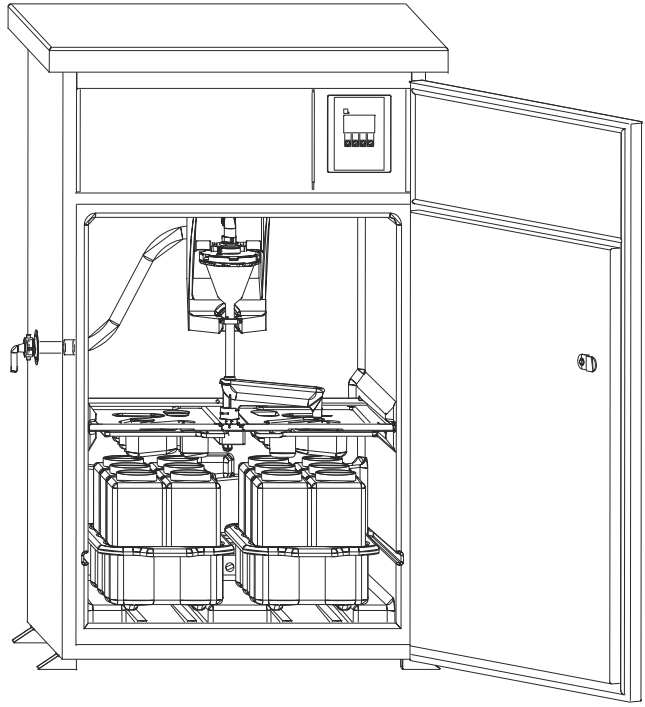
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2019-02-15

Operating Instructions
ASP Station 2000 RPS20B

Stationary sampler for liquid media



Endress+Hauser
People for Process Automation

Table of contents

1 Document information 4
1.1 Warnings 4
1.2 Symbols used 4

2 Basic safety instructions 6
2.1 Requirements for the personnel 6
2.2 Designated use 6
2.3 Workplace safety 6
2.4 Operational safety 6
2.5 Product safety 7

3 Device description 8
3.1 Device design 8
3.2 Function 9
3.3 Dosing system 9
3.4 Sample distribution 10
3.5 Sample preservation 11

4 Incoming acceptance and product identification 13
4.1 Incoming acceptance 13
4.2 Product identification 13
4.3 Scope of delivery 14
4.4 Certificates and approvals 14

5 Installation 15
5.1 Installation conditions 15
5.2 Installation 19
5.3 Sampling with a flow assembly 19
5.4 Post-installation check 20

6 Electrical connection 21
6.1 Connecting the sampler 21
6.2 Ensuring the degree of protection 24
6.3 Post-connection check 25

7 Operation options 26
7.1 Structure and function of the operating menu 26
7.2 Access to the operating menu via the local display 26

8 Commissioning 28
8.1 Function check 28
8.2 Switching on 28
8.3 Quick Setup 29
8.4 Configuring the tap (calibrating) 30
8.5 Manual setting of sample volume 30

9 Operation 31
9.1 Device locking status 31
9.2 Adapting the device to the process conditions 31

10 Diagnostics and troubleshooting 44
10.1 Troubleshooting instructions 44
10.2 Process error messages 44
10.3 Process errors without messages 45

11 Maintenance 46
11.1 Maintenance intervals 46
11.2 Cleaning 46

12 Repair 49
12.1 Spare parts 49
12.2 Return 51
12.3 Disposal 51

13 Accessories 52

14 Technical data 53
14.1 Power supply 53
14.2 Environment 53
14.3 Process 54
14.4 Mechanical construction 54

Index 56

1 Document information

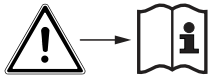
1.1 Warnings

Structure of information	Meaning
⚠ DANGER **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **will** result in a fatal or serious injury.
⚠ WARNING **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **can** result in a fatal or serious injury.
⚠ CAUTION **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
NOTICE **Cause/situation** If necessary, Consequences of non-compliance (if applicable) ▶ Action/note	This symbol alerts you to situations which may result in damage to property.

1.2 Symbols used

Symbol	Meaning
	Additional information, tips
	Permitted or recommended
	Not permitted or not recommended
	Reference to device documentation
	Reference to page
	Reference to graphic
	Result of a step

1.2.1 Symbols on the device

Symbol	Meaning
	Reference to device documentation

2 Basic safety instructions

2.1 Requirements for the personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Designated use

The ASP Station 2000 RPS20B is a stationary sampler for liquid media. The samples are extracted discontinuously by means of a vacuum system. They are put into one or several sampling containers and stored in a cool place.

The sampler is designed for use in the following applications:
- Communal and industrial wastewater treatment plants
- Laboratories and water management offices

Use of the device for any purpose other than that described, poses a threat to the safety of people and of the entire measuring system and is therefore not permitted.

The manufacturer is not liable for damage caused by improper or non-designated use.

2.3 Workplace safety

As the user, you are responsible for complying with the following safety conditions:
- Installation guidelines
- Local standards and regulations

Electromagnetic compatibility
- The product has been tested for electromagnetic compatibility in accordance with the applicable European standards for industrial applications.
- The electromagnetic compatibility indicated applies only to a product that has been connected in accordance with these Operating Instructions.

2.4 Operational safety

Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products, and protect them against unintentional operation.

4. Label damaged products as defective.

During operation:

- If faults cannot be rectified:
  products must be taken out of service and protected against unintentional operation.

2.5 Product safety

2.5.1 State of the art

The product is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. The relevant regulations and European standards have been observed.

Devices connected to the sampler must comply with the applicable safety standards.

2.5.2 IT security

We only provide a warranty if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

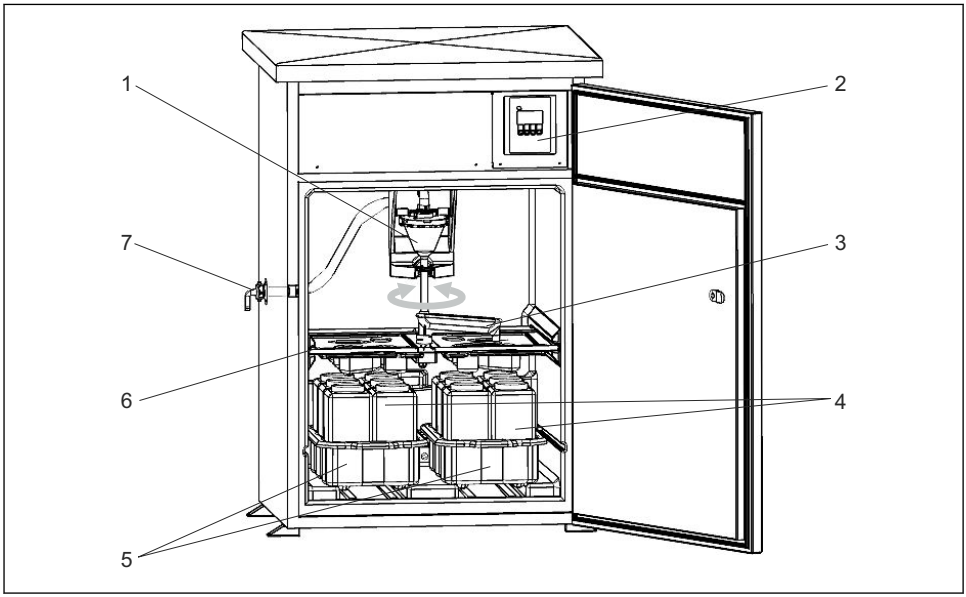
IT security measures in line with operators' security standards and designed to provide additional protection for the device and device data transfer must be implemented by the operators themselves.

3 Device description

3.1 Device design

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

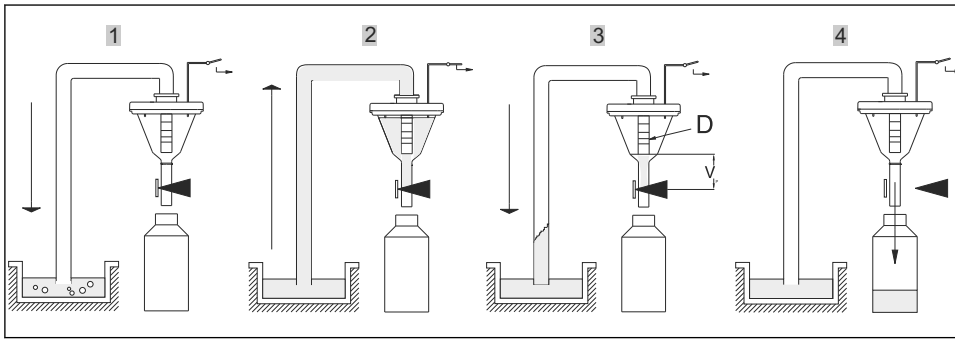


1 Example of an ASP Station 2000 RPS20B

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

3.2 Function

Sampling takes place in four steps:



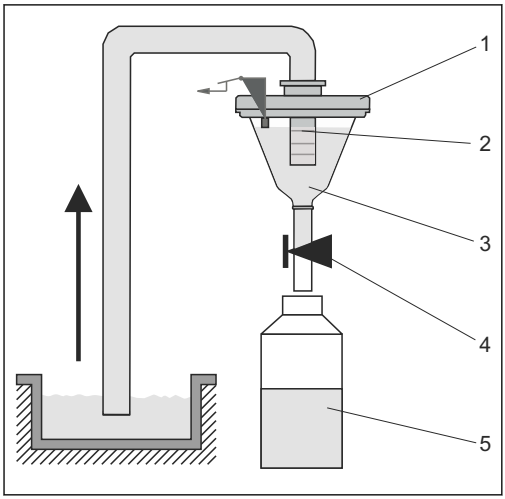
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1. Blow clear
   ↳ The vacuum pump blows the suction line clear via the dosing system.
2. Intake
   ↳ The "Airmanager" (pneumatic control unit) switches the air path of the vacuum pump to "intake". The sample is drawn into the dosing beaker until it 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.

