



Level



Pressure



Flow



Temperature



Liquid  
Analysis



Registration



Systems  
Components



Services



Solutions

## Technical Information

# ASP Station 2000

## Stationary Water Sampler Automatic sampler for liquid media



### Application

Municipal and industrial sewage treatment plants:

- Self monitoring
- Efficiency monitoring; cleaning performance determined
- Curve recording
- Process monitoring
- Monitoring of indirect dischargers
- Monitoring of wastewater network

Laboratories and Water Conservancy Boards:

- Hydrology and drinking water supply (e.g. dam monitoring)
- Monitoring of direct and indirect dischargers

Monitoring of liquid media in industrial processes.

### Your benefits

Robust and dependable

- Stainless steel cabinet with foamed insulation, for safe sample preservation
- Sample compartment with seamless inner shell and evaporator in foam - no freezing and no corrosion of cooling plates

Simple and user-friendly

- Menu-led operation with "Quick-Setup", for quick commissioning
- Media-carrying parts easy to mount without tools, for easy cleaning and maintenance
- Separate bottle trays with grips, for easy sample transportation

Flexible

- Parallel sampling, switching and event programmes for practical programming
- Modular installation of electrical components for extended functions

Communicative

- Integrated data logger, for recording measured values (e.g. pH value) and sample statistics (standard in the case of ASP station 2000 peristaltic, optional in the case of ASP station 2000 vacuum)
- RS232 interface for configuration, data transmission and read-outs from internal data logger (optional in the case of ASP station 2000 vacuum)
- Profibus-DP interface, for connection and control with control systems (optional in the case of ASP station 2000 vacuum)
- Connection possibility for multiparameter sensor (optional in the case of ASP station 2000 peristaltic)

Safe

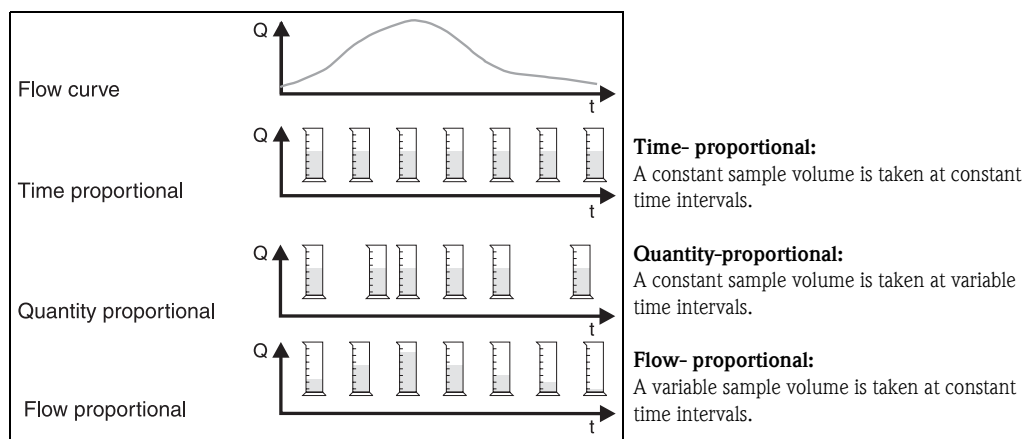
- ATEX II 3G certification for safe operation in zone 2 hazardous areas (optional in the case of ASP station 2000 vacuum)
- Trouble-free sampling operation in case of power failure by means of battery buffering in the case of ASP station 2000 peristaltic

## Function and system design

### Measuring principle

The ASP station 2000 is a stationary sampler for fully automated sampling, defined distribution and thermostatic storage of liquid media.

