Technical Information
ASP Station 2000 RPS20B

Stationary sampler designed for the fully automated removal, defined distribution, and thermostated storage of liquid media



Applications

Municipal and industrial wastewater treatment plants:
- Self-monitoring
- Efficiency monitoring, determination of cleaning capacity
- Recording of load curves
- Process monitoring
- Monitoring of indirect dischargers
- Wastewater network monitoring

Laboratories and Water Conservancy Boards:
- Hydrology and drinking water supply systems, e.g. dam monitoring
- Monitoring of direct or indirect dischargers

Monitoring of liquid media in industrial processes

Your benefits

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

Simple and user-friendly
- Menu-guided operation with “Quick-Setup”, for fast commissioning
- Parts that transport medium easily mounted without tools, for easy cleaning and maintenance
- Dual bottle trays with grips for easy sample transportation

Flexible and communicative
- Fast, practice-oriented programming
- Integrated logging of sample statistics

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People for Process Automation

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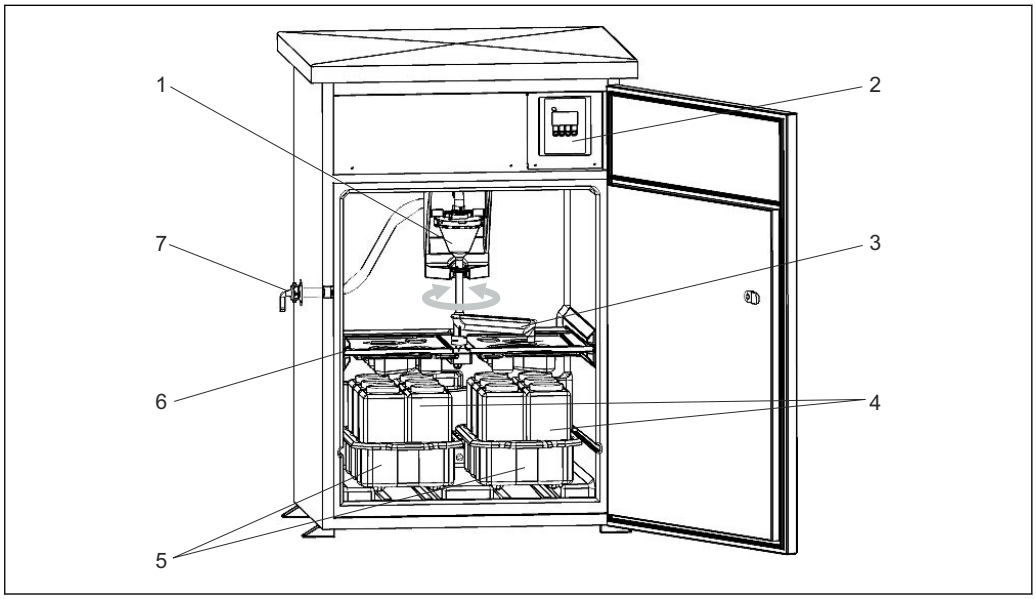
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Function and system design

Sampler ASP Station 2000 RPS20B

A complete sampling unit comprises:
ASP Station 2000 RPS20B for open channels, including the following depending on the version:
- Controller with display and soft keys
- Vacuum pump for sampling
- PE or glass sample bottles for sample preservation
- Sampling chamber temperature regulator for safe sample storage
- Suction line with suction head



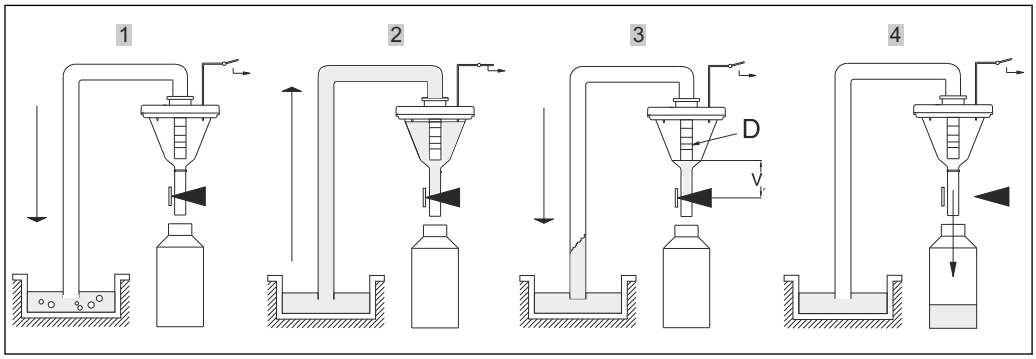
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1 Example of an ASP Station 2000 RPS20B

