load peaks:
 - In time
 - Instantaneous
 - Without gap
- Measured values stored by data logger

Function and system design

Measuring principle

Nitrate ions absorb UV light in the range of approx. 190 to 230 nm. Nitrite ions have a similar absorption in that range.

Ultra violet light of a pulsed, highly stable photoflash lamp lights through the measurement section. The nitrate and nitrite ions of the sample absorb this light proportionally to their concentration.

The intensity of the attenuated light beam is measured by photodiodes at two fixed wave lengths (measuring and reference wave length). Interferences, e.g. by turbidity, dirt or organic hydrocarbons are mathematically eliminated.

The nitrate concentration is determined by a stored calibration function.

Interferences

The measuring range is affected by the:

- dry substance
- age of the sludge
- color
- chemical oxygen demand (COD)
- temperature.

Trends:

- Higher dry substance content reduces the maximum measured value, i.e. narrows the measuring range.
- Equal dry substance content, but different color, leads to different measuring ranges/measured values.
- COD > 100 mg/l affects the measured value at nitrate concentrations below 1 mg/l.

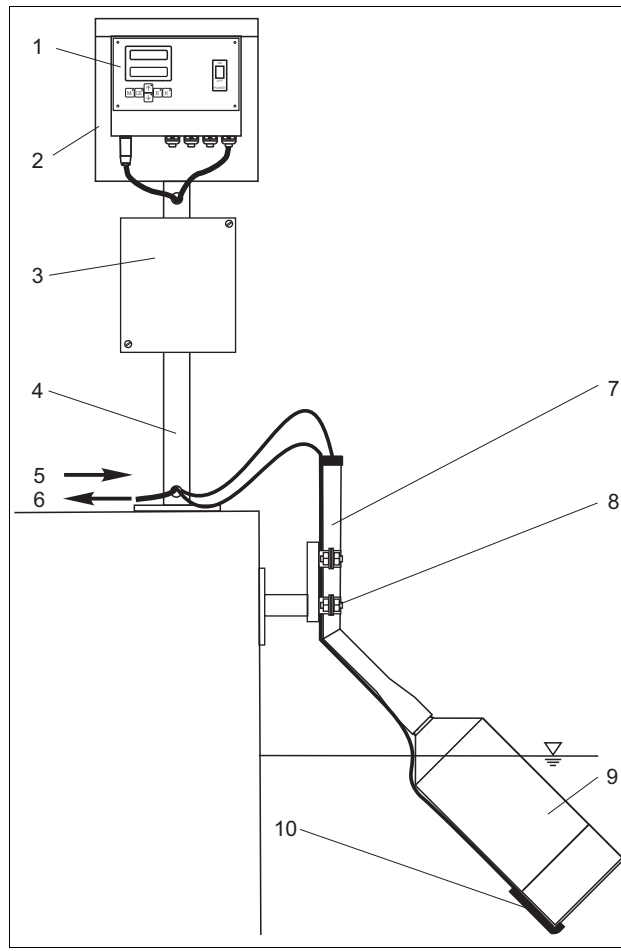
Measuring system

A complete measuring system comprises:

- a CNM750 transmitter
- a CNS70 sensor
- an immersion assembly with pendulum frame

Optional:

- Cleaning unit with compressor
- Mounting post and weather protection cover



Complete measuring system

- 1 Transmitter CNM750
- 2 Weather protection cover
- 3 Compressor housing (optional, only with cleaning unit)
- 4 Mounting post
- 5 Power supply
- 6 Signal output
- 7 Immersion assembly
- 8 Pendulum frame
- 9 Sensor CNS70
- 10 Cleaning unit (optional)

Input

Measured variable

NO₃-N [mg/l], NO₃ [mg/l]

Measuring range

Clear water 0.2 to 60 mg/l NO₃-N or 0 to 260 mg/l NO₃
 Activated sludge¹⁾ 0.2 to 30 mg/l NO₃-N or 0 to 130 mg/l NO₃

1) Please observe the notes on the interferences.

