

# Control Systems

Chem

Energy

Pharm

Food

Water

## Uniclean® 900

**The electro-pneumatic controller for fully automated pH measurement and cleaning**

In combination with the Protos® process analysis system and the SensoGate® or Ceramat® sensor lock-gates, Uniclean® offers the ideal functionality of a complete system for automatic process control of a pH measurement.

**Maximum availability of the point of measurement: Cleaning without interrupting the process, even when measuring directly in the pressure tank**

Since the sensor is not removed for cleaning, the process can continue uninterrupted. This allows problem-free measurements in a pressure tank or in the main pipe. Elaborate and lockable bypasses are eliminated and accuracy increases.

**Low maintenance**

Fully automated cleaning of the sensor with water or special cleaning solution at user-defined intervals without interrupting the process. The cleaning solution is automatically pumped into the cleaning chamber. You just have to top up the container.

**Cost-efficient**

Low-wear and low-maintenance pump with extremely low consumption of cleaning agent.

**Long sensor life – also in critical processes**

When measuring in aggressive media or at high process temperatures, the sensor rests in the cleaning chamber and is only briefly moved into the process for measurement. The cleaning chamber may be filled with water. This method decisively increases the sensor life.

**Safe and easy measurement, even in strongly polluted media**

Sensor cleaning and rinsing are performed at user-defined intervals. Cleaning solution and water are automatically pumped into the calibration chamber. Dismounting and manual cleaning of the sensor are not required.

**Modern fieldbus integration**

The interfaces to PROFIBUS PA or FOUNDATION Fieldbus allow the Uniclean® system to be integrated directly in a fieldbus network. Naturally also in hazardous locations.

**Universal adaptation to retractable fittings**

The modular structure of the Uniclean® allows any retractable fittings to be used. Optimum functionality is achieved with the Ceramat® and SensoGate® sensor lock-gates.

The Uniclean® 900 allows highly accurate measurements to be taken, even under difficult process conditions such as high pressure, high temperatures, and high levels of impurities. The device can be installed next to the process, within the hazardous area. Control is via the Protos® 3400 measuring system or directly via a DCS.

**Clean and safe construction**

All features for smooth, safe, and low-maintenance operation are provided as standard: water pressure gauge, air filter and water trap, integrated flooding sensor with alert message.