1 Vacuum system, dosing system with conductive sample sensor
2 Controller
3 Distribution arm
4 Sample bottles, e.g. 2 x 12 PE 1 liter bottles
5 Bottle trays (depending on sample bottles selected)
6 Distribution plate (depending on sample bottles selected)
7 Suction line connection

Function

Sampling takes place in four steps:

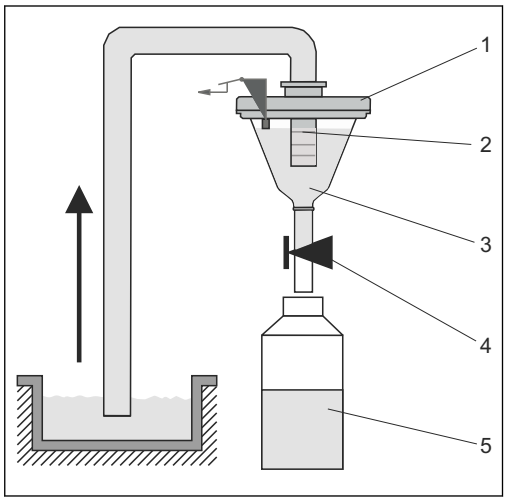


1. Blow clear
   ↳ The vacuum pump blows the suction line clear via the dosing system.
2. Intake
   ↳ The "Airmanager" (pneumatic control unit) switches the air path of the vacuum pump to "intake". The sample is drawn into the dosing beaker until it reaches the conductivity probes of the dosing system.
3. Dose
   ↳ The intake process ends. Depending on the position of the dosing tube (item D), the excess sample liquid flows back to the sampling point.
4. Drain
   ↳ The hose clamp is opened and the sample is drained into the sample bottle.

Dosing system

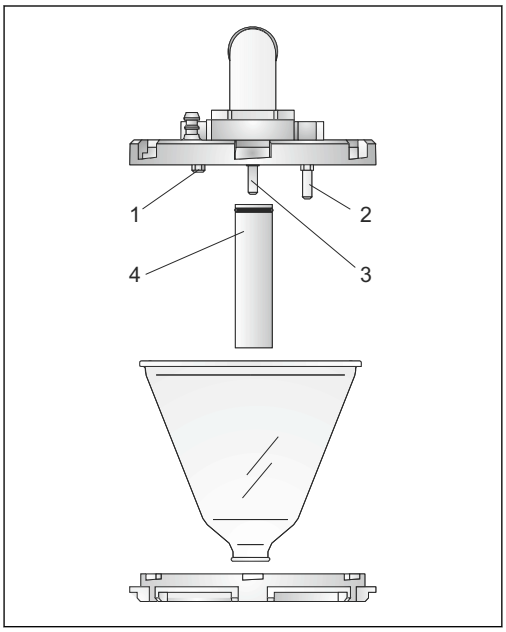
The sample liquid is extracted discontinuously by a vacuum system. The vacuum system in the ASP Station 2000 RPS20B consists of the following components:

- Vacuum pump
- Non-wearing, “Airmanager” pneumatic step control unit
- Dosing system



2 Sampling principle

1 Dosing beaker cover
2 Dosing tube
3 Dosing beaker
4 Hose clamp
5 Sample bottle



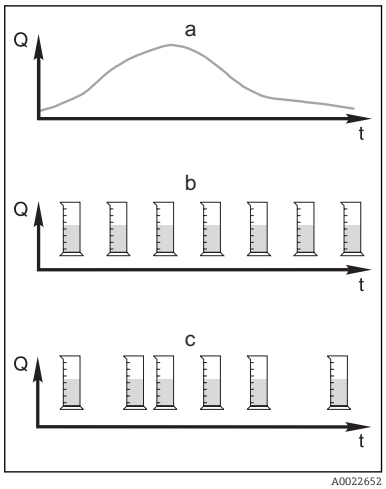
3 Dosing system

1 Conductivity sensor (short)
2 Conductivity sensor (long)
3 Conductivity sensor (long)
4 Dosing tube

Level detection principle

Three conductivity sensors are located in the cover of the dosing beaker ((→ 3, 5)). During the intake process, the sample liquid first reaches the longer sensors, items 2 and 3. The system thus detects that the dosing beaker is filled and the intake process is ended. Should sensors 2 and 3 fail, safety shutdown takes place via the shorter conductivity sensor, item 1.
The sampling volume is set by adjusting the dosing tube (item 4) between 20 ml and 200 ml.
The dosing system can be dismantled easily - no tools are needed - and cleaned.