3.3 Dosing system

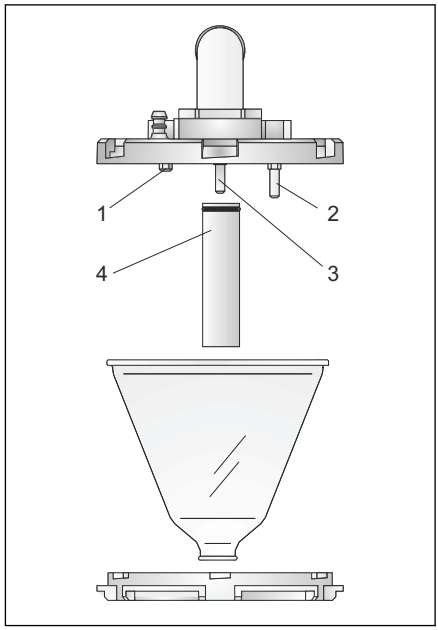
The sample liquid is extracted discontinuously by a vacuum system. The vacuum system in the ASP Station 2000 RPS20B consists of the following components:

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



2 *Sampling principle*

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



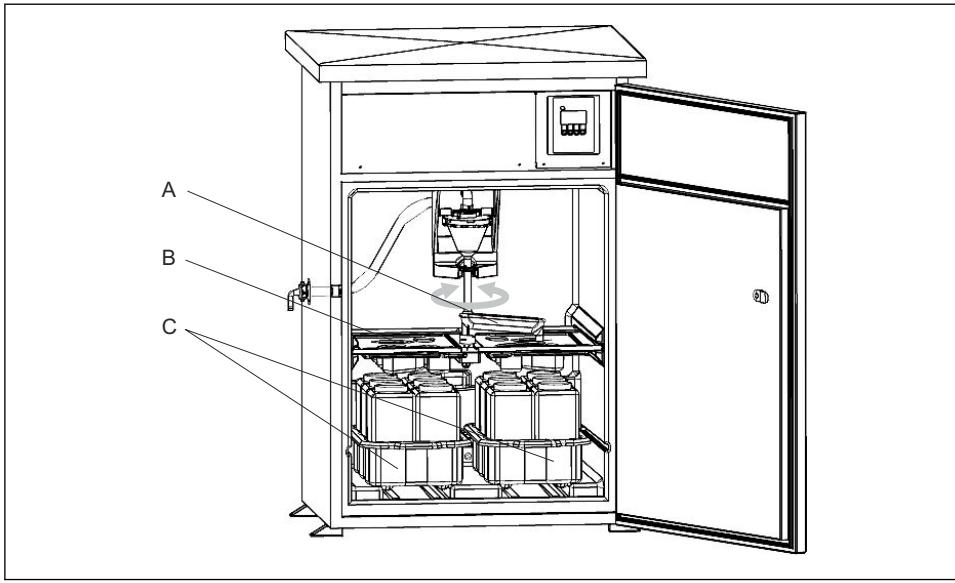
3 *Dosing system*

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 chamber (→ 3, 10). During the intake process, the sample liquid first reaches the longer sensors, items 2 and 3. The system thus detects that the dosing chamber 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.

3.4 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

3.5 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 (36 to 68 °F) directly at the controller (factory setting: +4 °C (39 °F)). 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

Bottle groups and distribution versions depending on the order version	
RPS20B-****	
L	4 x 20 l direct, PE
N	4 x 12 l direct, PE
S	12 x 1.8 l plate, glass

4 Incoming acceptance and product identification

4.1 Incoming acceptance

1. Verify that the packaging is undamaged.
   ↳ Notify the supplier of any damage to the packaging.
   Keep the damaged packaging until the issue has been resolved.
2. Verify that the contents are undamaged.
   ↳ Notify the supplier of any damage to the delivery contents.
   Keep the damaged goods until the issue has been resolved.
3. Check that the delivery is complete and nothing is missing.
   ↳ Compare the shipping documents with your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
   ↳ The original packaging offers the best protection.
   Make sure to comply with the permitted ambient conditions.

If you have any questions, please contact your supplier or your local Sales Center.

⚠ CAUTION

Incorrect transportation may result in injuries or damage to the device.

- ► Transport the sampler using suitable lifting equipment, e.g. pallet truck or forklift truck.
- ► Do not lift the sampler by the roof.

4.2 Product identification

4.2.1 Nameplate

Nameplates can be found:
- On the inside of the body
- On the packaging (adhesive label, portrait format)

The nameplate provides you with the following information on your device:
- Manufacturer identification
- Order code
- Extended order code
- Serial number
- Safety information and warnings

► Compare the information on the nameplate with the order.

4.2.2 Product identification

Interpreting the order code

The order code and serial number of your product can be found in the following locations:
- On the nameplate
- In the delivery papers

Obtaining information on the product

1. Go to www.endress.com.
2. Call up the site search (magnifying glass).
3. Enter a valid serial number.
4. Search.
   ↳ The product structure is displayed in a popup window.
5. Click on the product image in the popup window.
   ↳ A new window (**Device Viewer**) opens. All of the information relating to your device is displayed in this window as well as the product documentation.