Wavelength

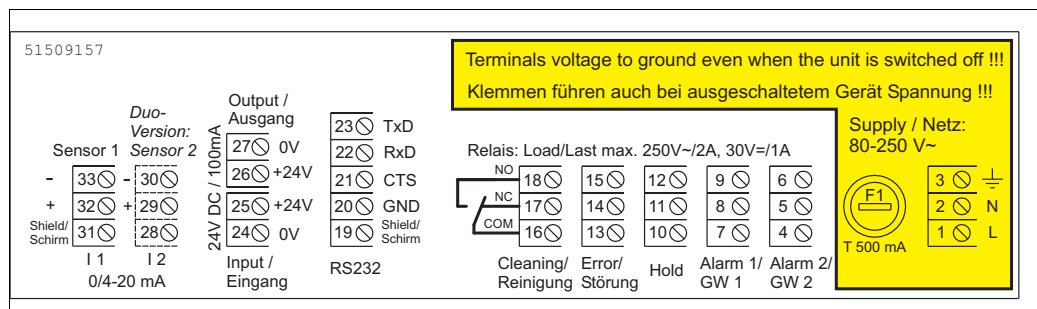
Nitrate absorbance maximum

Output

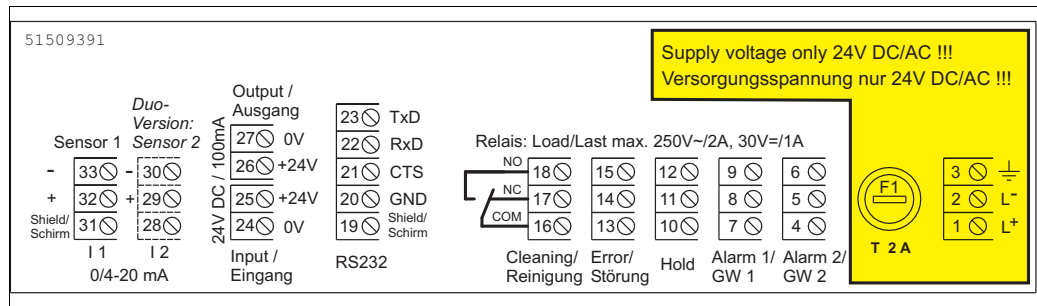
Output signal	0/4 to 20 mA, galvanically separated
Signal on alarm	2 limit contacts, 1 alarm contact
Contact switching power	230 V AC / 2 A, 30 V DC / 1 A
Load	max. 500 Ω
Data interface	RS 232 C, slot for bus extension (for internal purposes only)

Power supply

Electrical connection



Electrical connection transmitter with power supply 80 to 250 V AC



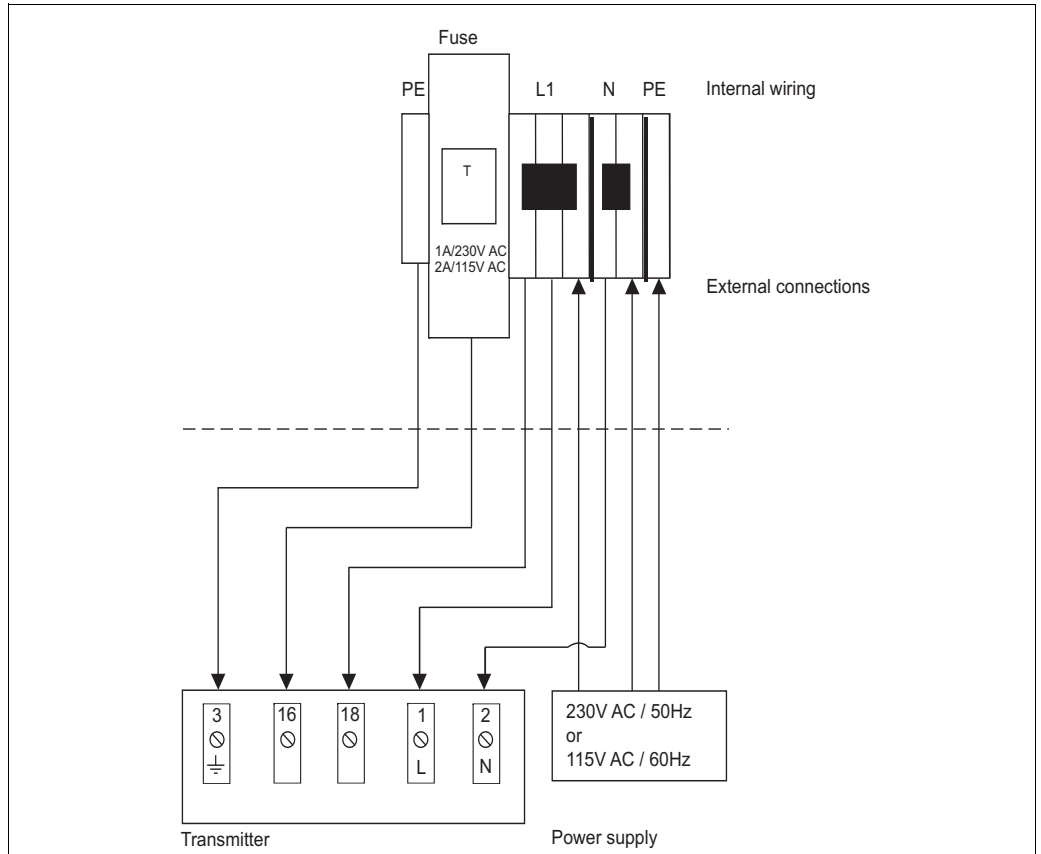
Electrical connection transmitter with power supply 24 V AC/DC

Note!

The duo version with a second sensor is not available for the CNM750 and CSM750 transmitters.