Sampling control



Typical sampling methods:

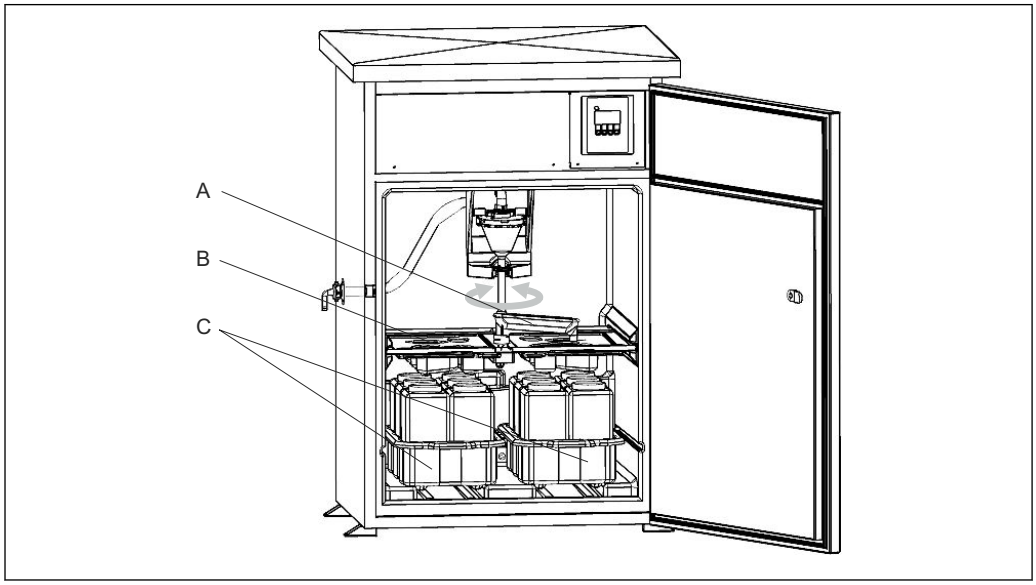
a Flow curve

b **Time-paced sampling C.T.C.V.**
A constant sample volume (e.g. 50 ml) is taken at regular intervals (e.g. every 5 min).

c **Volume-paced sampling V.T.C.V.**
A constant sample volume is taken at variable intervals (depending on the inflow volume).

Sample distribution

The sample liquid is distributed into the individual bottles by a distribution arm (item A). In addition to a 30 l and 60 l composite container, different bottle configurations are also available. The distribution versions can be changed or replaced easily without the need for special tools. The ASP Station 2000 enables the flexible configuration of sample distribution. Users can define individual bottles and bottle groups as they wish for the main, switchover and event programs. Individual bottles can be found in two separate bottle trays (item C). Grips on the bottle trays make transportation easy and practical.



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A Tap
B Distribution pan
C Bottle trays