4.3 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
- Optional accessories

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

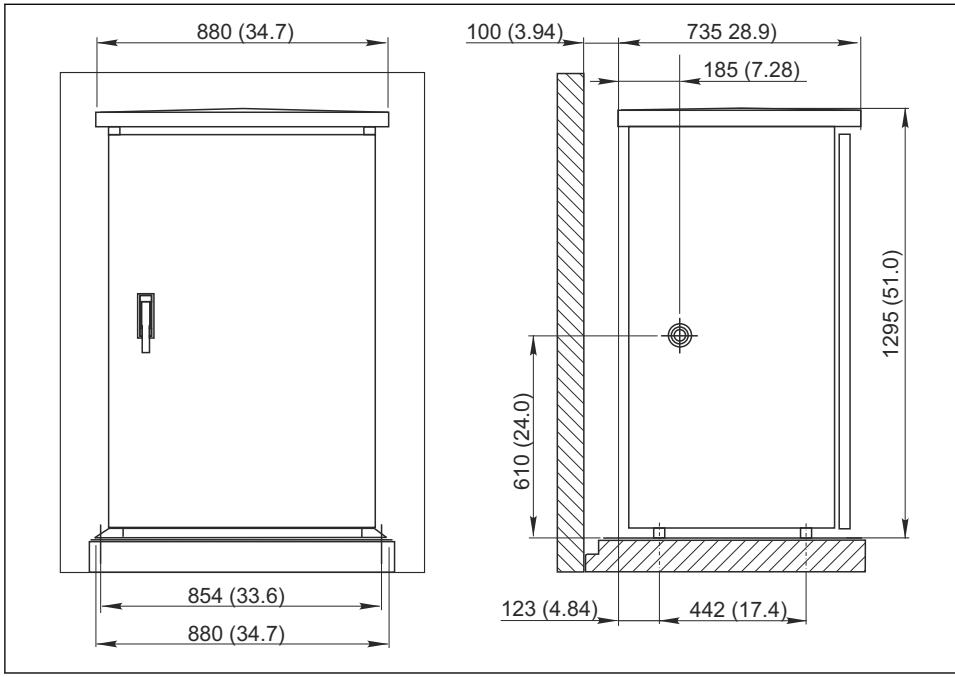
4.4 Certificates and approvals

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

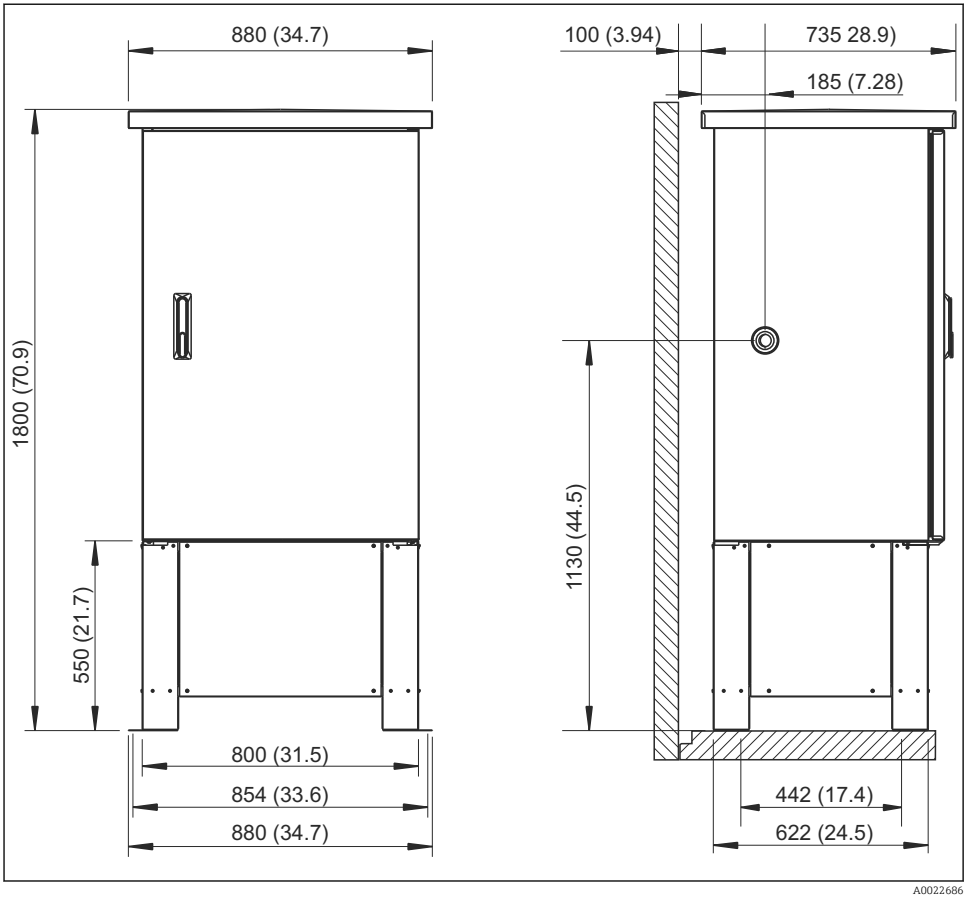
5 Installation

5.1 Installation conditions

5.1.1 Dimensions

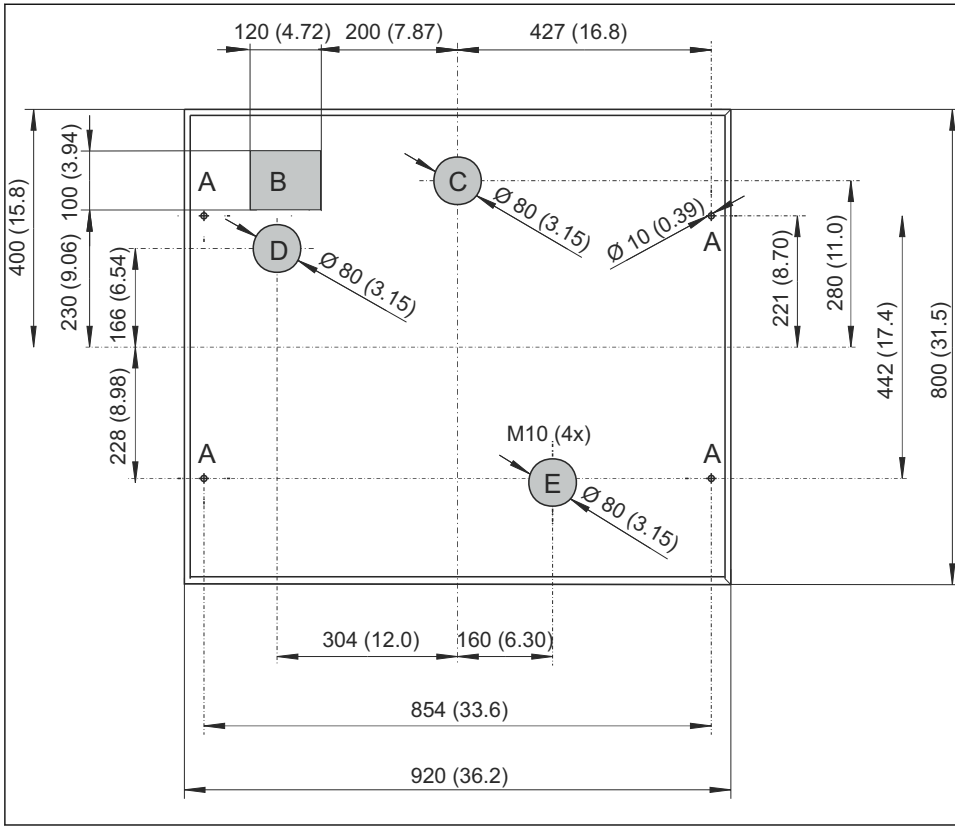


4 Standard cabinet in mm (inch)



5 Standard cabinet with base in mm (inch)

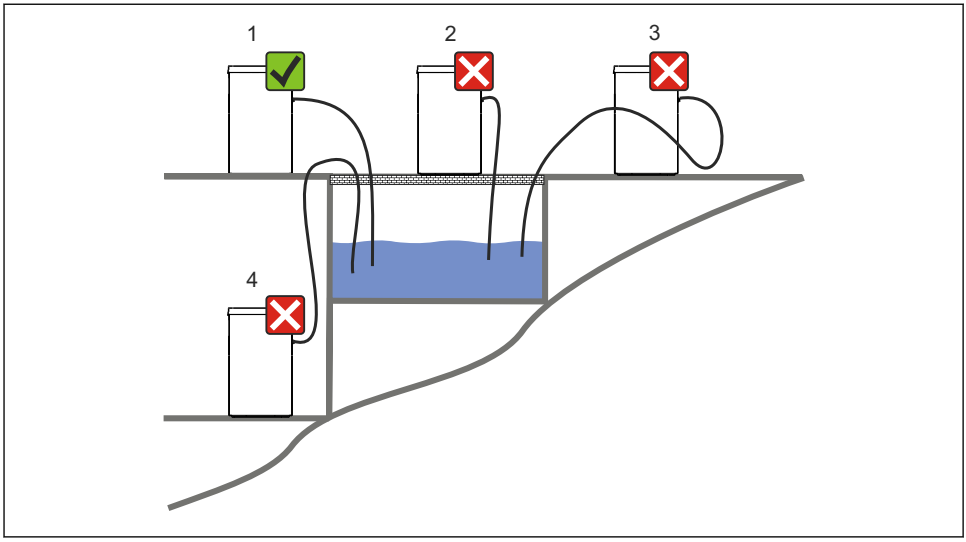
5.1.2 Foundation plan



6 *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

5.1.3 Installation site



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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. Distance from wall on left and right: min. 150 mm (5.9").
- Do not erect the device directly above the inlet channel of a wastewater treatment plant.

5.1.4 Connection for suctioning samples

Intake speed:

Note the following when erecting the device:
- Always route the suction line so that it slopes upwards from the sampling point to the sampler.
- The sampler must be located above the sampling point.
- Avoid siphoning effects in the suction line.

Requirements for the sampling point:
- Do not connect the suction line to pressurized systems.
- Use the suction filter to impede coarse and abrasive solids and solids which can cause clogging.
- Immerse the suction line in the direction of flow.
- Take the sample at a representative point (turbulent flow, not directly at the bottom of the channel).

Useful sampling accessories
- Suction filter:
  Impedes coarser solids and solids which can cause clogging.
- Immersion assembly:
  The adjustable immersion assembly fixes the suction line at the sampling point.

5.2 Installation

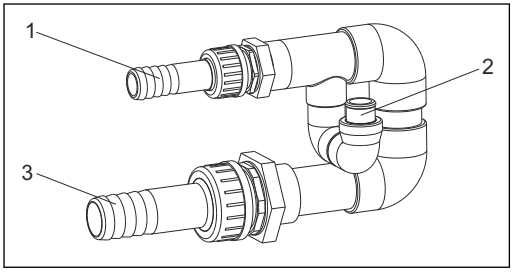
1. When installing the device, take the installation conditions into account.
2. Lay the suction line from the sampling point to the device.
3. Screw the suction line onto the device's hose connection.

5.3 Sampling with a flow assembly

The sample is extracted either directly from the flow assembly which is installed in the base or from an external flow assembly.

The flow assembly is used for sampling in pressurized systems e.g.:
- Tanks positioned at a height
- Pressure piping
- Conveyance using external pumps

The max. flow rate should be 1000 to 1500 l/h.

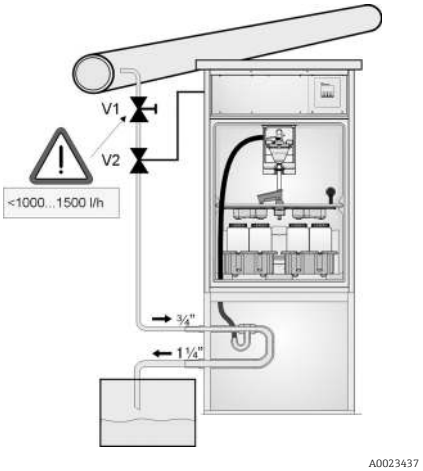


1 Flow assembly inflow: ¾"
2 Sampling connection
3 Flow assembly outflow: 1¼"

7 Connections on flow assembly 71119408

The outlet of the flow assembly must be unpressurized (e.g. drain, open channel).

Application example: Taking samples from pressure piping



Use diaphragm valve 1 to set the flow rate to a maximum of 1000 l/h to 1500 l/h. When the sampling cycle begins, one of the relay outputs can be used to control and open ball valve 2. The medium flows through the pipe and the flow assembly and into the outflow. Once an adjustable delay time has elapsed, the sample is taken directly from the flow assembly. Ball valve 2 is closed again once the sample has been taken.

The ball valve and the diaphragm valve are not included in the scope of supply. If necessary, please request a quote from your Endress+Hauser sales center.

8 Taking samples from pressure piping

V1 Diaphragm valve
V2 Ball valve
3 Flow assembly

5.4 Post-installation check

1. Verify that the suction line is securely connected to the device.
2. Visually check that the suction line is installed correctly from the sampling point to the device.
3. Verify that the rotating arm is correctly engaged.

6 Electrical connection

WARNING

Device is live!

Incorrect connection may result in injury or death!

- The electrical connection may be performed only by an electrical technician.
- The electrical technician must have read and understood these Operating Instructions and must follow the instructions contained therein.
- **Prior** to commencing connection work, ensure that no voltage is present on any cable.

6.1 Connecting the sampler

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.
- The circuit breaker must be a switch or power switch, and you must label it as the circuit breaker for the device.
- The ground connection must be made before all other connections. Danger may arise if the protective ground is disconnected

6.1.1 Laying the cable

- Lay the cables so that they are protected behind the rear panel of the device.
- Cable glands (up to 8 depending on the version) are available for the cable entry.
- The cable length from the foundation to the terminal connection is approx. 1.7 m (5.6 ft).
-

6.1.2 Cable types

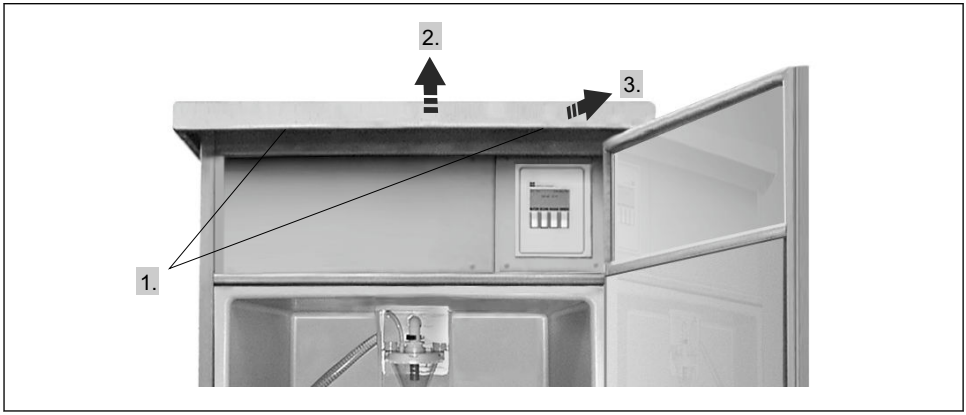
Power supply:	e.g. NYY-J, 3-wire, 1.5 mm^2 - 2.5 mm^2
Analog and signal cables:	e.g. LiYY 10 x 0.34 mm^2

6.1.3 Removing the cover and the rear panel

The terminal connection (analog/digital signal lines) as well as the terminal strip (mains connection) are in a protected location underneath the cabinet roof in the electronics compartment of the device.

Therefore, to connect the power supply, you must remove the rear panel and the cover of the device prior to commissioning.

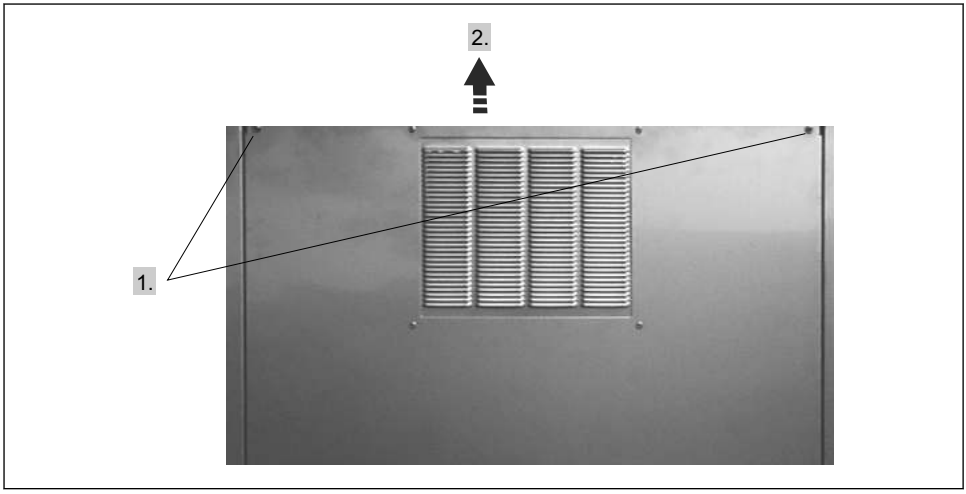
Removing the cabinet cover



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1. Release the securing screws.
2. Lift the cabinet roof at the front.
3. Pull the cabinet roof forwards and lift.
   ↳ You can now remove the rear panel.