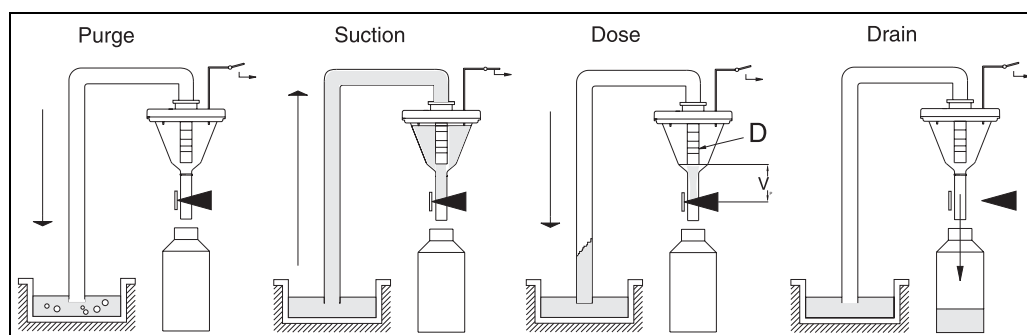
### Sampling methods



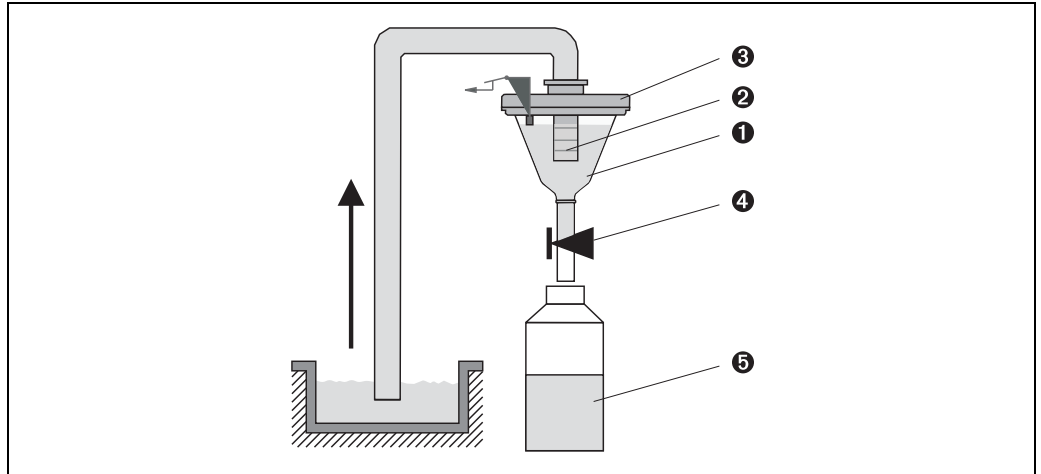
### Sampling unit

#### ASP station 2000 with vacuum system

There are four stages in the sampling process:



1. **Blow out:**  
The diaphragm pump blows the suction line clear via the dosing system.
2. **Suction:**  
The "Airmanager", a pneumatic ratchet gear, switches the air pipe of the diaphragm pump to suction mode. The sample liquid is drawn into the dosing funnel until the conductivity probes of the dosing system are reached.
3. **Dose:**  
The suction process is stopped. Depending on the position of the dosing pipe (item D), the excess sample liquid flows back to the sampling point.
4. **Drain:**  
The hose constriction is opened and the sample is drained into the sample bottle.



*Sampling principle*

- Item 1 : dosing funnel*
- Item 2 : dosing pipe*
- Item 3 : dosing funnel lid*
- Item 4 : hose constriction*
- Item 5 : sample bottle*

The sampling liquid is extracted discontinuously by means of a vacuum system. The vacuum system of the ASP station 2000 consists of the following components:

- Vacuum diaphragm pump
- Wear-resistant, pneumatic “Airmanager” step ratchet gear”
- Dosing system (see table below)

**Dosing systems, ASP station 2000 vacuum system**

Standard	"Twiddle principle"
<p><i>Standard dosing system</i></p> <ul style="list-style-type: none"> <li><i>Item A: conductivity probe (long)</i></li> <li><i>Item B: conductivity probe (long)</i></li> <li><i>Item C: conductivity probe (short)</i></li> <li><i>Item D: dosing pipe</i></li> </ul>	<p><i>"Twiddle principle" dosing system</i></p> <ul style="list-style-type: none"> <li><i>A: inlet</i></li> <li><i>B: rotatable pipe</i></li> <li><i>C: stationary pipe</i></li> <li><i>D: outflow sample container</i></li> </ul>