Polished stainless steel for food and pharmaceutical applications

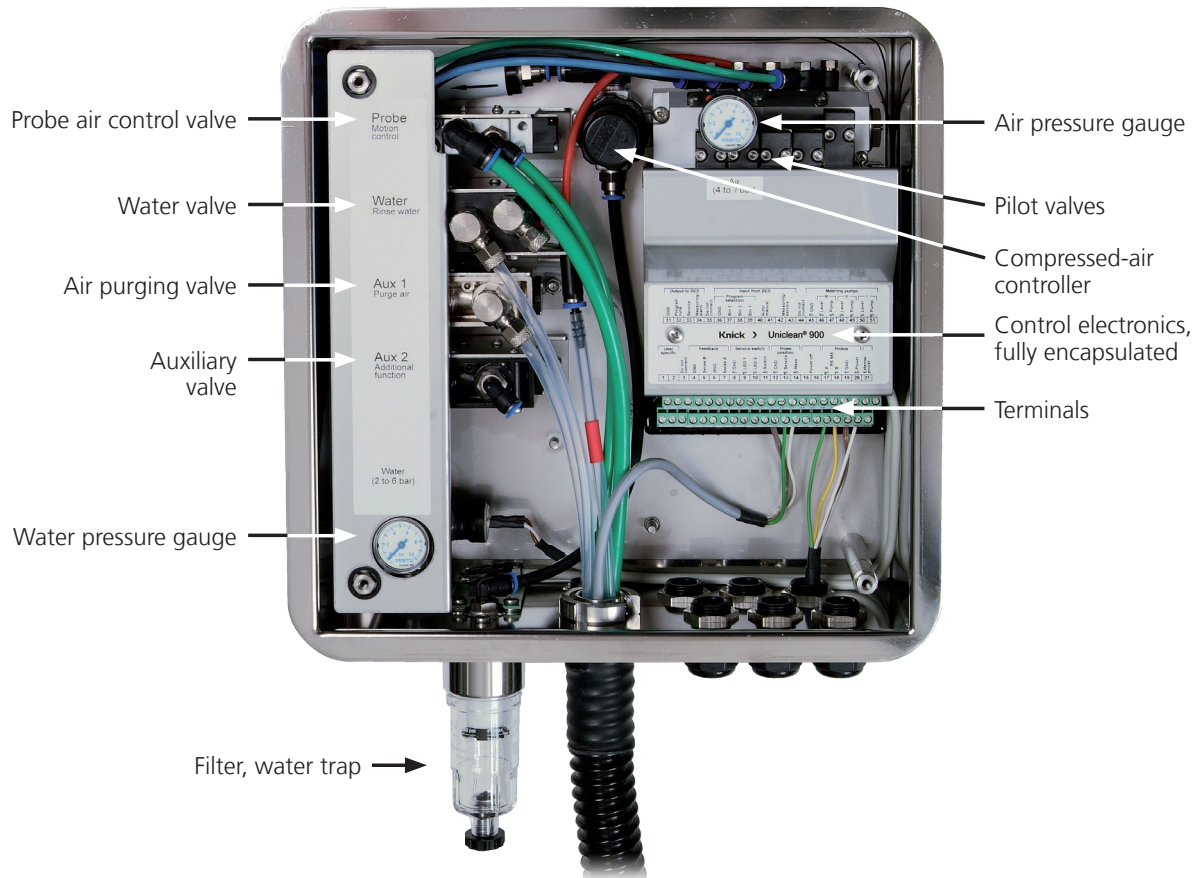


Powder-coated steel for corrosive environments

## Facts

- consistent enclosure concept for all devices
- modular design, adaptable to virtually every measuring task
- easy assembly and retrofitting
- hygienic version (polished stainless steel) or corrosion-proof (powder-coated steel)
- low maintenance effort due to innovative pump technology and extremely low consumption of media
- time-controlled cleaning
- cleaning with water and additional cleaning solution
- reduced maintenance effort due to automatic cleaning
- no disruption of production for cleaning the sensor
- operation in hazardous locations Zone 1 (all system components)
- longer sensor life due to short-time measurement and regular cleaning
- immediate readiness for measurement after production interruption since sensor is safely stored in liquid
- safety ensured by monitoring of the compressed air and water supply, the probe position and the cleaning solution level

## Inside View



**The valve units are expandable.**

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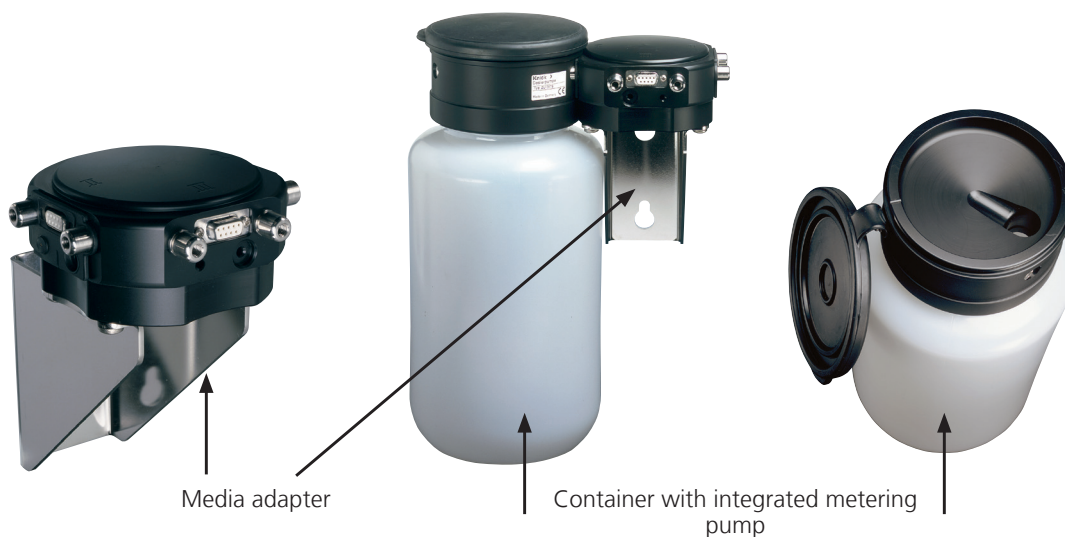
### New, Innovative Pump Design for Low Maintenance Costs

- no usual pistons/cylinders
- no moving mechanical parts
- no wear
- no stored energy as defined in ATEX 94/9/EC
- all process-wetted parts are chemically resistant



### Modular Flexibility for Very Simple Adaptation

- The cleaning solution container (3.5 l) is a replaceable active, self-sustaining unit with integrated pump: easy refilling of cleaning agent, without removing the pump
- The pump unit is automatically recognized by the system.
- The closure consists of a conveyor cap with funnel and buttoned lid.
- This innovative construction provides previously unknown flexibility and service friendliness.