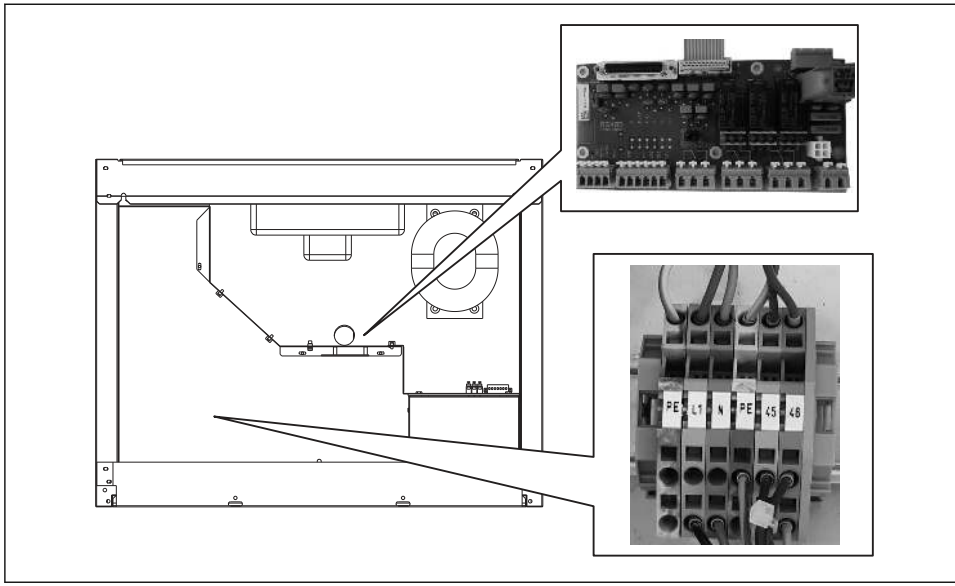
Removing the rear panel



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1. Release the securing screws.
2. Lift the rear panel up and remove it.
   ↳ The terminal board and the terminal strip in the electronics compartment are now exposed for wiring.

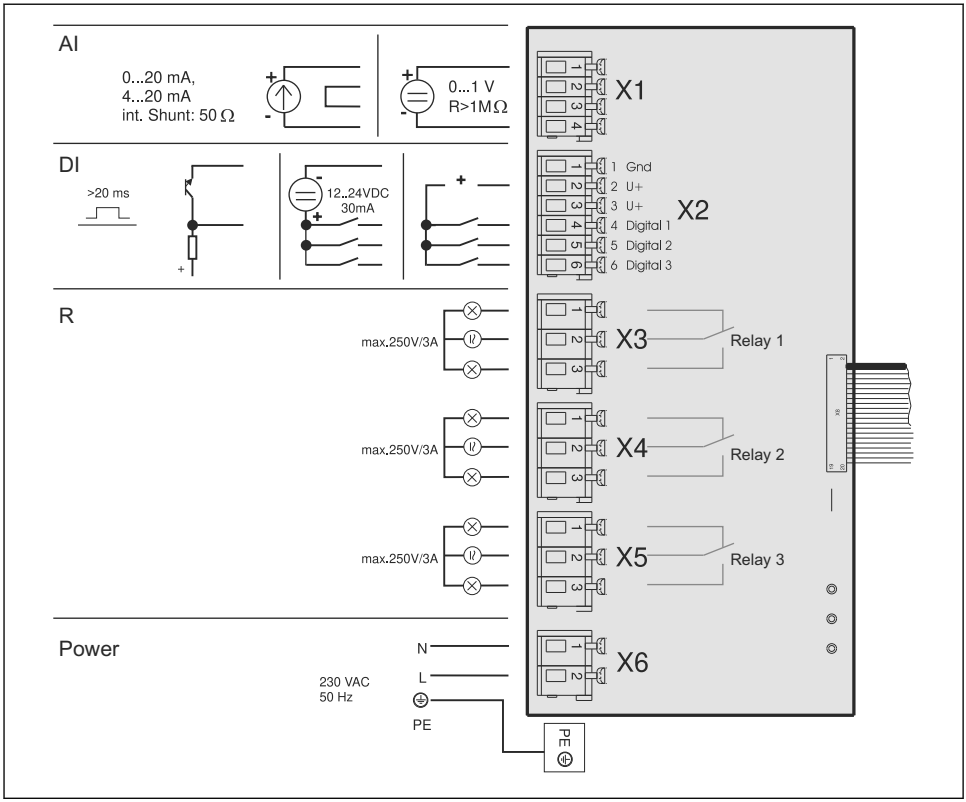
6.1.4 Terminal assignment



9 Position of terminal board and terminal strip in the electronics compartment

▶ Connect the supply voltage at the terminal strip in accordance with the following assignment:

PIN	Assignment
PE	Protective ground (provided by customer)
L1	Phase (provided by customer)
N	Neutral wire (provided by customer)
PE	Optional protective ground
45	Optional phase
46	Optional neutral wire



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

You can connect the following signals to the terminals:
- 3 digital input signals > 20 ms
- 1 analog input signal 0 to 1 V,0 to 20 mA or 4 to 20 mA
- 3 relay output signals

6.2 Ensuring the degree of protection

Only the mechanical and electrical connections which are described in these instructions and which are necessary for the required, designated use, may be carried out on the device delivered.

► Exercise care when carrying out the work.

Otherwise, the individual types of protection (Ingress Protection (IP), electrical safety, EMC interference immunity) agreed for this product can no longer be guaranteed due, for example to covers being left off or cable (ends) that are loose or insufficiently secured.

6.3 Post-connection check

⚠ WARNING

Connection errors

The safety of people and of the measuring point is under threat. The manufacturer does not accept any responsibility for errors that result from failure to comply with the instructions in this manual.

► Put the transmitter into operation only if you can answer "yes" to all questions.

Device condition and specifications

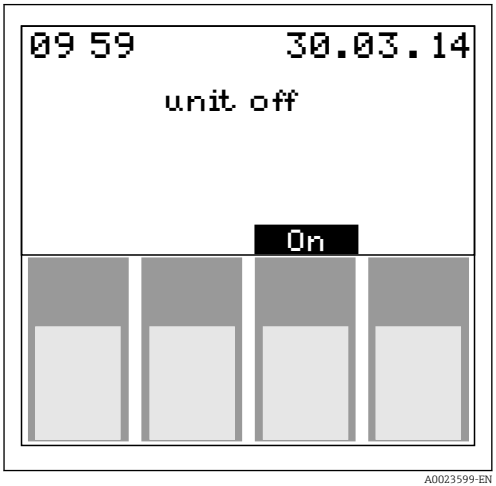
Are the sampler, suction line and all cables undamaged externally?

Electrical connection

- Are the mounted cables strain-relieved?
- Have the cables been routed without loops and cross-overs?
- Have the signal lines been connected correctly in accordance with the wiring diagram?
- Have all the other connections been established correctly?
- Have you connected unused connection wires to the protective ground connection?
- Are all the connection wires securely positioned in the cable terminals?
- Are all the cable entries installed, tightened and sealed?
- Does the supply voltage match the voltage indicated on the nameplate?

7 Operation options

7.1 Structure and function of the operating menu



The sampler is configured via four operating keys. The function of the keys is shown on the display. Operation is menu-guided.

10

7.2 Access to the operating menu via the local display

Key	Function
↓	Make active character or value smaller
↑	Make active character or value larger
<-'	Accept highlighted setting or value
..-> or <-..	Scroll left or right
Set	"Quick-Setup", setup, device settings, service, sampling programs
ESC	Exit the menu level
ON or OFF	Switch the device on and off The "Off" key has different functions depending on whether a program has been started or not. ▪ If a program has not been started: The device is switched off. ▪ If a program is running: Pressing the "Off" key briefly (≤ approx. 1 s) sets the program to break mode. If the key is pressed for a longer period (> 1 s), the running program is terminated. In the break mode, you can decide whether the program should be terminated. Pressing the "Off" key a second time terminates the program. Press "On" if you want to resume the program. Here, the tap goes through its reference position once and then on to the current bottle. Any bottle changes which are due to take place during the break period are performed.

Key	Function
MAN	Immediate sampling regardless of whether a program has been started. The sampling operation begins as soon as the key is pressed.
AUT	Start the sampling program
REP	Displays the report list Events are logged in this list while the device is switched on. A maximum of 30 reports are saved. The reports are stored in a ring memory. If the ring memory is full and a new report occurs, the oldest report is deleted.
STAT	Bottle statistics of the sampler The device displays the statistics for each individual bottle after the program startup. In this way, you can draw conclusions concerning the last samplings.