Standard	Twiddle principle
<ul style="list-style-type: none"> <li>■ There are three conductivity probes in the dosing funnel lid. During the suction process, the sample liquid first reaches the longer conductivity probes (item A and B). In this way, the filling of the dosing funnel is detected and the suction process is stopped. If the conductivity probes (item A and B) fail, safety switch-off takes place by means of the shorter conductivity probe (item C).</li> <li>■ The sample volume is set between 20 ml and 200 ml by moving the dosing pipe (item D).</li> <li>■ The dosing system can be disassembled and cleaned easily without tools.</li> </ul>	<ul style="list-style-type: none"> <li>■ Inside the dosing system there is a stationary, vertical pipe with an oblong hole and a rotatable pipe with a spiral-shaped cut-out (see diagram Seite 3). By rotating the pipe with the spiral-shaped cut-out, the vertical position of the opening is changed. This in turn changes the dosing volume.</li> <li>■ The sample volume is changed using a motor and is configured via the controls. The sample volume cannot be changed manually.</li> <li>■ When sampling starts, the upcoming current flow is queried, and the relevant dosing volume is configured as early as during the blow-out phase.</li> <li>■ In addition to flow-proportional sampling, time- and quantity-proportional programmes with different dosing volumes are also possible.</li> </ul>

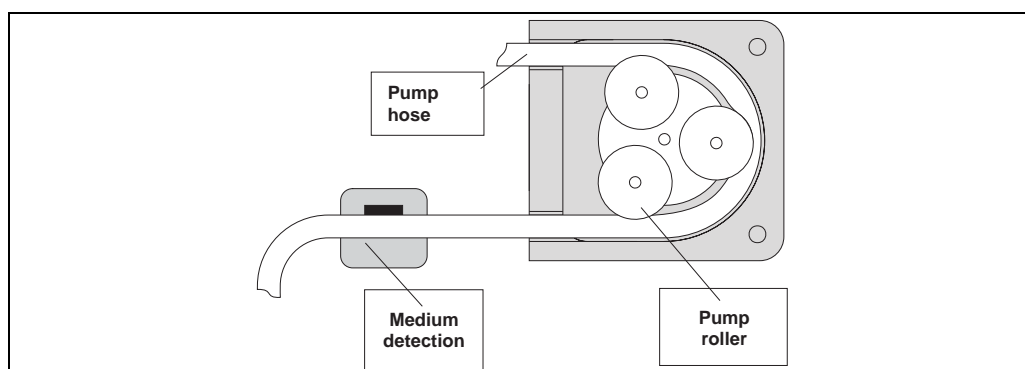
### ASP station 2000 peristaltic system

A hose pump is used to suck in and dose the sampling liquid. The pump hose is periodically twisted by rollers running along the circumference of the hose, thereby generating a pump effect. The medium detection system controls the electronic volume measurement.

The medium detection system is a new system developed by Endress+Hauser. A pressure sensor is at the heart of the system. The pressure sensor detects the difference between a full and empty pump line.

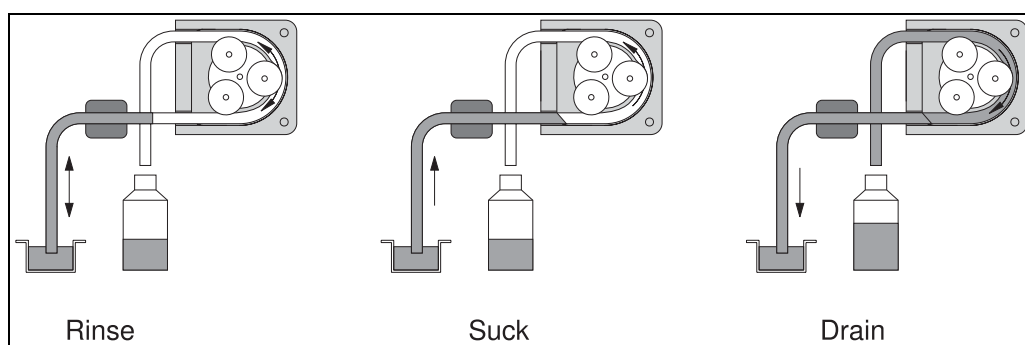
The advantages of the Endress+Hauser system:

- Intelligent: the suction height is detected automatically and does not need to be configured
- Maintenance-free: ceramic diaphragm



*How the hose pump works*

Sampling takes place in three steps:



*Sampling steps*

## Ordering information

### Ordering information ASP Station 2000 Vacuum:

Control unit	
<b>A</b>	1x user mode
<b>B</b>	1x user mode + RS485
<b>C</b>	7x user mode + Profibus preparation
<b>D</b>	7x user mode + RS485 + Profibus preparation
<b>E</b>	7x user mode + RS485 + DFP + Profibus preparation
<b>F</b>	7x user mode + memory + Profibus preparation
<b>G</b>	7x user mode + memory + RS232 cable + ReadWin2000 + Profibus preparation
<b>H</b>	7x user mode + memory + DFP + RS485 + Profibus preparation
<b>I</b>	7x user mode + memory + DFP + RS485 + RS232 cable + Readwin2000 + Profibus preparation
<b>K</b>	7x user mode + Profibus-DP
<b>L</b>	7x user mode + Profibus-DP + DFP+ RS485
<b>M</b>	7x user mode + preparation RPM20
<b>N</b>	7x user mode + self draining preparation
Operation language	
<b>A</b>	German
<b>B</b>	English
<b>C</b>	French
<b>D</b>	Italian
<b>E</b>	Spanish
<b>F</b>	Dutch
<b>G</b>	Danish
<b>K</b>	Czech
<b>P</b>	Polish
Sample distribution	
<b>A</b>	W/o
<b>B</b>	1x 30 litre composite container, PE
<b>C</b>	1x 60 litre composite container, PE
<b>N</b>	4x 12 litre bottle, PE
<b>L</b>	4x 20 litre bottle, PE
<b>E</b>	D12x 3 litre bottle, PE
<b>F</b>	24x 1 litre bottle, PE
<b>G</b>	12x 2 litre bottle, glass
<b>H</b>	24x 1 litre bottle, glass
<b>O</b>	6x 3 + 2x 12 litre bottle, PE
<b>P</b>	12x 1 + 2x 12 litre bottle, PE
<b>K</b>	12x 1 + 6x 3 litre bottle, PE
Hydraulic connection; suction height	
<b>1</b>	Left; max. 6m
<b>2</b>	Bottom; max. 6m
<b>3</b>	Left; max. 8m
<b>4</b>	Bottom; max. 8m
<b>5</b>	Flow through armature, external feed
<b>6</b>	Right; max. 6m
<b>7</b>	Right; max .8m
<b>A</b>	Left; sampling RPM20, order separately)
<b>B</b>	Right; sampling RPM20,order separately)
Cabinet	
<b>A</b>	Stainl.steel 304H
<b>B</b>	Stainl.steel 316L
<b>C</b>	Stainl.steel 304H + window
<b>D</b>	Stainl.steel 304H + door stop
<b>E</b>	Stainl.steel 304H, w/o cooling
<b>F</b>	Stainl.steel 316L + refrig. system varnished
<b>G</b>	Stainl.steel 304H + 2x door + window
<b>H</b>	Stainl.steel 316L + 2x door + window + refrig. system varnished
<b>I</b>	Stainl.steel, 304H + refrig. system varnished

RPS20-

⇐ order code (part 1)

						<b>Cabinet accessories; Dosing chamber</b>	
						<b>1</b>	W/o; Acryl chamber
						<b>2</b>	Base, stainl.steel 304H; Acryl
						<b>3</b>	Base, stainl.steel, 316L; Acryl
						<b>4</b>	Castors + handle; Acryl
						<b>5</b>	Rodent protection; Acryl
						<b>6</b>	W/o; glass
						<b>7</b>	W/o; glass + capacitance switch
						<b>8</b>	W/o; glass + Liquiphant switch
						<b>Electrical variations</b>	
						<b>A</b>	W/o
						<b>B</b>	Main switch
						<b>C</b>	Internal lighting
						<b>D</b>	Main switch + internal lighting
						<b>E</b>	Overvoltage protection, Main
						<b>F</b>	Earth leakage trip, 2-pole, 30mA
						<b>H</b>	Measuring pH / temp., CPM223-PR0105
						<b>I</b>	Measuring conductivity, CLM223-CD0005
						<b>K</b>	Measuring pH / temp. + conductivity CPM223-PR0105, CLM223-CD005
						<b>N</b>	Medium detection using capacitance switch-off 60/7
						<b>P</b>	Power supply 110-125VAC
						<b>R</b>	Transmitter 96x96mm, order separatly, Fitting + wiring)
<b>RPS20-</b>						<b>⇐ order code (complete)</b>	