Supply voltage	80 to 250 V AC ±10%, 50/60 Hz 24 V AC/DC
Power consumption	max. 15 VA

Connection of the cleaning unit



Connection of the cleaning unit

a0000951-en

Performance characteristics

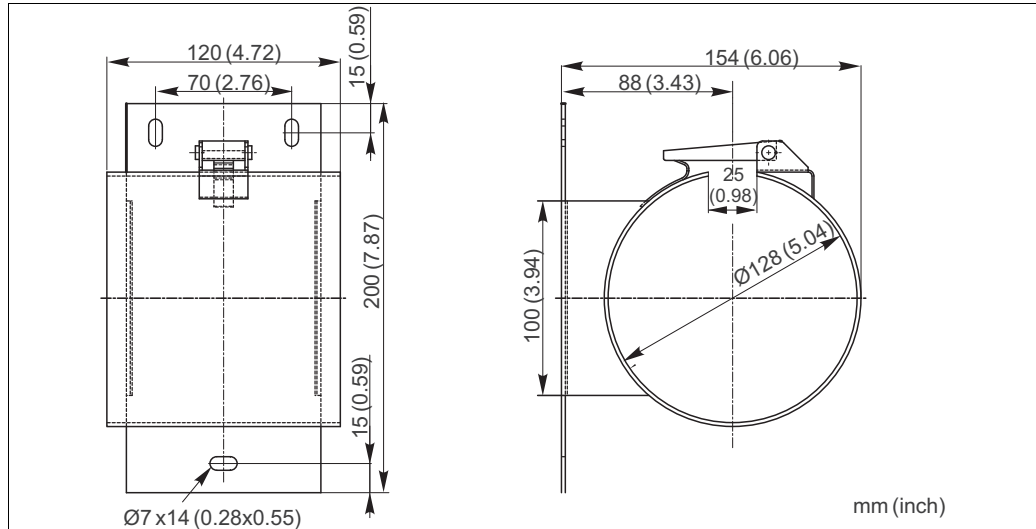
Response time t_{90}	≥ 60 s, selectable
Maximum measured error	2 % of upper range value or $\pm 0,1$ mg/l with clear water resp. $\pm 0,3$ mg/l with activated sludge, depending on which is the higher value
Repeatability	0.5 % (with homogeneous media)
Measuring interval	≥ 40 s, selectable

Installation

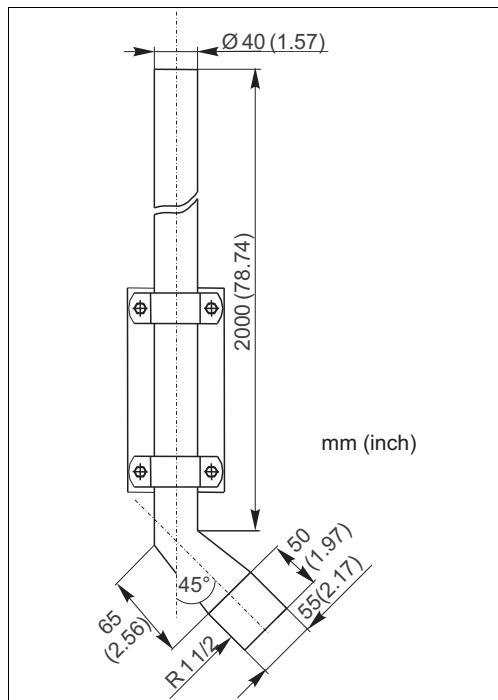
Installation instructions

Caution!

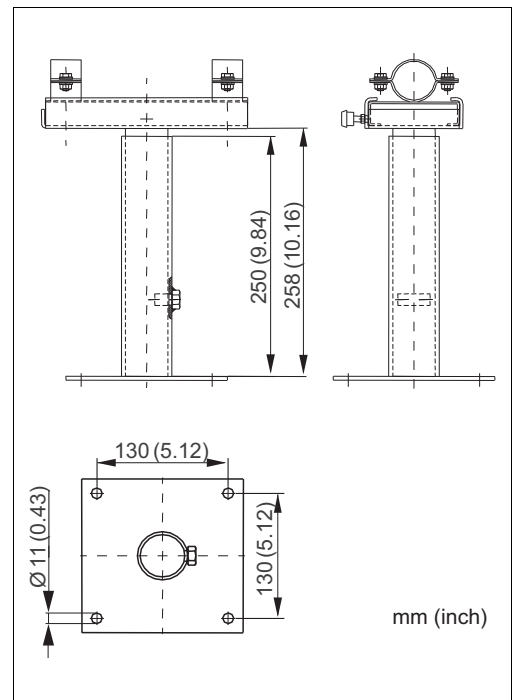
Do not install the sensor suspended from the cable. Use a wall bracket or an immersion assembly with pendulum frame for sensor mounting.