8 Commissioning

8.1 Function check

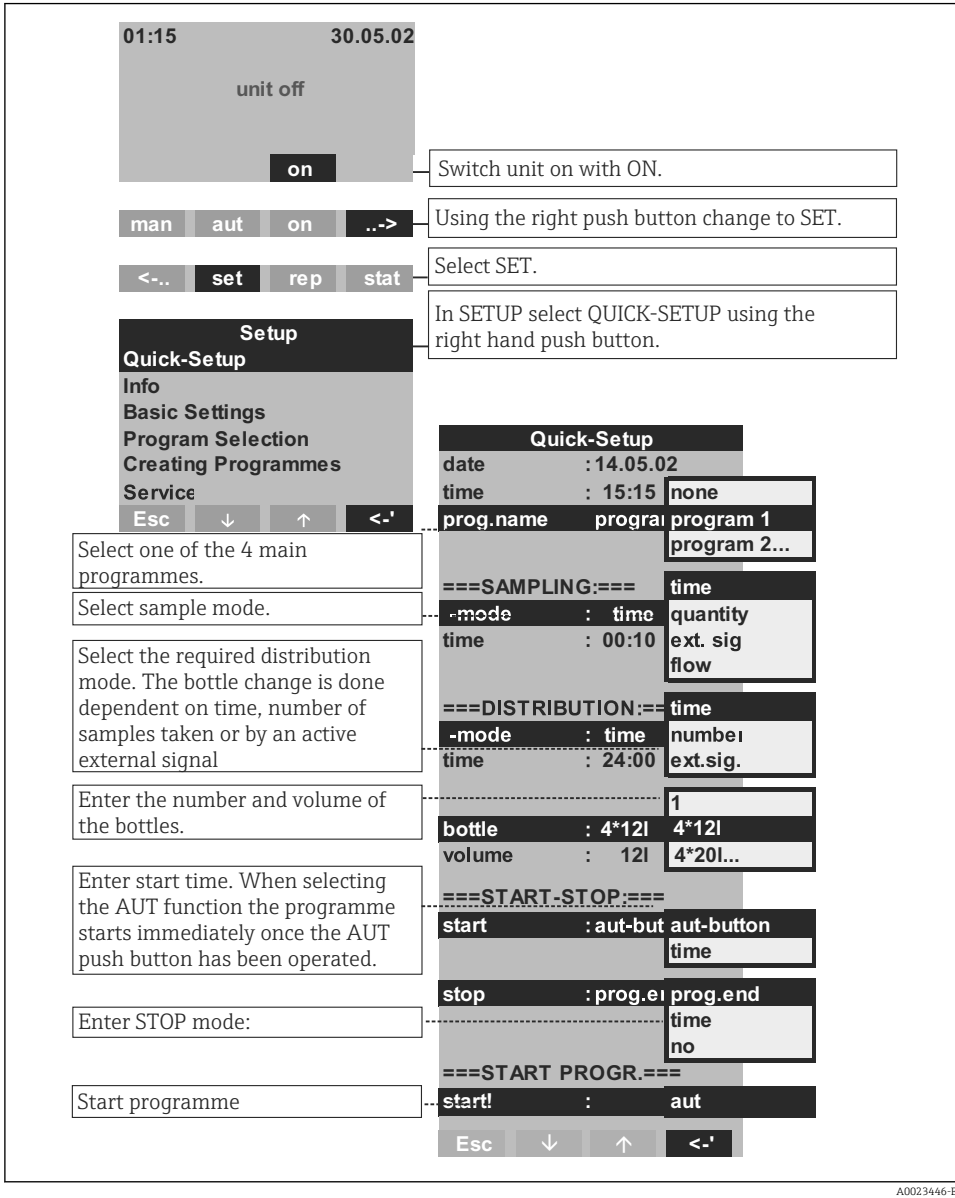
WARNING

Incorrect connection, incorrect supply voltage
Safety risks for staff and device malfunctions!
- ▶ Check that all connections have been established correctly in accordance with the wiring diagram.
- ▶ Ensure that the supply voltage matches the voltage indicated on the nameplate.

8.2 Switching on

1. Switch on the supply voltage.
   ↳ The display starts to light up and displays the message "UNIT OFF".
2. Press the operating key below the "ON" field.
   ↳ The message "UNIT ON" appears. The device is in operation and you can perform the Quick Setup.

8.3 Quick Setup



A0023446-EN

11 Quick Setup

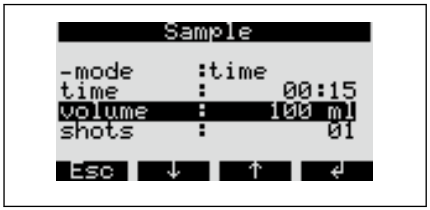
8.4 Configuring the tap (calibrating)

- You must configure the tap if:
- The tap motor was replaced
- The error message "Tap calibration" appears in the display.

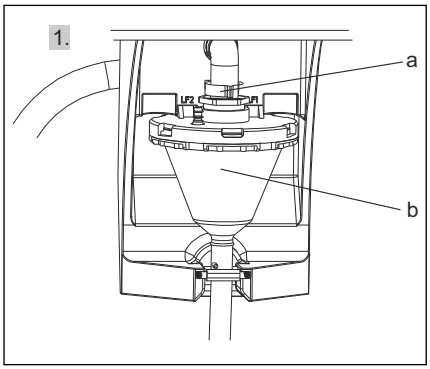
1. Select: SET --> SERVICE --> CALIBRATION --> DIST. TAB.
2. Select "Start".
   ↳ The tap continues moving and stops just before the calibration position.
3. Keep pressing "1 step" until the arrow on the front of the tap is positioned exactly in the notch in the middle of the distribution pan.
4. Select SAVE.
   ↳ The tap is calibrated.

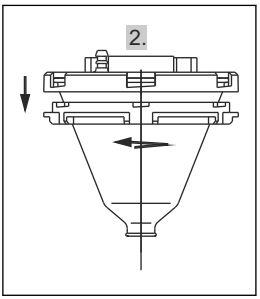
8.5 Manual setting of sample volume

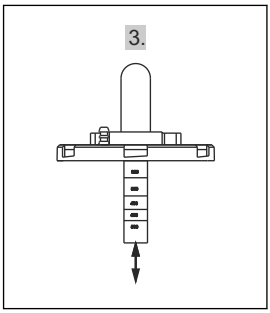
The required sample volume is set by moving the dosing pipe manually.



Check which sample volume is set in the active program.







1. Stop or pause any sampling programs running.
2. Release the clamping lever and air tube (a). Pull the dosing glass (b) forwards and remove it.
3. Open the bayonet lock and open the dosing glass.
4. Set the sample volume by moving dosing pipe.
5. Then re-install the dosing glass in the reverse order.

9 Operation

9.1 Device locking status

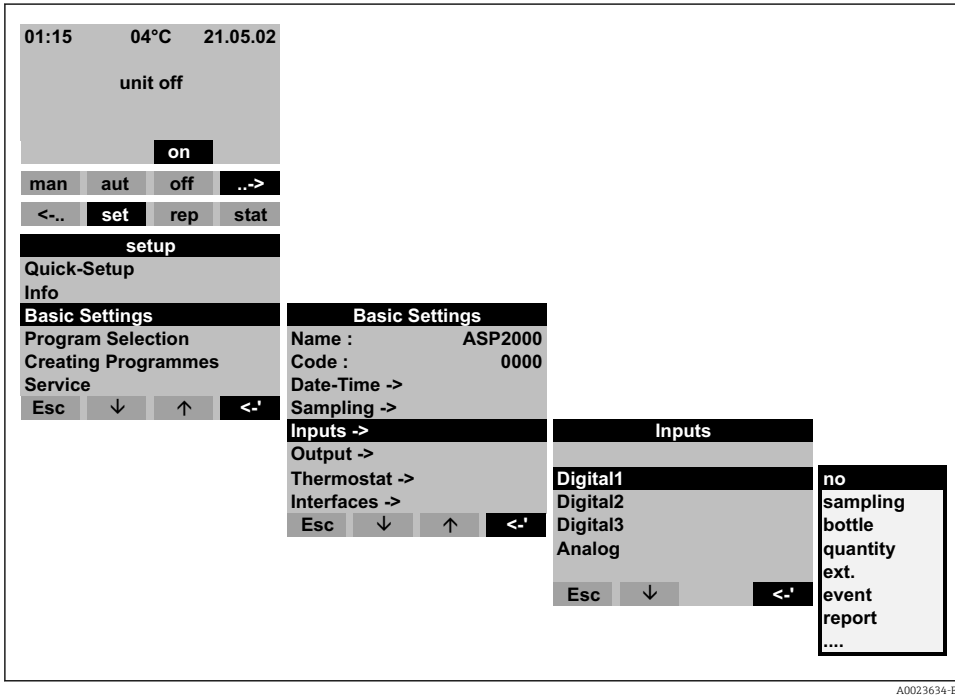
You can lock or enable the configuration of the device at the control console with a 4-digit user code.

▶ Enter the user code in the CODE function in the SET - BASIC SETTINGS menu.

9.2 Adapting the device to the process conditions

9.2.1 Configuration of the inputs

Digital inputs



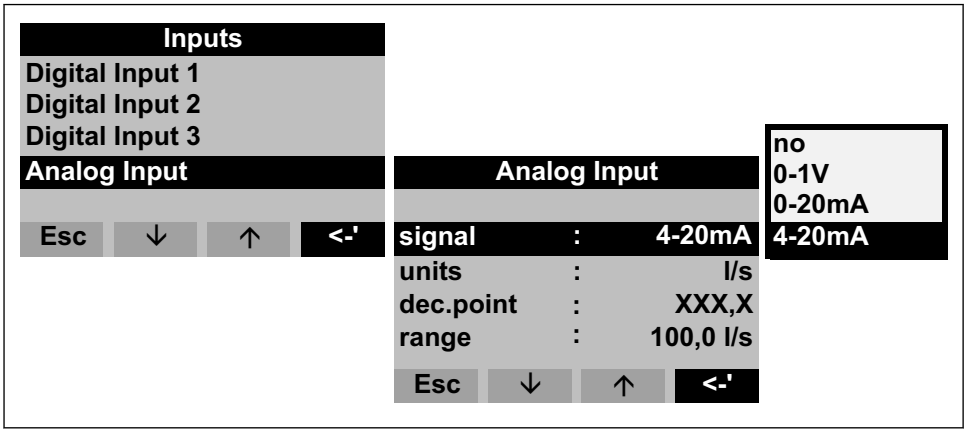
12 *Menu structure*

Sampling	The input signal triggers a sample.
Bottle	The input signal triggers a switch to the next empty bottle.
Quantity	The input signal is a pulse signal from a volume meter. Alternative to analog quantity signal (0/4 to 20 mA)

Ext. stop	The input signal stops any programs running. The programs are continued when the signal disappears.
Event	The input signal triggers "event sampling". For example, the input signal may be switched when a limit value is infringed. A separate bottle can be filled when an event sample occurs.
Report	A message appears on the display showing the date and time (e.g. function error of the flowmeter). The message must be acknowledged, the sampling program is not interrupted.
Start Aut	The input signal starts the configured main program.
Stop Aut	The input signal ends the configured main program.
Switch	The input signal triggers a switch to the switching program.