**Ordering information ASP Station 2000 Ex:**

										<b>Certification</b>	
										<b>A</b>	ATEX II 3G Eex nA/C IIC T4
										<b>Y</b>	Other
										<b>Controller/software</b>	
										<b>A</b>	1 user mode
										<b>B</b>	1 user mode + RS485
										<b>Operating language</b>	
										<b>A</b>	German
										<b>B</b>	English
										<b>C</b>	French
										<b>D</b>	Italian
										<b>E</b>	Spanish
										<b>F</b>	Dutch
										<b>G</b>	Danish
										<b>K</b>	Czech
										<b>P</b>	Polish
										<b>Sample distribution</b>	
										<b>A</b>	W/o
										<b>B</b>	1x 30 litre composite container, PE
										<b>C</b>	1x 60 litre composite container, PE
										<b>D</b>	12x 3 litre bottle, PE
										<b>E</b>	24x 1 litre bottle, PE
										<b>F</b>	12x 2 litre bottle, glass
										<b>G</b>	24x 1 litre bottle, glass
										<b>H</b>	12x 1 litre + 6x 3 litre bottle, PE
										<b>I</b>	4x 20 litre bottle, PE
										<b>K</b>	4x 12 litre bottle, PE
										<b>L</b>	6x 3 litre+ 2x 12 litre bottle, PE
										<b>M</b>	12x 1 litre + 2x 12 litre bottle, PE
										<b>Hydraulic connection; suction height</b>	
										<b>1</b>	Left; max. 8m
										<b>2</b>	Bottom; max. 8m
										<b>3</b>	Right; max .8m
										<b>4</b>	Left; flow through armature, external feed
										<b>Cabinet</b>	
										<b>A</b>	Stainl.steel 316L
										<b>B</b>	Stainl.steel 316L + refrig. system varnished
										<b>Y</b>	Other
										<b>Cabinet accessories</b>	
										<b>1</b>	Basic version
										<b>2</b>	Base, stainl.steel, 316L
										<b>3</b>	Castors + handle
										<b>Electrical variations</b>	
										<b>A</b>	Basic version
										<b>Y</b>	Other
<b>RPS22-</b>										← order code (complete)	

**Ordering information**  
**ASP station 2000 peristaltic**

		<b>Power supply</b>	
	1	230VAC50Hz + cooling + heater	
	2	110-125V 50/60Hz + cooling + heater	
	9	Special version, to be specified	
		<b>Control unit</b>	
	A	1x user mode	
	B	7x user mode	
	C	7x user mode, interface, connection for multiprobe	
	Y	Special version, to be specified	
		<b>Operating language</b>	
	A	German	
	B	English	
	C	French	
	D	Italian	
	E	Spanish	
	F	Dutch	
	G	Danish	
	K	Czech	
	P	Polish	
	Y	Special version, to be specified	
		<b>Sample distribution</b>	
	A	W/o	
	B	1x 30 litre composite container, PE	
	C	1x 60 litre composite container, PE	
	E	12x 3 litre bottle, PE	
	F	24x 1 litre bottle, PE	
	G	12x 2 litre bottle, glass	
	H	24x 1 litre bottle, glass	
	K	12x 1 litre bottle + 6 x 3 litre	
	L	4x 20 litre bottle, PE	
	N	4x 12 litre bottle, PE	
	O	6x 3 litre + 2x 12 litre bottle PE	
	P	12x 1 litre + 2x 12 litre bottle PE	
		<b>Hose tap</b>	
	1	Left	
	2	Bottom	
	3	Right	
	9	Special version, to be specified	
		<b>Suction height</b>	
	1	6m	
	2	8m	
	9	Special version, to be specified	
		<b>Cabinet</b>	
	A	Stainless steel 304H	
	B	Stainless steel 316L	
	C	Stainless steel 304H + door + window	
	D	Stainless steel 304H + door stop	
	E	Stainless steel 304H + w/o cooling	
	F	Stainless steel 316L + refrig. system varnished	
	G	Stainless steel 316L + 2x door + window	
	H	Stainless steel 316L + 2x door + varnished refrig. system + window	
	Y	Special version, to be specified	
		<b>Cabinet accessories</b>	
	1	Basic version	
	2	Base stainl.steel 304H	
	3	Base stainl.steel 316L	
	4	Castors + handle	
	5	Rodent protection	
	9	Special version, to be specified	
RPS24-			⇐ order code (part 1)

										<b>Electrical version</b>	
										A	Basic version
										B	Main switch
										C	Internal lighting
										D	Main switch + internal lighting
										E	Overvoltage protection, Main
										F	Earth leakage trip, 2-pole, 30mA
										Y	Special version, to be specified
RPS24-										⇐ <b>order code (complete)</b>	

## Accessories

Various accessories can be supplied for the device and they can be ordered separately from Endress+Hauser. More detailed information on the particular order code can be obtained from your local E+H service organisation.