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## Overview – The Complete System

Protos® 3400  
process analysis system



Uniclean® 900  
controller



Metering pump  
with cleaning solution



SensoGate® WA 130  
sensor lock-gate



pH sensor

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### Specifications

Compressed air	oil- and condensate-free
Permitted pressure range	4 ... 10 bar
Pressure monitoring	automatic monitoring, message
Connection	1/4" internal thread
Rinse water	filtered 100 µm
Permitted pressure range	2 ... 6 bar
Temperature range	5 ... 65 °C
Pressure monitoring	automatic monitoring, message
Connection	1/4" internal thread and 3/4" external thread (for coupling)
Pump (option)	cleaning solution
Usable bottle volume	3.5 l
Max. lifting height	10 m
Displaced volume	25 ml/stroke
Level monitoring	continuous, messages
Material	PP, PE, EPDM, (optional FKM), check valves: glass, HC4
Dimensions	150 mm x 150 mm x 340 mm with 3.5-L bottle
Weight	approx. 1.5 kg (with empty 3.5-L bottle)
Supply	supplied via Protos® PHU module
(Ex ia IIC)	$V_i = 8.5 \text{ V}$ $I_{i1} = 200 \text{ mA}$ $P_i = 400 \text{ mW}$ $6.8 \text{ V} (\pm 10 \%) / 15 \text{ mA}$
Connection	terminals, conductor cross section max 2.5 mm <sup>2</sup> (preassembled connecting cable to Protos® 3400)
RS 485	communication with Protos® PHU module or external host computer (e.g. DCS/PLC)
(Ex ia)	$V_i/V_o = 5 \text{ V}$ $I_{i1}/I_o = 250 \text{ mA}$ $R_i = 20 \text{ ohms}$
Transmission	1200 bauds/8 data bits/1 stop bit/no parity
Security	CRC16
Connection	terminals, conductor cross section max 2.5 mm <sup>2</sup> (preassembled connecting cable to Protos® 3400) max. length 10 m
Media connection	compact multiplug connection for 1 x rinse water, 1 x cleaning liquid, 1 x purge air, 2 integrated check valves for water and cleaning liquid, 2 x compressed air connection for drive, noncontacting electrical limit position control
Media adapter	approx. 2 kg
DCS Input M/S	measuring/Service
(Ex ia IIC)	$V_i = 30 \text{ V}$ , floating, galvanic isolation up to 60 V
Switching voltage	0 ... 2 V AC/DC                      inactive (measuring) 10 ... 30 V AC/DC                    active (service)

**Specifications – continued**

Connection	terminals, conductor cross section max. 2.5 mm <sup>2</sup>
DCS input A/M	automatic mechanism blocked
(Ex ia IIC)	Vi = 30 V, floating, galvanic isolation up to 60 V
Switching voltage	0 ... 2 V AC/DC                      inactive (automatic intervals enabled) 10 ... 30 V AC/DC                    active (automatic intervals blocked)
Connection	terminals, conductor cross section max. 2.5 mm <sup>2</sup>
DCS inputs PRG1 ... 3	program selection 1 ... 8
(Ex ia IIC)	Vi = 30 V, floating, inter-connected, galvanic isolation up to 60 V
Switching voltage	0 ... 2 V AC/DC                      inactive 10 ... 30 V AC/DC                    active
Connection	terminals, conductor cross section max. 2.5 mm <sup>2</sup>
DCS outputs ML1 ... 3	check-back signals: Service, measuring, program electronic relay contacts, floating, inter-connected
(Ex ia IIC)	Vi = 30 V li = 100 mA Pi = 800 mW, galvanic isolation up to 60 V
Voltage drop	< 1.2 V
Connection	terminals, conductor cross section max. 2.5 mm <sup>2</sup>
Explosion protection	II 2(1)G Ex ia IIC T4
EMC	EN 61326 EN 61326/A1
Lightning protection	EN 61000-4-5, Installation Class 2
Protection against electric shock	according to EN 61010
Ambient conditions	5 ... 55 °C (Ex: 5 ... 50 °C)
Ambient temperature	(different temperature range on request)
Transport/Storage temperature	-20 ... +70 °C
Relative humidity	10 ... 95 %, not condensing
Enclosure	Uniclean® 900 S                      Stainless steel A2, polished Uniclean® 900 C                      Stainless steel A2, coated, color: pigeon blue
Assembly	wall and pipe mounting (see dimension drawing)
Dimensions	W x H x D approx. 320 mm x 400 mm x 120 mm
Ingress protection	IP 65/NEMA 4X
Cable glands	4 cable glands M 20 x 1.5
Weight	approx. 9 kg