For the described functions, a digital signal must be assigned to digital input 1, 2 or 3.→ 23

Analog input

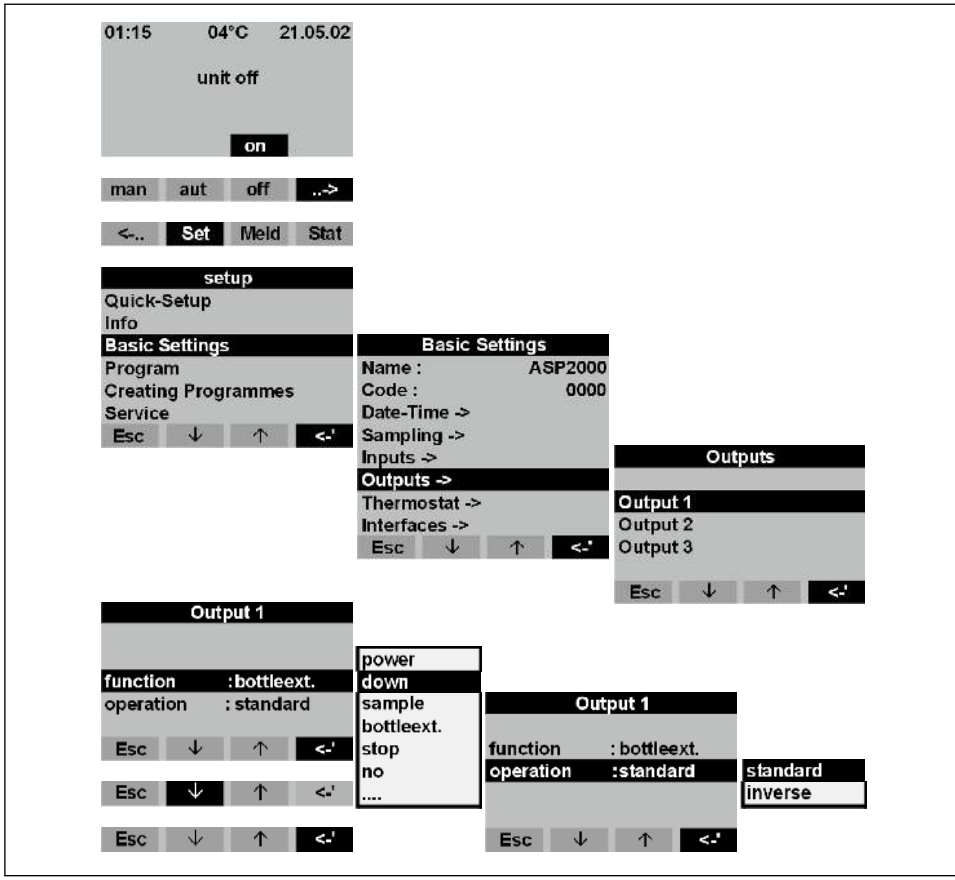


13 Menu structure

Signal	Output signal of the connected device: none, 0 to 1 V, 0 to 20 mA or 4 to 20 mA
Units	SI unit of the analog signal
Dec. point	Number of decimal places of the analog signal
Range	Maximum measuring range

For the described functions, an analog signal must be assigned to the analog input. → 23

9.2.2 Output configuration

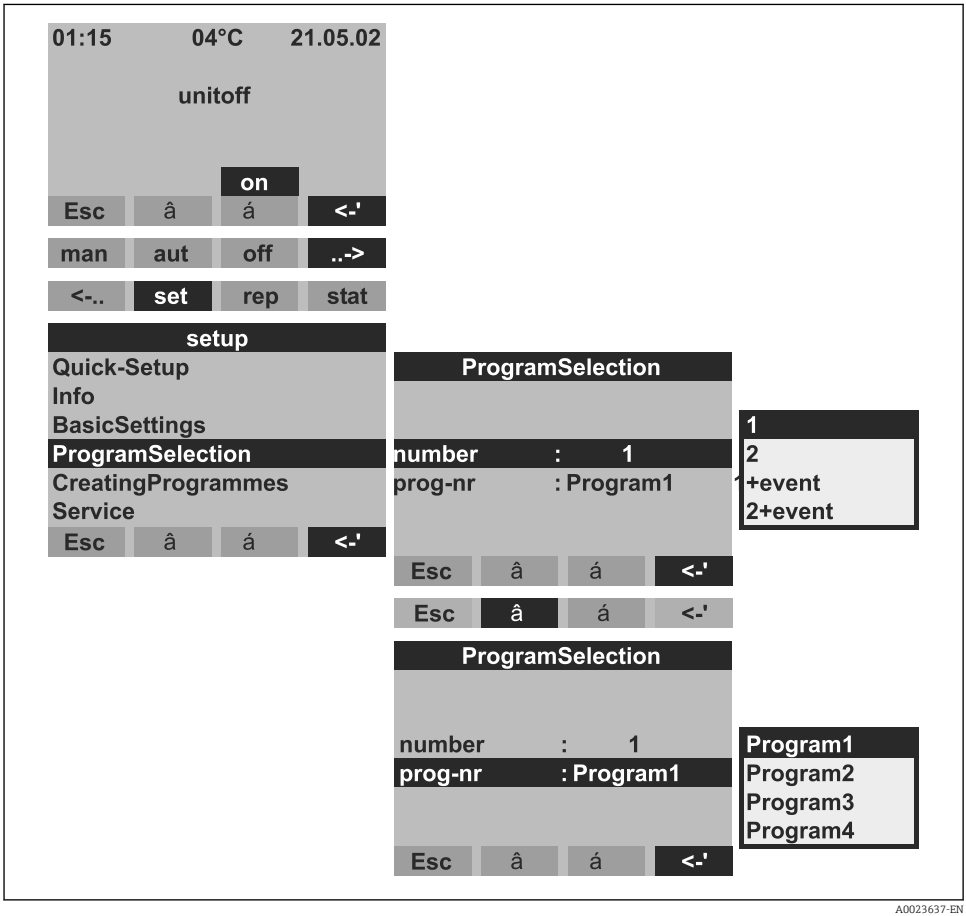


14 Menu structure

Power down	The output contact is switched in the event of a power failure.
Sample	The output contact is switched in the event of sampling.
Bottle	The output contact is switched in the event of a bottle change.
Ext. stop	The output contact is switched in the event of an external stop.
Fill end	The output contact is switched when the sampling program is stopped.
No flow	The output contact is switched if the device was unable to draw in any sampling medium (e.g. blocked intake hose).
CS 1/2:	The output contact is switched in the event of error message "CS 1/2".

Error	The output contact is switched in the event of any error message.
Suction	Active during suction when sampling
Suck.+Dos.:	The output contact is switched when the device draws in sampling medium and doses.
Overfill	The output contact is switched when a bottle is overfull.
Paral. sample PN	The output contact is switched in the event of an active parallel program.
Event prg.	The output contact is switched in the event of an active event program.
Switch prg.	The output contact is switched in the event of an active switching program.

9.2.3 Program selection



15 *Menu structure*

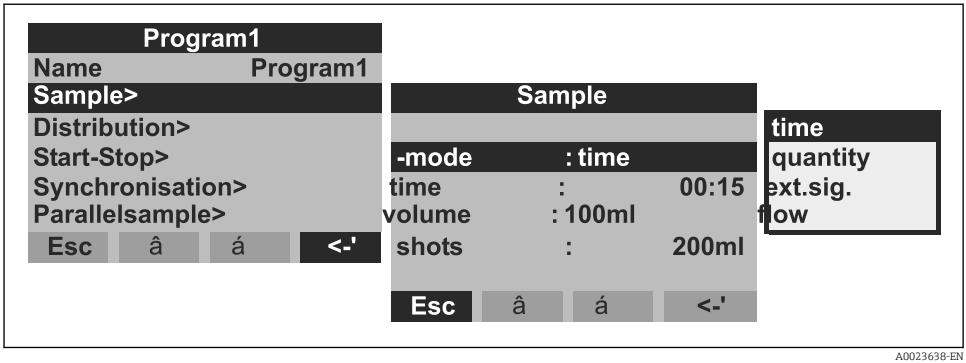
1	A main program is active. Four main programs are available. A main program is selected in the NAME menu item.
2	A main program and a switching program are active. Two program pairs (1<->1 or 2<->2) are available. The switching programs (U1 and/or U2) are permanently assigned to the main programs (1 and/or 2).
1+event	A main program and the event program are active. The event program is enabled by a digital input. One of the digital inputs must be assigned for this function and configured with the EVENT function. A separate sampling program and separate bottles can be defined for the event program.
2+event	A main program, a switching program and the event program are active.

The changeover from the main program to the switching program can be triggered as follows:	
Day	Change to the switching program at two configurable times in one day
Week	Change to the switching program on three configurable days in a week
Q greater	Change to the switching program when the value exceeds a configurable threshold An analog signal must be connected to the analog input of the sampler for this function.
Q smaller	Change to the switching program when the value drops below a configurable threshold
Ext. signal	Change to the switching program by means of an external digital signal One of the digital inputs must be assigned for this function and configured with the SWITCH function.
Separate sampling programs and bottles can be defined for the switching programs.	

9.2.4 Creating a main program

Menu structure → 34

Sampling mode

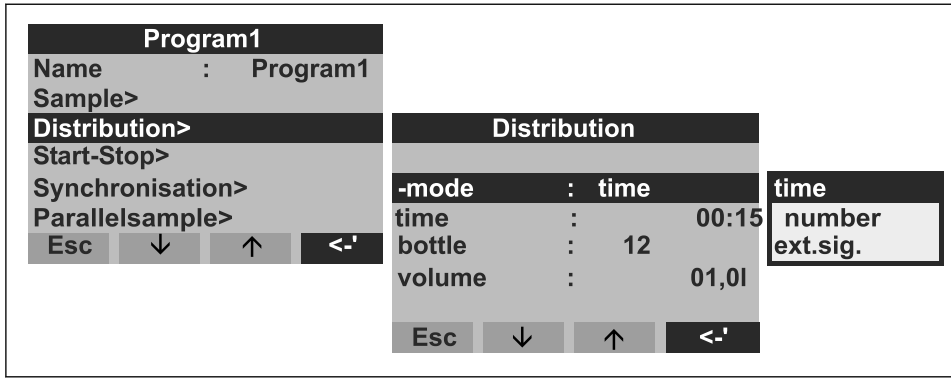


A0023638-EN

16 *Menu structure*

Sampling can be time-paced, volume-paced or flow-paced (option) or can be triggered by an event.	
Time	Sampling is triggered at configurable intervals.
Quantity	Sampling is triggered after a certain measured flow volume. A volume signal must be connected to the analog input or one of the digital inputs of the sampler for this function. The digital input must be configured with the QUANTITY function for this purpose.
Ext. sign.	Sampling is triggered by an external signal. One of the digital inputs must be assigned and configured with the SAMPLE function.
Flow	Sampling is triggered at configurable intervals. The sample volume taken is proportional to a flow currently measured. The ASP Station 2000 must be fitted with a dfp dosing system ("twiddle principle") for this function. In addition, a volume signal must be connected to the analog input of the sampler.
Shots:	Number of samples per sample cycle.

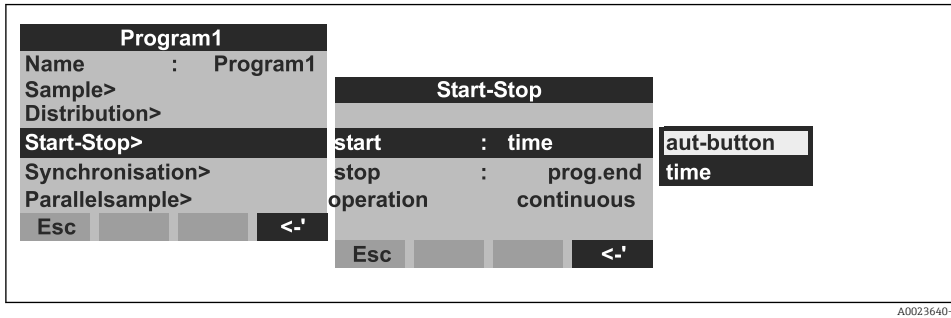
Distribution



17 *Menu structure*

Time	After a set time period has elapsed, the tap switches to the next empty bottle.
Number	After a set number of samples, the tap switches to the next empty bottle.
Ext. sign.	The tap switches to the next empty bottle when an external signal is present. A digital input must be assigned and configured with the BOTTLE function.