Wall bracket for sensor

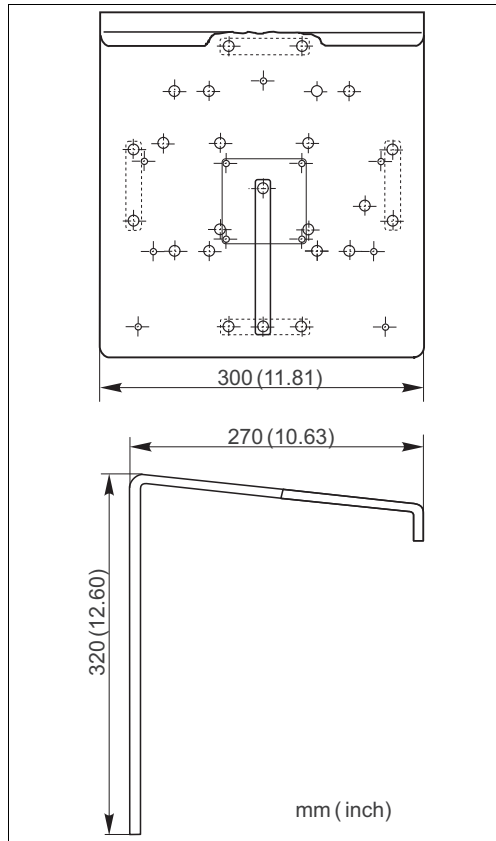


Immersion assembly for sensor

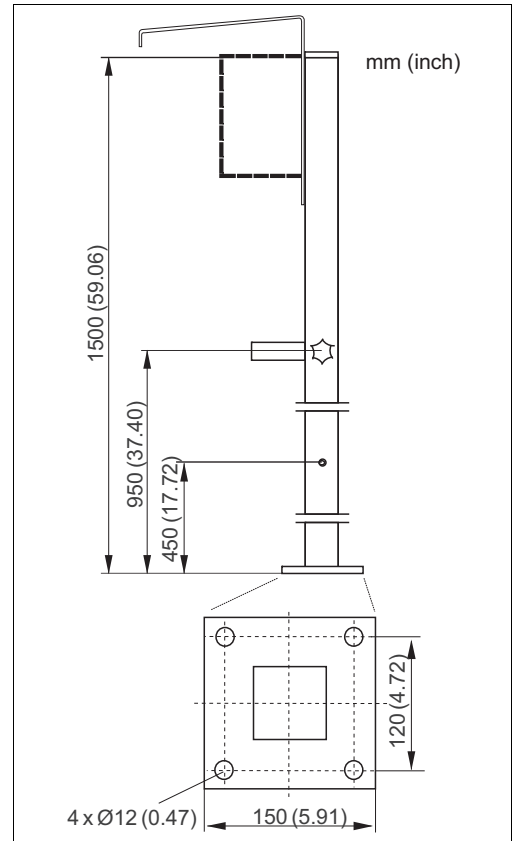


Pendulum frame for immersion assembly

Weather protection cover and round post mount (accessories, optional)



Weather protection cover CYY101



Round post mount CYY102

Cleaning unit

Maximum length of air line tubing: 15 m (49.2 ft)

Note!

Make sure to observe the maximum length of the air line tubing because the cleaning unit has not sufficient power for longer distances.

Environment

Ambient temperature

-10 to 50 °C (14 to 122 °F)

Ingress protection

Sensor, up to 1 bar (14.5 psi): IP 68
 Transmitter: IP 65
 Cleaning unit (compressor): IP 54

Process

Medium temperature

2 to 40 °C (36 to 104 °F)

Medium pressure

max. 1 bar (14.5 psi)