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Product Line

Order No.

Basic unit		Uniclean® 900 /																
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Approvals</b>	for hazardous area Zone 1 without	<b>X</b>	<b>N</b>															
<b>Enclosure</b>	steel, coated stainless steel, polished	<b>C</b>	<b>S</b>															
<b>Media connection</b> (water rinsing)	5 m (sealing material: FKM) 10 m (sealing material: FKM) 15 m (sealing material: FKM)	<b>1</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>											
<b>Media connection</b> (water rinsing and cleaning agent)	5 m (sealing material: FKM) 10 m (sealing material: FKM) 17 m (sealing material: FKM) 5 m (sealing material: EPDM) 10 m (sealing material: EPDM) 17 m (sealing material: EPDM)	<b>3</b>	<b>4</b>	<b>6</b>	<b>C</b>	<b>D</b>	<b>F</b>	<b>1/A</b>	<b>1/A</b>	<b>1/A</b>	<b>1/A</b>	<b>1/A</b>						
<b>Media interface</b>	with (for standard probes) without (for WA 130, WA 150, WA 160)	<b>1</b>	<b>0</b>															
<b>Media adapter with port</b>	with (sealing material: FKM) with (sealing material: EPDM) none		<b>1</b>	<b>A</b>	<b>0</b>													
<b>Port</b>	metering pump with empty 3.5-L bottle (EPDM) metering pump with empty 3.5-L bottle (FKM) not equipped		<b>2</b>	<b>B</b>	<b>0</b>													
<b>Supplementary air purging kit</b>	with without							<b>C</b>	<b>N</b>									
<b>Supplementary ext. valve kit</b>	1 external valve none								<b>E</b>	<b>N</b>								
<b>Special variant</b>	none														<b>0</b>	<b>0</b>	<b>0</b>	

**Accessories for Uniclean® 900**

Order No.

Pipe-mount kit for Uniclean® 900	<b>ZU 0601</b>
Pipe-mount kit for media adapter	<b>ZU 0606</b>
Connection kit for Uniclean® 900 (water and air)	<b>ZU 0656</b>
Commissioning Uniclean® 900 <b>Commissioning comprises the following steps:</b> – Connection of hoses and cables and commissioning of the Uniclean® 900 system. – Training of operators <b>Prior to arrival of our engineer, the customer must prepare the following:</b> – Protos® 3400, Uniclean® and retractable fitting assembled (Observe maximum length of connecting hose between Uniclean® 900 and retractable fitting). – Electric supply: Cable ducts/rails must be present. Auxiliary power supply for Protos® 3400 must be installed in 2 x 1.5 mm. – Air supply: Hose with connection nipple G 3/4" internal thread. Nominal hose width > 6 mm. Water supply: Hose with connection nipple G 3/4" internal thread or G 3/4" external thread. Nominal hose width > 6 mm.	<b>ZU 0649</b>
Chemical pump (supplementary ext. valve kit required)	<b>ZU 0741</b>

**Spare Parts and Retrofit Parts for Uniclean® 900**

Order No.