Sample preservation

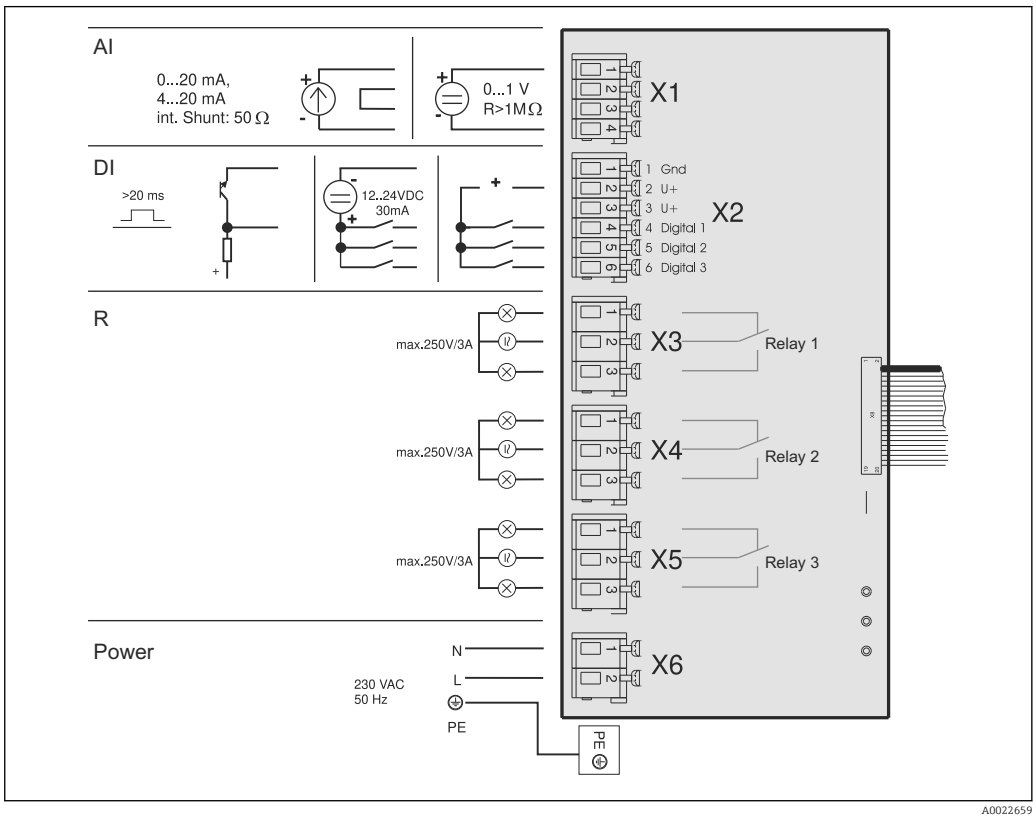
The sample bottles are located in the wet compartment of the sampler. The sample compartment temperature can be set between +2 and +20 °C directly at the controller (factory setting: +4 °C). The current sample compartment temperature is displayed at the controller. The evaporator and the defrost heater are embedded in the PU insulation behind the inner lining to protect them against corrosion and damage. The compressor and the condenser are located in the upper section of the sampler.

All parts that transport medium (e.g. distribution arm, dosing system, distribution pans) can be disassembled and cleaned easily without the need for tools. The entire sample compartment is fitted with a seamless plastic inner lining for easy and effective cleaning.

Bottle groups and distribution versions depending on the order version	
RPS20B-****	
B	1 x 30 l direct, PE
C	1 x 60 l direct, PE
E	12 x 3 l plate, PE
F	24 x 1 l plate, PE
H	24 x 1 l plate, glass
L	4 x 20 l direct, PE
N	4 x 12 l direct, PE
S	12 x 1.8 l plate, glass

Equipment architecture

Block diagram



AI Analog input
DI Digital input
R Relay output
X1-6 Terminal blocks

Power supply

Supply voltage

230 V AC ±10 %, 50/60 Hz

NOTICE

The device does not have a power switch

- A fuse with a maximum rating of 10 A must be provided by the customer. Observe the local regulations for installation.

A mains switch can be ordered as an option.

Cable entries

- 2 x M16 cable gland
- 2 x M20 cable gland
- 2 x M32 cable gland

Cable specifications

Power supply:	e.g. NYY-J, 3-wire, 1.5 mm^2 - 2.5 mm^2
Analog and signal cables:	e.g. LiYY 10 x 0.34 mm^2