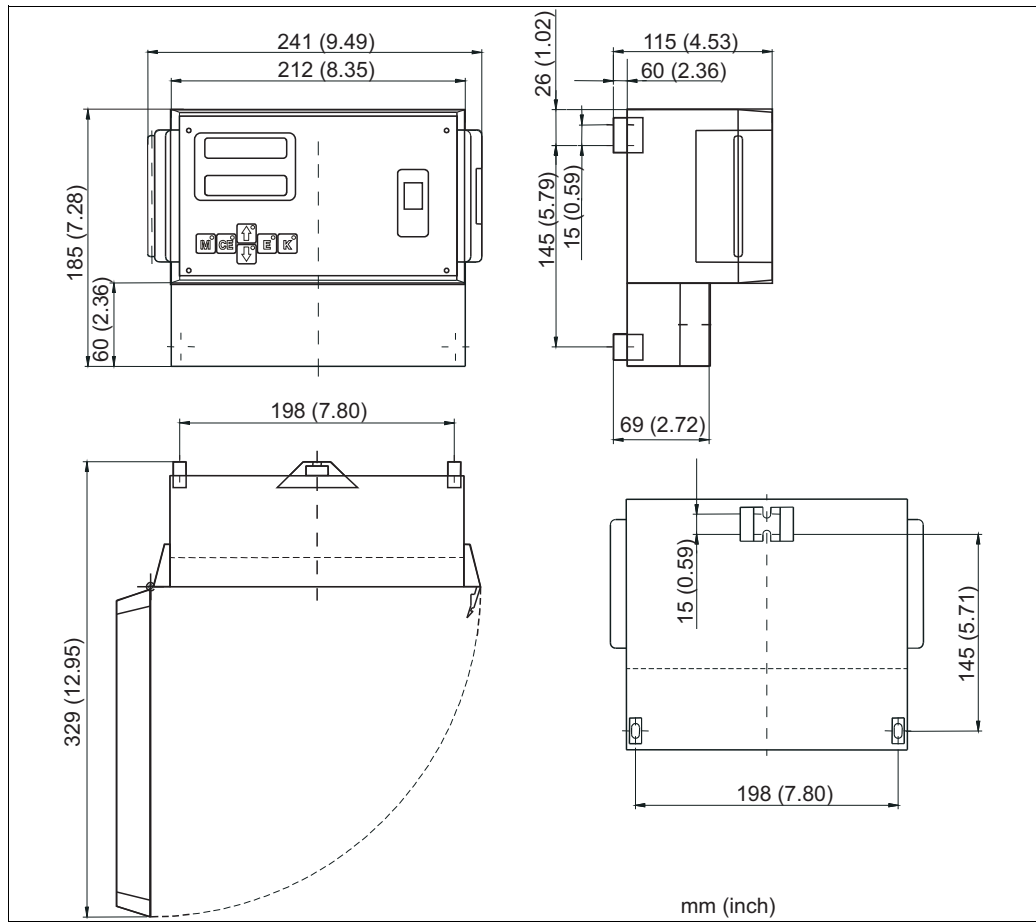
Solid content

Activated sludge sensor¹⁾ 2.5 g/l to < 8 g/l
 Clear water sensor < 2 g/l

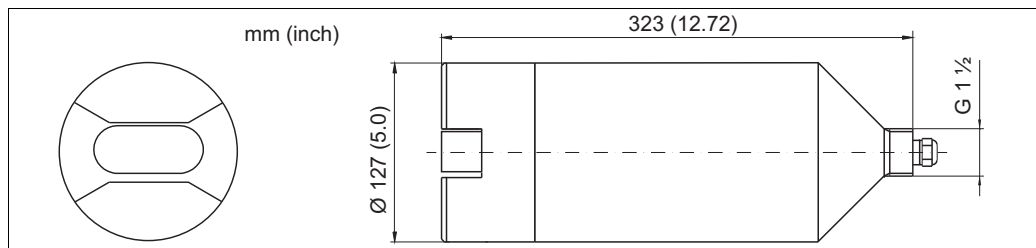
1) Please observe the notes on the interferences.

Mechanical construction

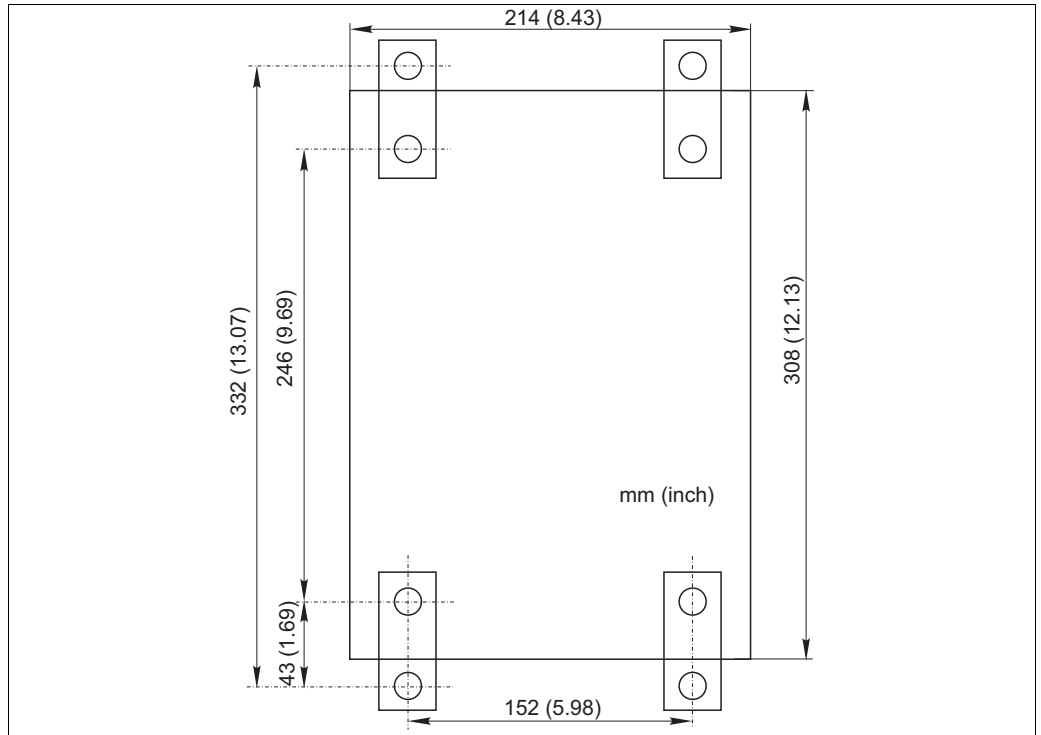
Design, dimensions



Transmitter dimensions



Sensor dimensions



Compressor of the cleaning unit

a0003231

Weight	Transmitter	approx. 1.6 kg (3.5 lb)
	Sensor	approx. 5 kg (11 lb)

Materials	Sensor head	Stainless steel 1.4571 (AISI 316 Ti)
	Optical sensor windows	Quartz glass
	Sensor housing	POM

Process connection	Sensor head G1½
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Cable specification	Cable length:	2 m (6.6 ft), 5 m (16.4 ft), 7 m (23 ft) or 15 m (49.2 ft) (cable with plug)
	Cable extension:	up to 200 m ¹⁾ (656 ft) (with sensor connection box, s. accessories) up to 50 m ²⁾ (164 ft) (with sensor connection box, s. accessories)