Media connection, rinse, 5 m (FKM gaskets)	<b>ZU 0572/1</b>
Media connection, rinse, 5 m (EPDM gaskets)	<b>ZU 0572/2</b>
Media connection, rinse, 10 m (FKM gaskets)	<b>ZU 0573/1</b>
Media connection, rinse, 10 m (EPDM gaskets)	<b>ZU 0573/2</b>
Media connection, rinse, 15 m (FKM gaskets)	<b>ZU 0652/1</b>
Media connection, rinse, 15 m (EPDM gaskets)	<b>ZU 0652/2</b>
Media connection, rinse + clean, 5 m (FKM gaskets)	<b>ZU 0574/1</b>
Media connection, rinse + clean, 5 m (EPDM gaskets)	<b>ZU 0574/2</b>
Media connection, rinse + clean, 10 m (FKM gaskets)	<b>ZU 0575/1</b>
Media connection, rinse + clean, 10 m (EPDM gaskets)	<b>ZU 0575/2</b>
Media connection, rinse + clean, 17 m (FKM gaskets)	<b>ZU 0653/1</b>
Media connection, rinse + clean, 17 m (EPDM gaskets)	<b>ZU 0653/2</b>
Media interface for standard probes	<b>ZU 0576</b>
Metering pump (PP, FKM) with empty 3.5-L bottle	<b>ZU 0580/1</b>
Metering pump (PP, EPDM) with empty 3.5-L bottle	<b>ZU 0580/2</b>
Metering pump (PP, FKM) with empty 3.5-L bottle, Ex	<b>ZU 0580 X/1</b>
Metering pump (PP, EPDM) with empty 3.5-L bottle, Ex	<b>ZU 0580 X/2</b>
Supplementary air purging kit	<b>ZU 0587</b>
Supplementary Aux 2 kit	<b>ZU 0588</b>
Media adapter (FKM gaskets)	<b>ZU 0715/1</b>
Media adapter (EPDM gaskets)	<b>ZU 0715/2</b>
Media adapter, Ex (FKM gaskets)	<b>ZU 0715 X/1</b>
Media adapter, Ex (EPDM gaskets)	<b>ZU 0715 X/2</b>



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### Service Parts for Uniclean® 900

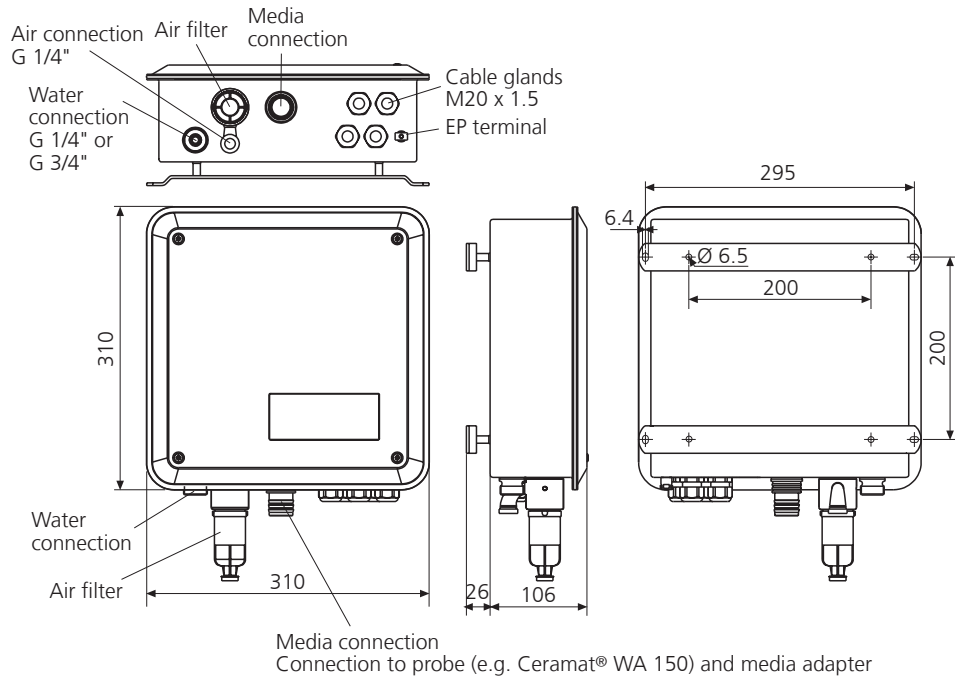
Order No.