Start-stop operation

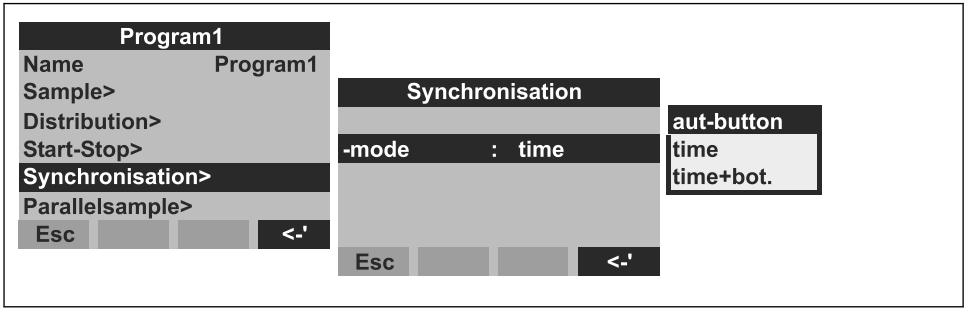


18 *Menu structure*

The sampling program can be started either immediately by pressing the AUT key, or at a configurable time. The end of the sampling program can be defined as follows:	
Program end	The device stops sampling automatically once it has run through the set program.

No	The device runs through the program in an infinite loop. Do not forget to empty the bottles!
Time	The sampling program is stopped at a configurable time.
With regard to the operating mode, it is possible to choose between continuous operation and operation at different intervals.	
Day	Operating time at two configurable times per day
Week	Operating time on three configurable days per week
Window	Operation at certain time intervals

Synchronization

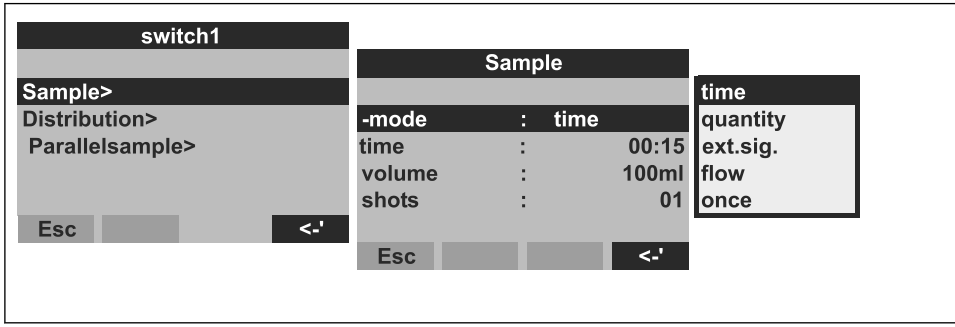


19 Menu structure

Synchronization can be used to assign specific bottles to specific filling times. For example, bottle 1 could be filled from midnight (00:00) to 2 a.m., bottle 2 from 2 a.m. to 4 a.m. etc. The following options are available for this:	
AUT key	The sampling and bottle change times are not synchronized.
Time	Sampling starts with the first bottle. The change to the next bottle is synchronized. Example: a time of 2 hours was set for the bottle change and midnight (00:00) was the time set for synchronization. If the program is started at 5:23, for example, bottle 1 is filled first of all. The system changes to bottle 2 at 6 a.m., bottle 3 at 8 a.m. etc.
Time+Bott.	Each bottle is allocated a specific filling time. For example: midnight - 2 a.m: bottle 1; 2 a.m. - 4 a.m.: bottle 2; 4 a.m. - 6 a.m.: bottle 3 etc. If the program is started at 10 a.m., for example, the device will start filling bottle 6.

9.2.5 Creating a switching program

Sampling mode

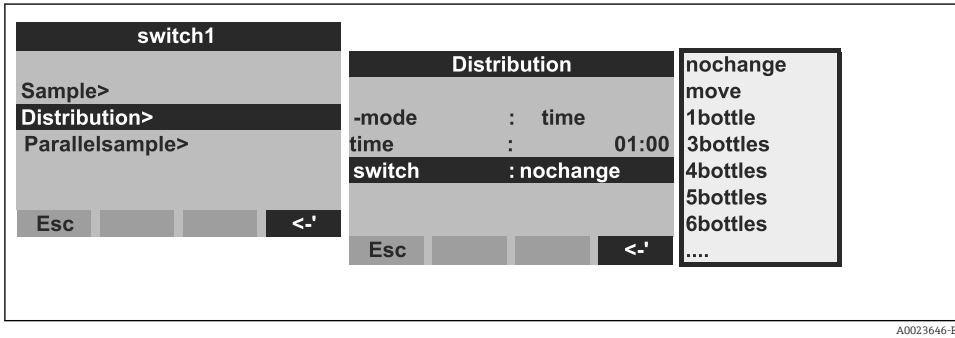


20 *Menu structure*

As in the main programs, sampling in the switching programs can be triggered by time, volume, flow or by an external signal.

Distribution

Separate bottles can be reserved for the switching programs. With the exception of parallel sampling, the following applies when distributing to bottles: The first bottle group of a distribution is reserved for the main programs. The second bottle group is reserved for the switching programs. The last bottle group is reserved for the event program.

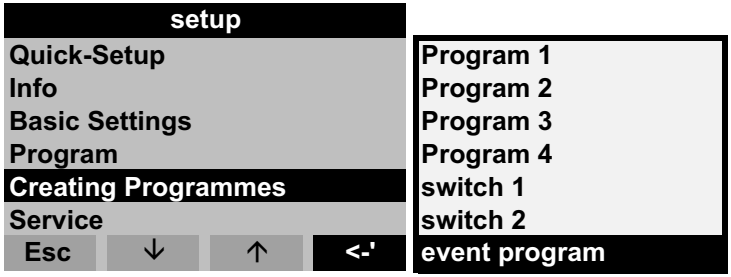


21 *Menu structure*

The bottles for the switching program can be defined as follows:	
No change	There is no bottle change when the system switches to the switching program.

Move	The next empty bottle is filled when the system changes to the switching program.
1-9 bottles	When the system switches to the switching program, 1-9 bottles are filled from the second distribution bottle group. The number of bottles that can be reserved for the switching program depends on the total number of bottles (max. 9 bottles).

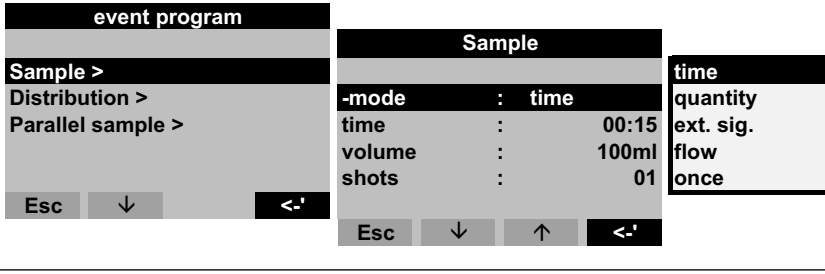
9.2.6 Creating an event program



A0023647-EN

22 Menu structure

Sampling mode



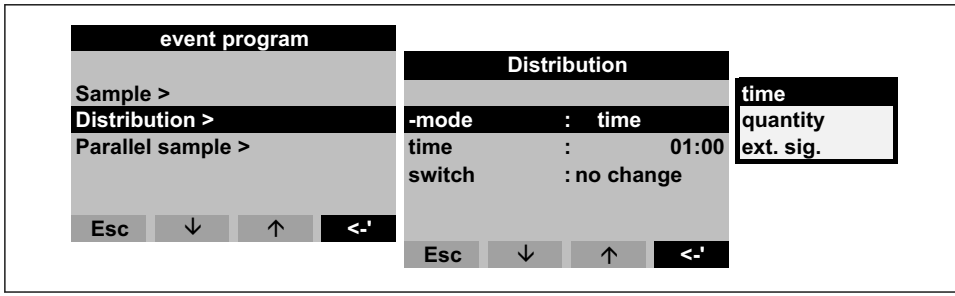
A0023648-EN

23 Menu structure

The same sampling options that are available in the main programs and switching programs (time-paced, volume-paced, flow-paced and external signal) are also available in the event program. In addition, the ONCE function can be selected. With this function, the sampler takes a sample once in the event program and returns immediately to the main program when the event signal is no longer pending.

Distribution

Separate bottles can be reserved for the event program. With the exception of parallel sampling, the following applies when distributing to bottles: The first bottle group of a distribution is reserved for the main programs. The second bottle group is reserved for the switching programs. The last bottle group is reserved for the event program.



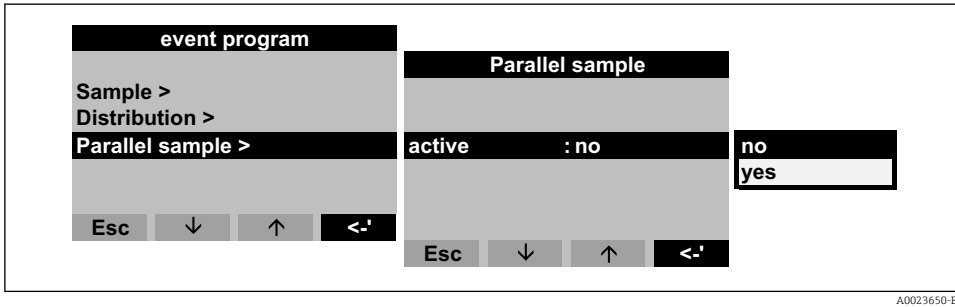
24 Menu structure

The bottles for the event program can be defined as follows:	
No change	There is no bottle change when the system switches to the event program.
Move	The next empty bottle is filled when the system changes to the event program.
1-9 bottles	When the system switches to the event program, 1-9 bottles are filled from the last distribution bottle group. The number of bottles that can be reserved for the event program depends on the total number of bottles (max. 9 bottles).

9.2.7 Creating a parallel program

Activating parallel sampling

Parallel sampling refers to the simultaneous sampling of two samples into separate vessels.



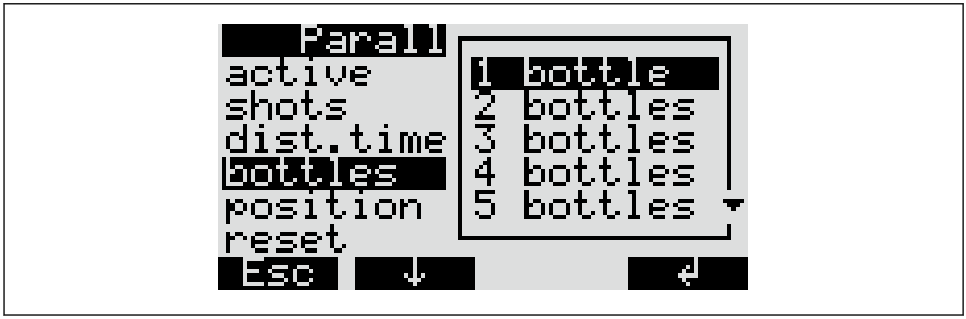
25 Menu structure

Sampling mode

Following sampling in a main, switching or event program, a separate bottle (reserve bottle) is additionally filled with sample (parallel sample). This means that the sampling mode for the parallel sample corresponds to the sampling mode in the parallel main, switching or event program.