Power consumption

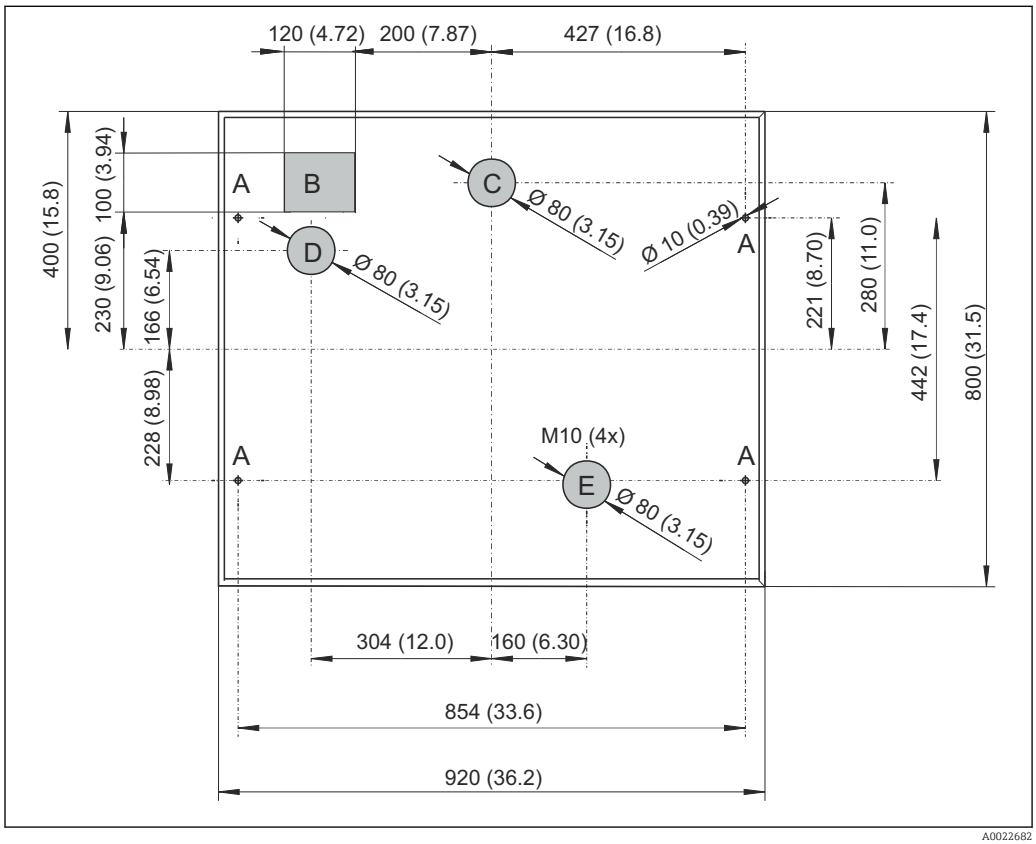
350 W

Performance characteristics

Dosing accuracy	4 % of set volume
Repeatability	2 %
Sampling methods	▪ In proportion to volume ▪ Time-paced
Dosing volume	20 to 200 ml (0.68 to 6.8 fl.oz.)
Hose length	Max. 30 m (98 ft)
Intake speed	> 0.5 m/s (1.6 ft/s), in accordance with EN 25667, ISO5667
Suction height	Max. 6 m (20 ft)

Installation

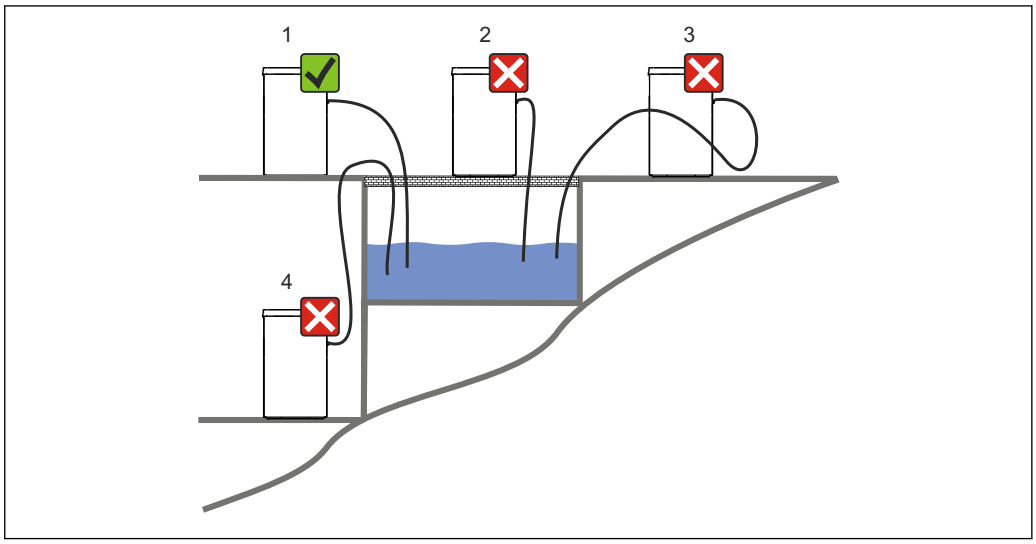
Foundation plan



4 *Foundation plan for standard cabinet with and without base, dimensions in mm (inch)*

A Fasteners (4 x M10)
B Cable duct
C Drain for condensation
D Hose entry, bottom (option)
E Drain for overflow

Mounting instructions



1. **Correct**
   ↳ The suction line must be routed with a downward gradient to the sampling point.
2. **Incorrect**
   ↳ The sampler should never be mounted in a place where it is exposed to aggressive gases.
3. **Incorrect**
   ↳ Avoid siphoning effects in the suction line.
4. **Incorrect**
   ↳ The suction pipe should never be routed with an upward gradient to the sampling point.