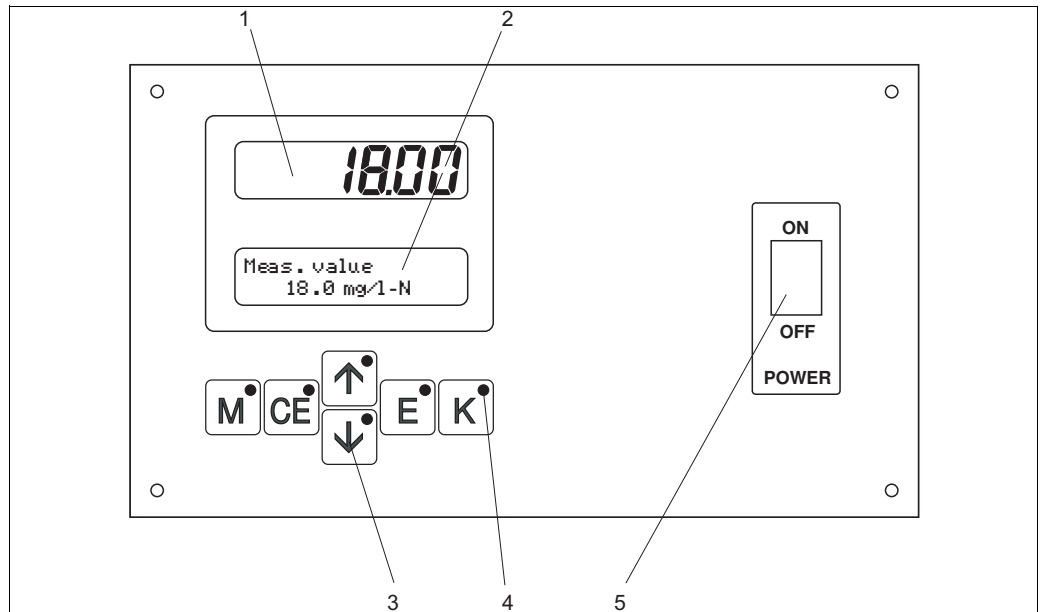
- 1) with CNM750/CNS70
- 2) with CSM750/CSS70

Note!

If you are using the cleaning unit, make sure to observe the maximum permissible air line tubing length.

Human interface

Display elements



Display and operating elements

- 1 LED (measured value)
- 2 LC display
- 3 Operating keys
- 4 Indicator LEDs
- 5 Mains switch

Ordering information

Scope of delivery

The scope of delivery comprises:

- a transmitter (device type and version acc. to the nameplate)
- a sensor (sensor type and version acc. to the nameplate)
- a quality certificate
- Operating Instructions (English).

Product structure

Power supply	
7	80 to 250 V AC
8	24 V AC/DC
9	Special version acc. to customer specification
Communication / Output	
A	RS 232 + 0/4 to 20 mA
Y	Special version acc. to customer specification
Version	
1	One channel version
9	Special version acc. to customer specification
Additional equipment	
A	Quality certificate
Y	Special version acc. to customer specification
CNM750 -	complete order code

Cleaning unit	
A	Without
B	230 V
C	115 V
Y	Special version acc. to customer specification
Measuring range	
4	0.2 to 30 mg/1 NO ₃ -N (activated sludge)
5	0.2 to 60 mg/1 NO ₃ -N (clear water)
9	Special version acc. to customer specification
Cable length	
A	2 m (6.56 ft)
B	7 m (23 ft)
C	5 m (16.4 ft)
D	15 m (49,2 ft)
Y	Special version acc. to customer specification
Version	
1	Without assembly
3	Sea water version (titanium sensor housing)
4	Immersion assembly 2 m (6.56 ft), 90° offset + pendulum frame w. 250 mm (9.84") wall spacing
9	Special version acc. to customer specification
Additional equipment	
A	Quality certificate
Y	Special version acc. to customer specification
CNS70 -	complete order code

Certificates and approvals

CE approval

Declaration of conformity

The product meets the requirements of the harmonized European standards. It thus complies with the legal requirements of the EC directives.

The manufacturer confirms successful testing of the product by affixing the **CE** symbol.

Test reports

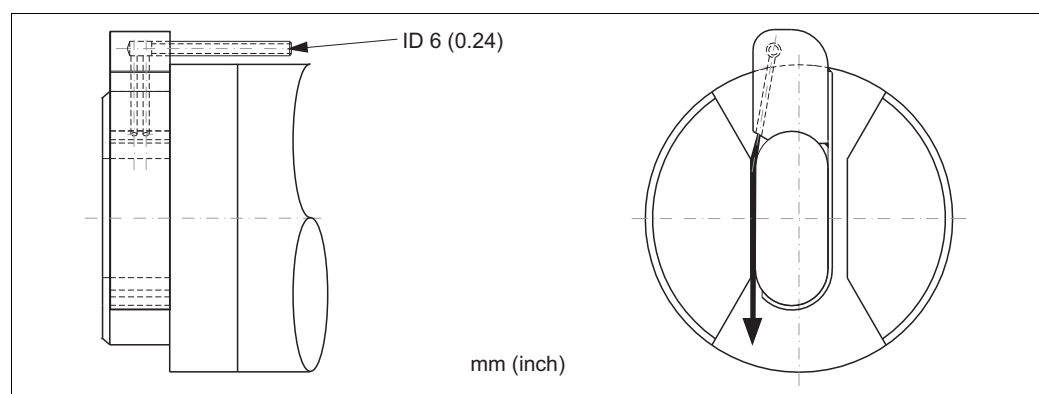
Quality certificate

Depending on the order code, you receive a quality certificate.