For ASP station 2000			Order code	Accessory
Vacuum	Ex	Peristaltic		
●	●	●	RPS20A-BA	Bottle 1 l PE incl. lid
●	●	●	RPS20A-BB	Bottle 2 l glass incl. lid
●		●	RPS20A-B3	Composite container 30 l
	●		RPS24A-B3	Composite container 30 l
●		●	RPS20A-B6	Composite container 60 l
	●		RPS24A-B6	Composite container 60 l
●	●	●	RPS20A-FB	Bottle tray 6x 3 l PE with bottles
●	●	●	RPS20A-FC	Bottle tray 12x1 l PE with bottles
●	●	●	RPS20A-FD	Bottle tray 6x 2 l glass with bottles
●	●	●	RPS20A-FE	Bottle tray 12x1 l glass with bottles
●	●	●	RPS20A-FF	Bottle tray 2x12 l PE with bottles
●			RPS20A-PA	Profibus DP slave module for top-hat DIN rail mounting from unit software >=V4.10 and 7 programme version
●	●	●	RPS20A-SD	Retro-fit kit acstors and handle
●	●	●	RPS20A-SE	Retro-fit-kit cabinet base 1.4301/ss304H
●			RPS20A-SF	Retrofit kit for capacitive detection from unit software >= V2.03
●			RPS20A-SG	Retrofit kit for flow through armature without base and base cover
●	●	●	RPS20A-VA	Distribution system (tap, tap drive, distribution frame)
●			RPS20A-VK	Interface cable with ReadWin 2000 only for option memory
●	●	●	50041303	Bottle 1.0 l glass white with lid
●	●	●	50035320	Lid for 1.0 l bottle PE
●	●	●	50088586	Bottle 3L PE with lid
●	●	●	51002312	Bottle 12 l ASP2000 PE square with lid
●	●	●	51000416	Bottle 20 l ASP2000 with lid
●	●	●	50089636	Distribution pan 6x (distr. 12 bottles)
●	●	●	50089637	Distribution pan 12x distr.24 bottles
●	●		51001074	Suction hose, 13mm, length 3m ASP NBR-rubber/black, inner diameter 13mm
●	●		51001075	Suction hose, 13mm, length 5m ASP NBR-rubber/black, inner diameter 13mm
●	●		51001076	Suction hose 13mm, length 10m ASP NBR-rubber/black, inner diameter 13mm
●	●		50076633	Suction hose, I.D.=16 mm rubber inner diameter 16mm, price per meter
●	●		UE-SDH	Hose weight L=500mm V2A for 16mm suction hose
●	●		50031904	Suction hose, I.D.=19mm PVC PVC reinforced, inflow hose flow through armatur

For ASP station 2000			Order code	Accessory
Vacuum	Ex	Peristaltic		
●	●		50079739	Hose weight L=400mm, V2A, 19mm for 19mm hose
●	●		50031919	Webbed PVC hose 32x5(internal diameter) Drain hose flow through armatur and CE4
●	●		50090886	Hinged submersion holder cpl.
●	●		50079731	Suction filter cpl.PVC,13/15mm suct.hose
●	●		50079732	Glass dosing chamber 350ml
●	●	●	51004674	Metal TAG SS 25x100
		●	51004744	Spare pump hose 6m package:2 customised tubes for pump head black and white
		●	51004745	Spare pump hose 8m package:2 customised tubes for pump head black and white
		●	51002425	Suction filter 1", V2A
		●	50053928	Suction hose in PVC internal.dia.10mm
		●	50070341	Suction hose in rubber internal dia.10mm
		●	51003189	Hose connection nipple cpl.
		●	51003199	Battery 12V,12Ah cpl.
		●	51003198	Hose end piece cpl. V2A=500mm for 10mm suction hose

## Documentation

- Water samplers and measurement stations - Automatic samplers and measurement stations for liquid media (FA 013C/09/en)
- Operating instructions ASP Station 2000 (BA 080R/09/c4)
- Operating instructions ASP Station 2000 peristaltic (BA 176R/09/c4)
- Ex-Supplementary documentation: ATEX, FM, CSA, etc.
- Appendix to the operating manual - ASP Station 2000 DP-Slave-Module\_is Pro Gate (ZBA 146R/09/en)
- Appendix to the operating manual - ASP Station 2000 flow proportional sampling "twiddle principle" (ZBA 096R/09/a2)

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**Endress+Hauser**   
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