Note the following when erecting the device:
- Erect the device on a level surface.
- Protect the device against additional heating (e.g. from heaters).
- Protect the device against mechanical vibrations.
- Protect the device against strong magnetic fields.
- Make sure air can circulate freely at the side panels of the cabinet. Do not mount the device directly against a wall. Allow at least 150 mm (5.9") from the wall to the left and right.
- Do not erect the device directly above the inlet channel of a wastewater treatment plant.

Environment

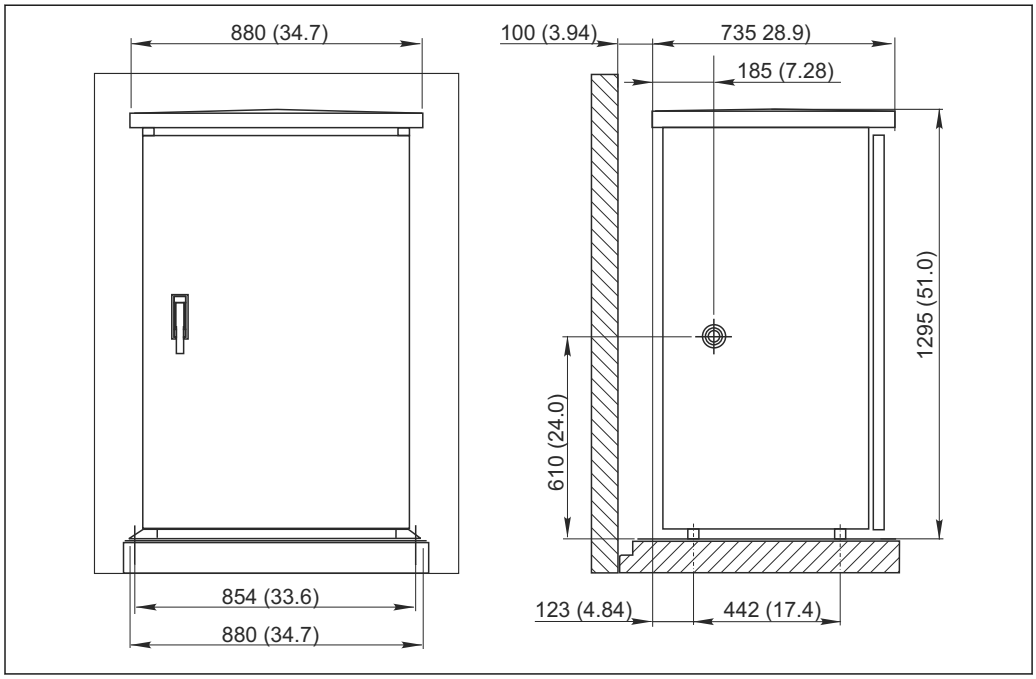
Ambient temperature range	-20 to +40 °C (0 to 100 °F)	
Storage temperature	-20 to +60 °C (0 to 140 °F)	
Degree of protection	Control (front panel):	IP 65
	Sample compartment:	IP 54
	Electronics compartment:	IP 43
Electromagnetic compatibility	In accordance with EN 61 326	
Electrical safety	In accordance with EN 61010-1, Class I equipment, environment < 2000 m (6500 ft) above MSL	