With the certificate the manufacturer confirms compliance with all technical regulations and the successful individual testing of your product.

Accessories

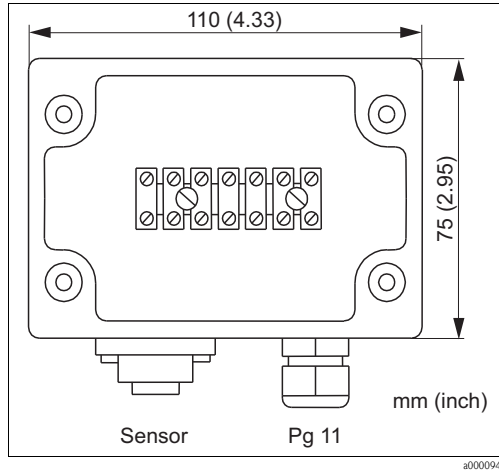
- Weather protection cover CYY101,
for field mounting of the transmitter;
order no. CYY101-A
- Round post mount CYY102,
for weather protection cover mounting to vertical or horizontal pipes;
order no. CYY102-A
- Immersion assembly, offset 45°
length 2 m; order no. 51511771
- Immersion assembly, straight
length 2 m (6.56 ft); order no. 51502959
length 3 m (9.84 ft); order no. 51502960
special length; order no. 50066036
- Wall bracket for sensor;
order no. 51508576
- Pendulum frame for sensor;
wall spacing 250 mm (9.84"); order no. 51502962
special version; order no. 50066036
- Compressor attachment;
order no. 51505419
- Cleaning unit,
230 V; order no. 51504764
115 V; order no. 51504765



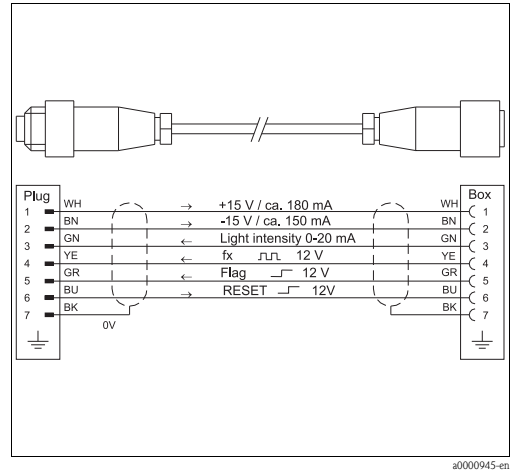
Cleaning unit for sensor

- Extension cable,
cable length 10 m (32.8 ft), with plug and coupling;
order no. 51502953
- Plug,
7-pin plug, IP 67;
order no. 51502954
- Coupling;
order no. 51502955

- Control line,
50 m (164 ft), 6 x 0,34;
order no. 51503015
- Sensor terminal housing,
for cable extension from transmitter to sensor;
order no. 51502956