Air pressure switch	<b>ZU 0632</b>
Water pressure switch	<b>ZU 0633</b>
Probe valve, complete	<b>ZU 0634</b>
Water valve	<b>ZU 0714</b>
Sensor dismount guard, complete	<b>ZU 0644</b>
Air purge valve, complete	<b>ZU 0636</b>
Aux 2 valve, complete	<b>ZU 0637</b>
Piezo valve for valve block	<b>ZU 0638</b>
Gasket for port at media adapter (EPDM)	<b>ZU 0639</b>
Filter insert (5 ... 10 µm)	<b>ZU 0640</b>
Replacement filter housing	<b>ZU 0641</b>
Electronics module, tested, encapsulated	<b>ZU 0716</b>
Electronics module, tested, encapsulated, Ex	<b>ZU 0716 X</b>
Small-parts set (various screws, springs etc.)	<b>ZU 0643</b>
Multiplug service set, FKM gaskets	<b>ZU 0812/1</b>
Multiplug service set, EPDM gaskets	<b>ZU 0812/2</b>
Reed switch, short (service part for multiplug)	<b>ZU 0813/1</b>

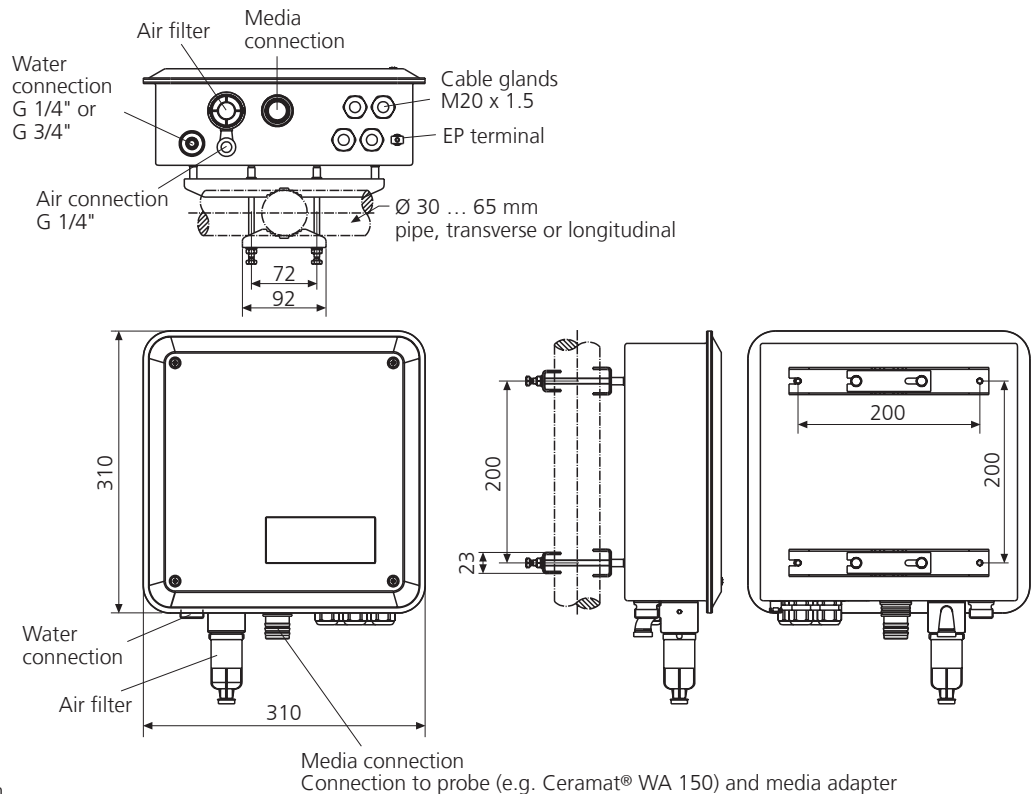


### Dimension Drawings

#### Wall mounting



#### Pipe mounting



All dimensions in mm.