Process

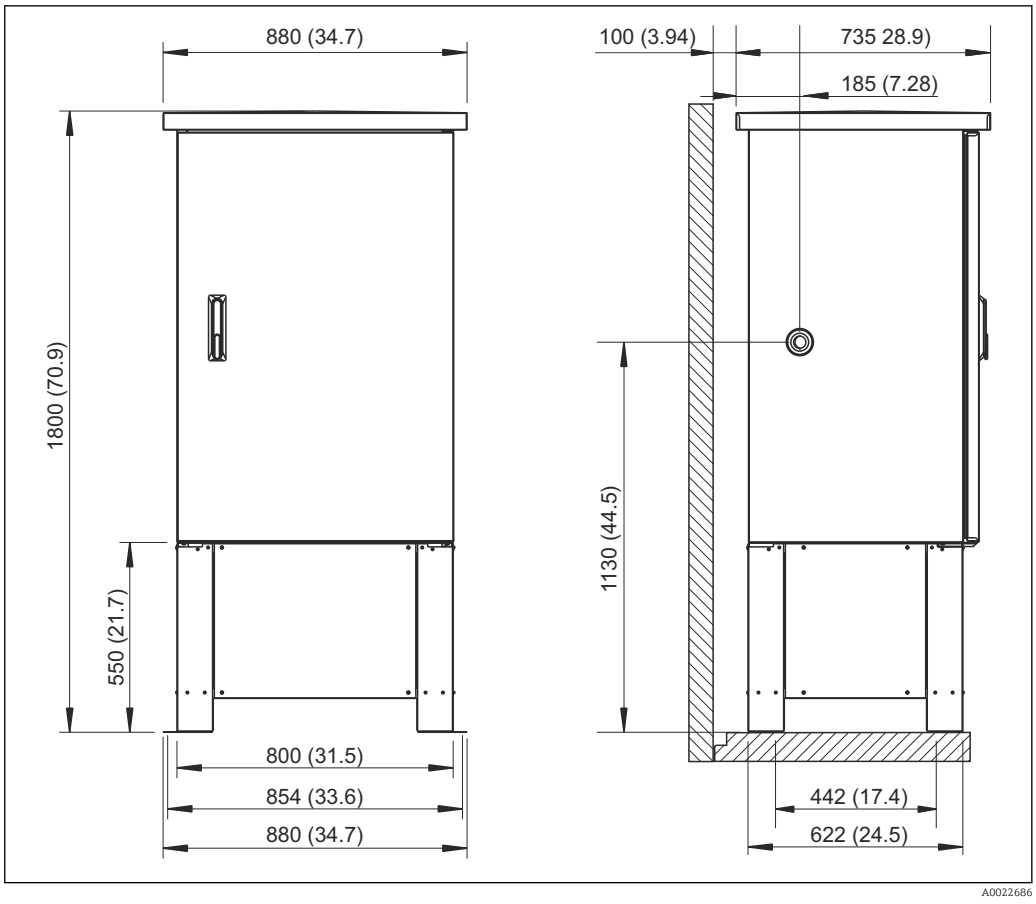
Process temperature	2 to 50 °C (36 to 120 °F)
Process pressure	Unpressurized

Mechanical construction

Design, dimensions



5 Standard cabinet in mm (inch)



6 Standard cabinet with base in mm (inch)

Weight

Approx. 110 kg (242 lbs)

Materials

Not in contact with medium	
Cabinet housing	V2A (AISI 304), optionally V4A (AISI 316)
Sample compartment inner lining	PS
Insulation	PU, CO_2 foamed

In contact with medium	
Intake hose	EPDM
Hose connection	PP, POM, PA
Dosing tube	PVC
Dosing beaker cover	PP
Dosing beaker	PMMA
Conductivity electrodes	1.4305
Dosing system outflow hose	Silicone
Tap	PP
Tap cover	PE
Distribution pans	PS
Composite container/bottles	PE, optionally glass

Pneumatics	
Hoses	Silicone
Air Manager housing	PC
Air Manager sealing plate	Silicone
Vacuum pump head	Aluminum, anodized
Vacuum pump membrane	EPDM

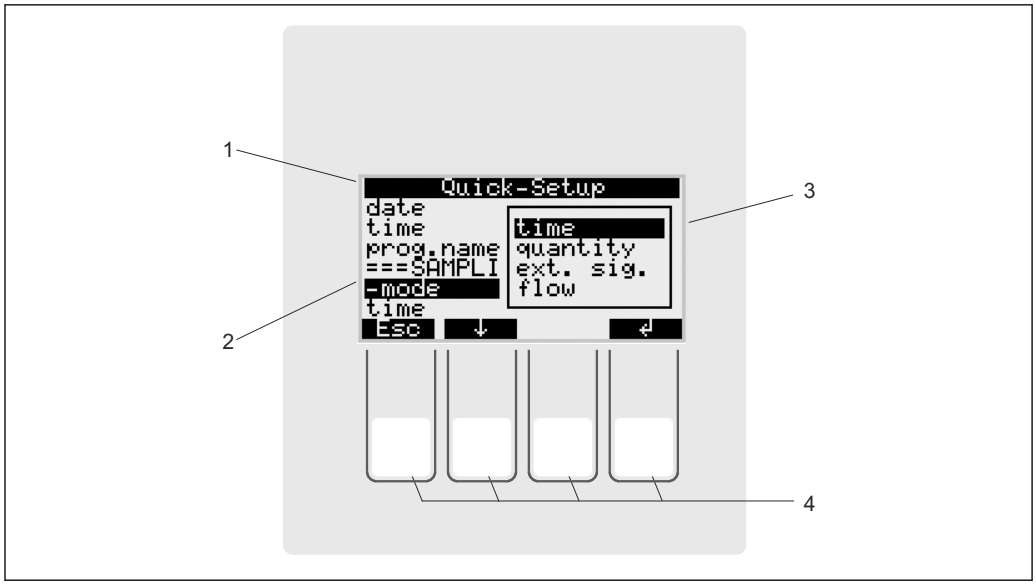
Operability

Display elements

Liquid crystal display: illuminated, 128 x 64 dot, 32 characters, 8 lines

Local operation

Menu-guided operation via four operating keys on the device. Picklists and Quick Setup menu for easy and fast commissioning.