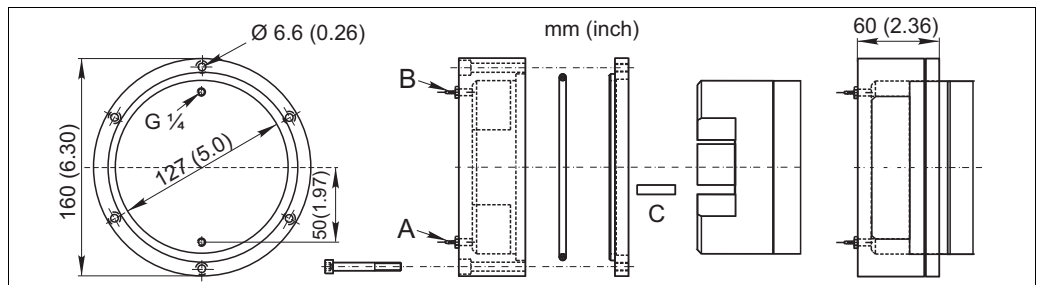


Sensor terminal housing



Sensor connection to sensor terminal housing

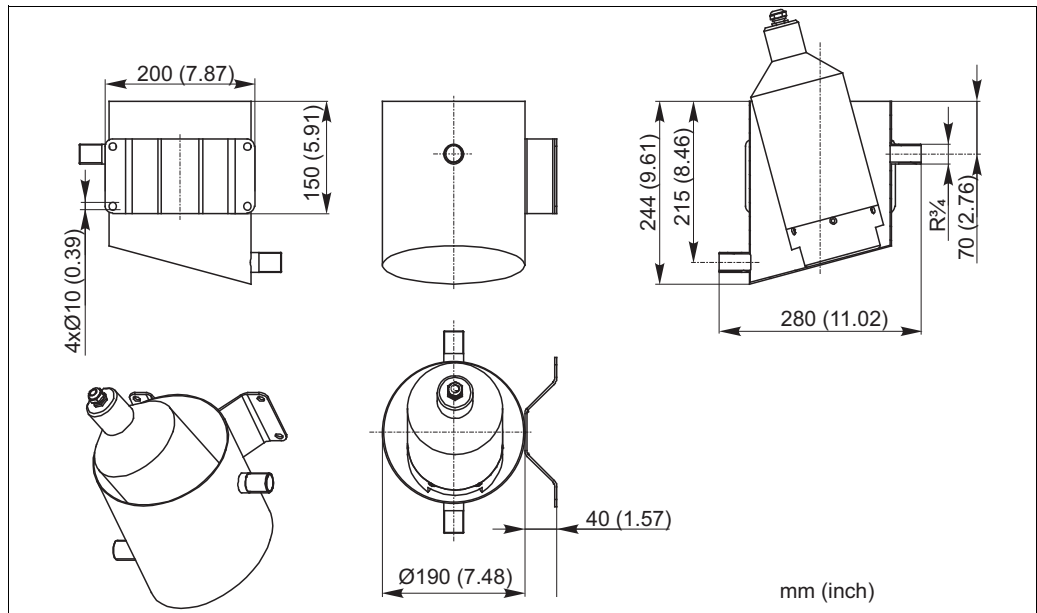
- Flow assembly for drinking water application,
with reduction of the dead volume, stainless steel 1.4571 (AISI 316 Ti) / PVDF;
order no. 51509332
- without reduction of the dead volume, stainless steel 1.4571 (AISI 316 Ti) / PVDF;
order no. 51509333



Flow assembly

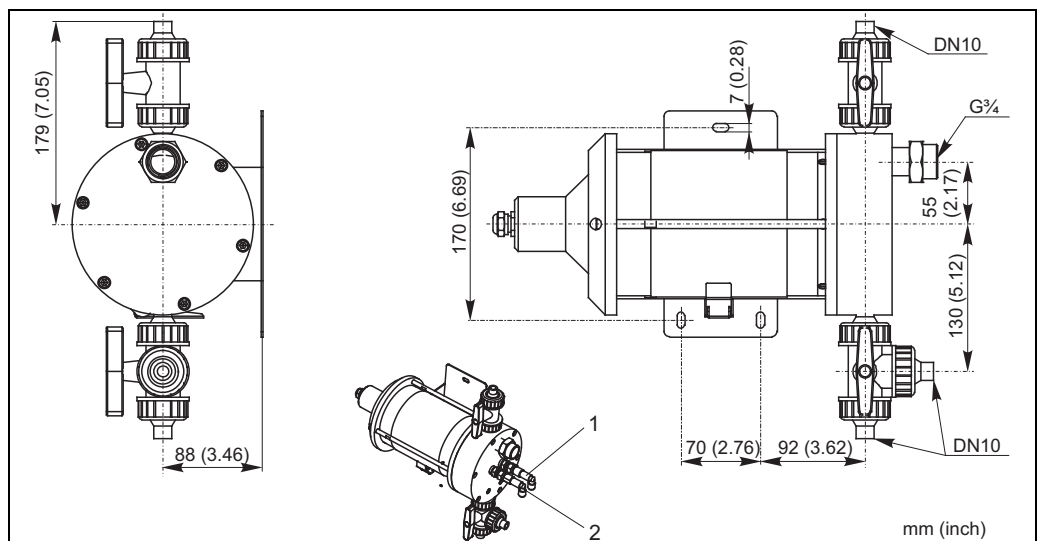
- A Hose connection inlet
ID 1.6 mm (with dead volume reduction)
ID 6.4 mm (without dead volume reduction)
- B Hose connection inlet
ID 1.6 mm (with dead volume reduction)
ID 6.4 mm (without dead volume reduction)
- C Split pin for dead volume reduction

- Flow vessel, open version; with inlet and outlet order no. 51515762



Flow vessel

- Flow assembly, without external rinsing
 - with dead volume reduction and overpressure protection, order no. 51515803
 - without dead volume reduction, with overpressure protection; order no.51515804
 - PVDF, without dead volume reduction, with stop valves and overpressure protection, order no. 51515765
 - PVC, without dead volume reduction, with stop valves and overpressure protection; order no. 51515769
- Flow assembly, with external rinsing
 - external switched valve needed, inlet DN10, outlet ¼", PVDF
 - for 2 mm (0.08") slit, order no. C-A050128-10
 - for 8 mm (0.31") slit, order no. C-A041217-11
 - for 40 mm (1.57") slit, order no. C-A041122-11
 - external switched valve, order no. C-A050110-10



Flow assembly (all versions)

- 1 with external rinsing only, 2 mm (0.08"), 8 mm (0.31") and 40 mm (1.57") slit
- 2 with external rinsing only, 40 mm (1.57") slit only

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