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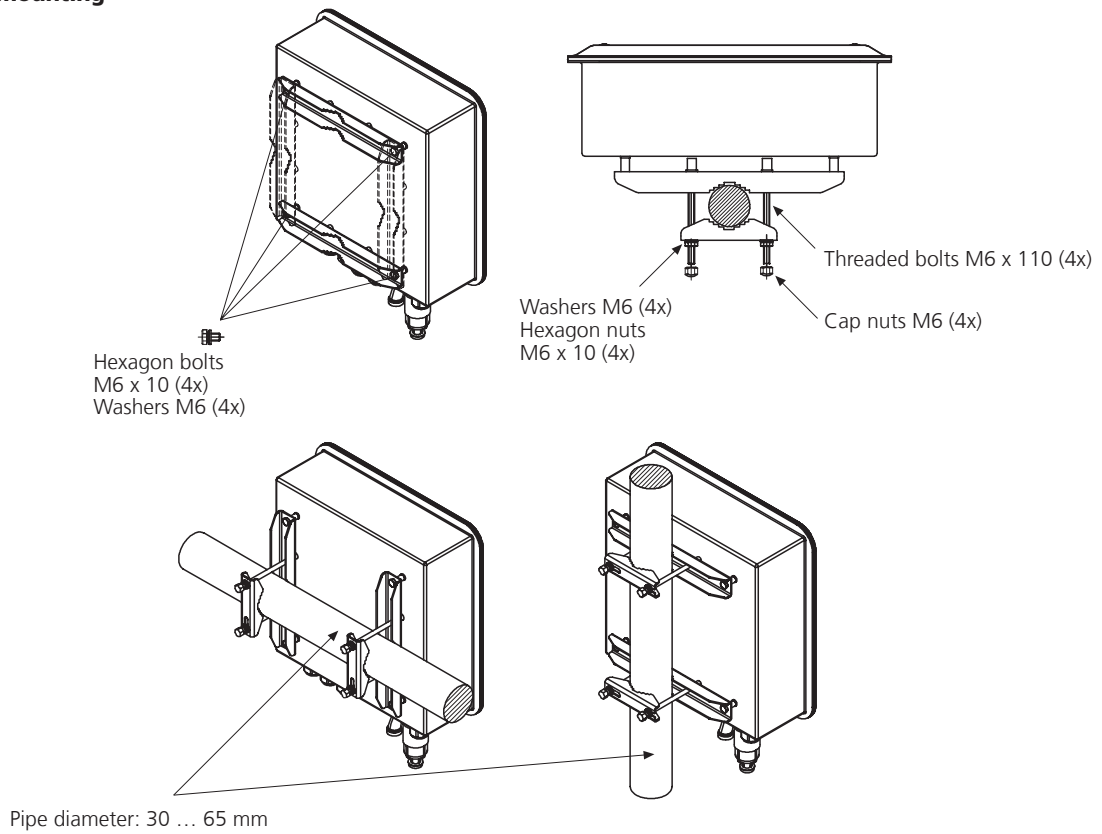
Food

Water

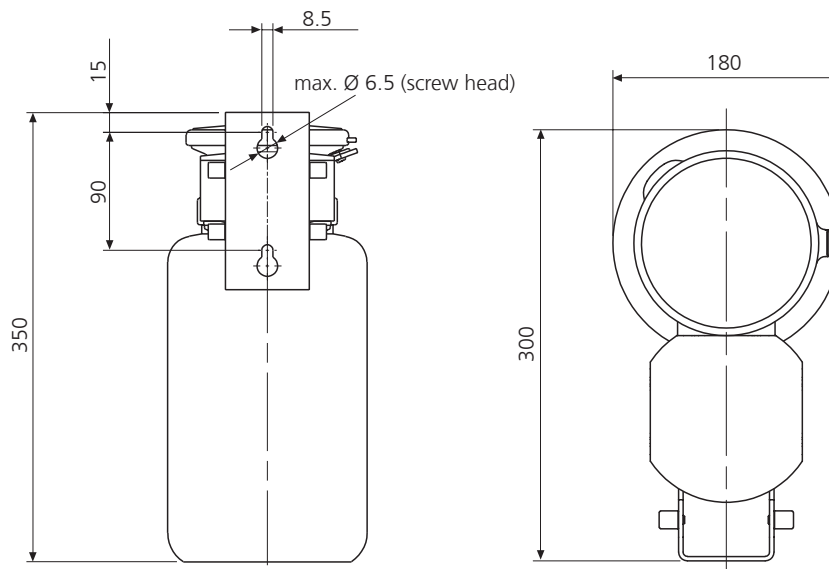
## Uniclean® 900

### Dimension Drawings – continued

#### Pipe mounting



#### Media adapter



All dimensions in mm.

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### Terminal Assignments