7 *Local operation*

1 Quick Setup menu
2 Display
3 Picklist
4 Operating keys

Ordering information

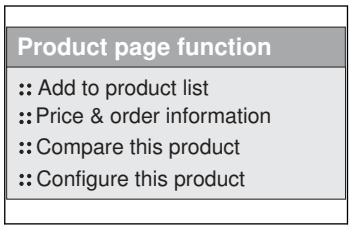
Product page

www.products.endress.com/rps20b

Product Configurator

You can create a valid and complete order code online using the Configurator.

You can choose from the following options on the right of the product page:



1. Click "Configure this product".
   ↳ The Configurator opens in a separate window.
2. Configure your device.
   ↳ You receive the valid and complete order code for the device.
3. Export the order code as a PDF file or Excel file. To do so, click the appropriate button at the top of the page.

Scope of delivery

The scope of delivery comprises:
- ASP Station 2000 RPS20B with
  - The ordered bottle configuration
  - Optional hardware
- Connection nipple for suction line
- Brief Operating Instructions in the language ordered
- CD with Operating Instructions in German and English, Application Manual, simulation software
- Optional accessories

Operating Instructions in other languages can be downloaded on the product page.

Certificates and approvals

CE mark

Declaration of Conformity

The product meets the requirements of the harmonized European standards. As such, it complies with the legal specifications of the EC directives. The manufacturer confirms successful testing of the product by affixing to it the CE mark.

Accessories

Order no.	Bottle tray + bottles + cover
71251004	Kit RPS20B: bottle tray + 12 x 1 l (0.26 US gal.) PE + cover
71251023	Kit RPS20B: bottle tray + 12 x 1 l (0.26 US gal.) glass + cover
71251025	Kit RPS20B: bottle tray + 6 x 3 l (0.79 US gal.) PE + cover
71251027	Kit RPS20B: bottle tray + 6 x 1.8 l (0.48 US gal.) glass + cover
71251028	Kit RPS20B: bottle tray + 2 x 12 l (3.2 US gal.) PE + cover

Order no.	Distribution pan
71251029	Kit RPS20B: distribution pan, 6 bottles
71251031	Kit RPS20B: distribution pan, 12 bottles

Order no.	Bottles + covers
71111164	1 liter (0.26 US gal.) PE + cover, 24 pcs.
71111165	1 liter (0.26 US gal.) glass + cover, 24 pcs.
71134277	1.8 liter (0.48 US gal.) glass + cover, 6 pc.
71111167	3 liter (0.79 US gal.) PE + cover, 12 pcs.
71251036	12 l (3.2 US gal.) PE + cover, 1 pc.
71251038	20 l (5.3 US gal.) PE + cover, 1 pc.
71111172	30 liter (7.92 US gal.) PE + cover, 1 pc.
71111173	60 liter (15.8 US gal.) PE + cover, 1 pc.

Order no.	Complete suction line
71111236	Suction line ID 13 mm (1/2"), EPDM black, length 10 m (33 ft), suction head V4A

Order no.	Suction head
71111185	Suction head V4A for ID 13 mm (1/2"), 1 pc.

Order no.	Suction line coil
71111486	... m, rolled goods, suction line ID 13 mm (1/2"), EPDM black

Order no.	Tubing customized
71251039	Kit RPS20B: distributor dosing hose, silicone DN15 x 2, 2 pcs.
71251040	Kit RPS20B: vessel dosing hose, silicone DN15 x 2, 2 pcs.

Order no.	Retrofit kits
71251041	Kit RPS20B: distribution assembly (distribution arm, distribution drive, frame)
71251043	Kit RPS20B: device stand, V2A, 304
71251044	Kit RPS20B: device stand, V4A, 316
71251045	Kit RPS20B: flow assembly V2A, 304, without stand, with stand cover

Order no.	Retrofit kits
71251046	Kit RPS20B: flow assembly V4A, 316, without stand, with stand cover
71119408	Flow assembly, sample

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