Distribution

A bottle change is time-controlled in the parallel program. For parallel sampling, 1-x separate bottles - referred to as "reserve bottles" below - must be reserved.

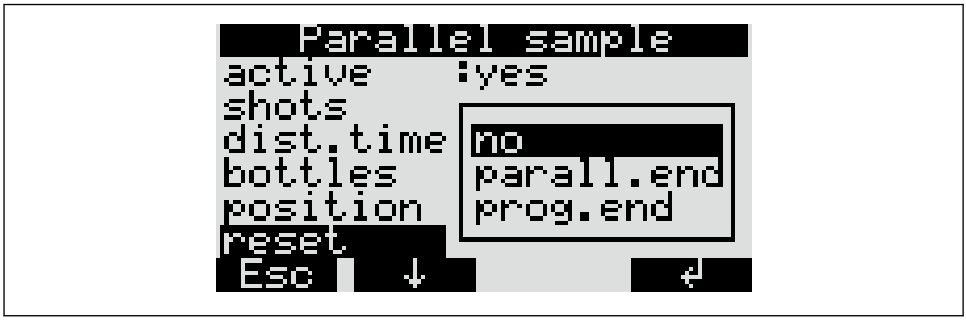


A0023662-EN

26 Menu structure

The position of the bottles for the parallel sample can be defined at the start (from vessel 1), in the center (before the bottles of the switching and event programs) or at the end of bottle distribution.

Program stop options for resetting parallel sampling



A0023663-EN

27 Menu structure

The “Reset” program stop of parallel sampling can be defined as follows:	
No	Parallel sampling is stopped automatically when the last reserve bottle has been filled.
Parall. end	When the last reserve bottle is filled, parallel sampling continues automatically with the first reserve bottle.
Prog. end	When the main program is completed, parallel sampling continues automatically at the first reserve bottle.

10 Diagnostics and troubleshooting

10.1 Troubleshooting instructions

Always start troubleshooting with the following checklists if faults occur after commissioning or during operation. The routine takes you directly to the cause of the problem and the appropriate remedial measures.

10.2 Process error messages

Message	Cause	Test or remedial measures
ERROR: RAM	New program transmitted	Acknowledge the message
ERROR: Clock	Electronics error	Repair by Service
ERROR: EEPROM	New program transmitted EEPROM defective	Acknowledge the message Repair by Service
ERROR: Conductivity 1	Contact between conductivity electrodes due to water/dirt	Clean the dosing system
ERROR: Conductivity 2		
ERROR: Air manager zero point	The air manager cannot find the zero position	Replace the air manager; if necessary have repaired by Service
ERROR: Tap zero point	Tap defective or jammed	Check the tap; if necessary replace the distribution system or have repaired by Service
ERROR: Distributor missing	Distributor not connected to controller	Check the connector of the distributor; if necessary, have repaired by Service
ERROR: 4-20mA < 3mA	Analog signal transmitter defective, no analog signal connected, cable open circuit	Check signal current, line and signal transmitter
ERROR: Temp. sample compartment	Temperature in sample compartment > 60°C Temperature sensor defective	Check installation conditions Repair by Service
ERROR: Temp. too high	Temperature in upper compartment > 70°C Temperature sensor defective	
ERROR: Temp. upper compartment	Temperature in upper compartment > 90°C Temperature sensor defective	
ERROR: Tap turned	Tap turned manually	Check tap
ERROR: Change distributor	Incorrect distribution selected in operation	Check distributor and change as necessary

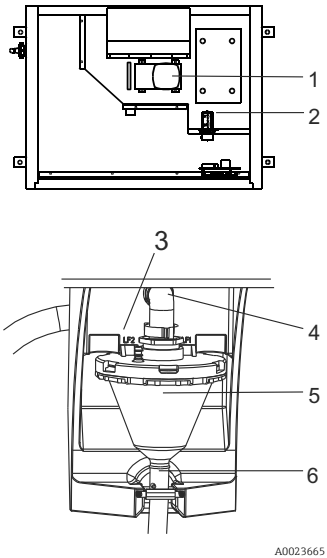
10.3 Process errors without messages

Problem	Cause	Test or remedial measures
Device does not switch on, or display stays dark	▪ No power supply ▪ Controller defective	▪ Check power connections ▪ Replace controller (only by specialist personnel)
Time constantly resets to 01.01.01.	Lithium cell defective	Replace lithium cell (only by specialist personnel)
Controller signals not accepted or outputs do not switch	▪ Incorrect program setting ▪ Incorrect wiring ▪ Electronics failure	▪ Check program setting ▪ Check wiring ▪ Replace controller (only by specialist personnel)
Sample not representative	▪ Siphon in sampling hose ▪ Connection not tight/sampling hose drawing in air ▪ Bottles not filling correctly ▪ Distributor tap stuck ▪ Incorrect bottle filled ▪ No sample cooling	▪ Check the sampling hose ▪ Check hoses/connections ▪ Check routing of the sampling hose ▪ Incorrect distribution selected in operation ▪ Calibrate the tap ▪ Check the distribution connection ▪ Distributor defective, replace the distributor ▪ Check the setting for the sample compartment temperature at the console ▪ Repair by Service
No sampling	▪ Connection not tight ▪ Sampling hose drawing in air ▪ Air manager defective ▪ Membrane pump defective	▪ Check tightness of hoses/connections ▪ Check routing of the sampling hose ▪ Check the air manager; if necessary have repaired by Service ▪ Check the membrane pump; if necessary have repaired by Service

11 Maintenance

11.1 Maintenance intervals

Endress+Hauser offers you a maintenance contract for your ASP Station 2000. A maintenance contract increases the operational safety of your device and reduces your staff's workload. Please contact your Endress+Hauser Service organization for more detailed information on maintenance contracts.



No.	Designation	Minimum maintenance interval
1	Membrane pump, set of gaskets	2 years
2	Air manager	2 years
3	Air filter	1 year
4	O-ring seals	1 year
5	Dosing glass	1 year
6	Diaphragm for hose clamp	1 year

11.2 Cleaning

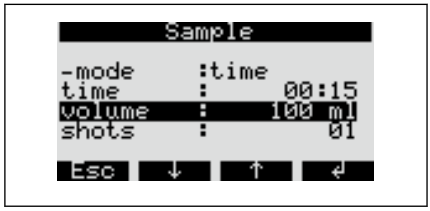
11.2.1 Device

Only use cleaning agents that will definitely not damage the mechanical and electrical device components. We recommend stainless steel cleaner for the cabinet body and water or soap, if applicable, for the parts conveying medium. To ensure reliable operation, it is important to clean the parts conveying medium regularly and thoroughly.

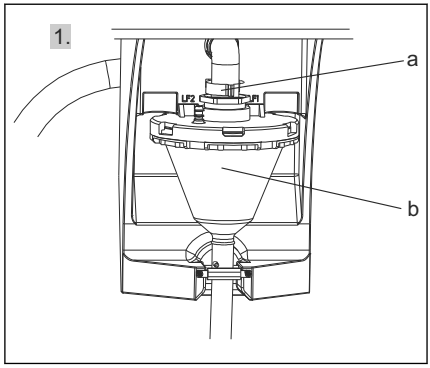
11.2.2 Parts conveying medium

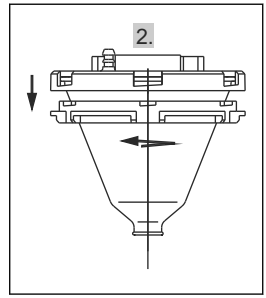
All parts carrying medium can be dismantled and mounted easily without the need for tools.

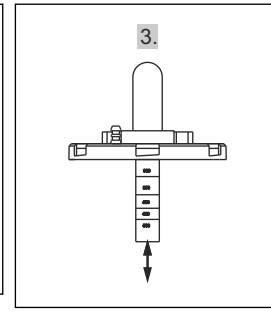
Cleaning the dosing glass



Check which sample volume is set in the active program.

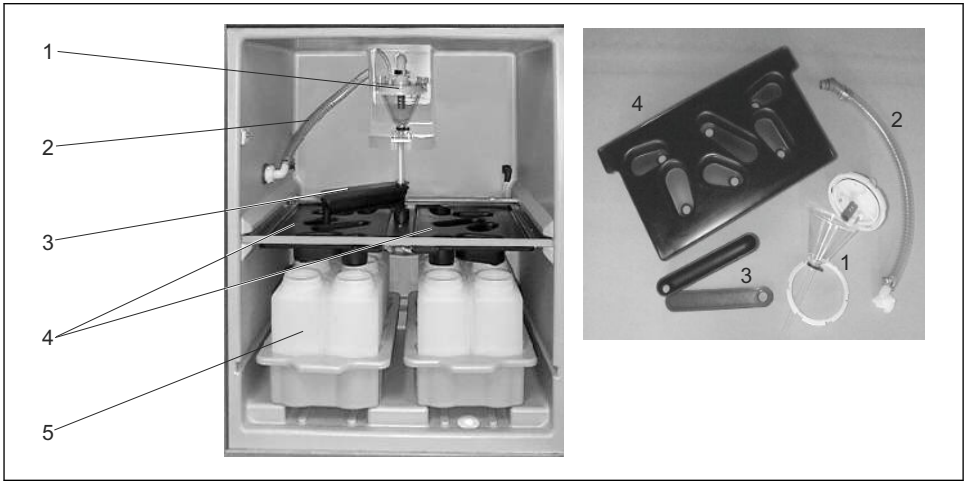






1. Release the clamping lever and air tube (a). Pull the dosing glass (b) forwards and remove it.
2. Open the bayonet lock and open the dosing glass.
3. Clean the dosing glass and the dosing glass cover with conductivity probes thoroughly with water or soap.
4. Then re-install the dosing glass in the reverse order.

Cleaning other parts conveying medium



A0023667

1. Internal intake hose (item 2): unscrew at the dosing system (item 1) and hose gland. Rinse with water or soap.
2. Tap (item 3): pull out towards the front and remove the cover. Rinse with water or soap.
3. Distribution pans (item 4): pull forwards out of the frame. Rinse with water or soap.
4. Remove the bottle trays (item 5). Clean the bottles and bottle trays with water or soap.

11.2.3 Sample compartment

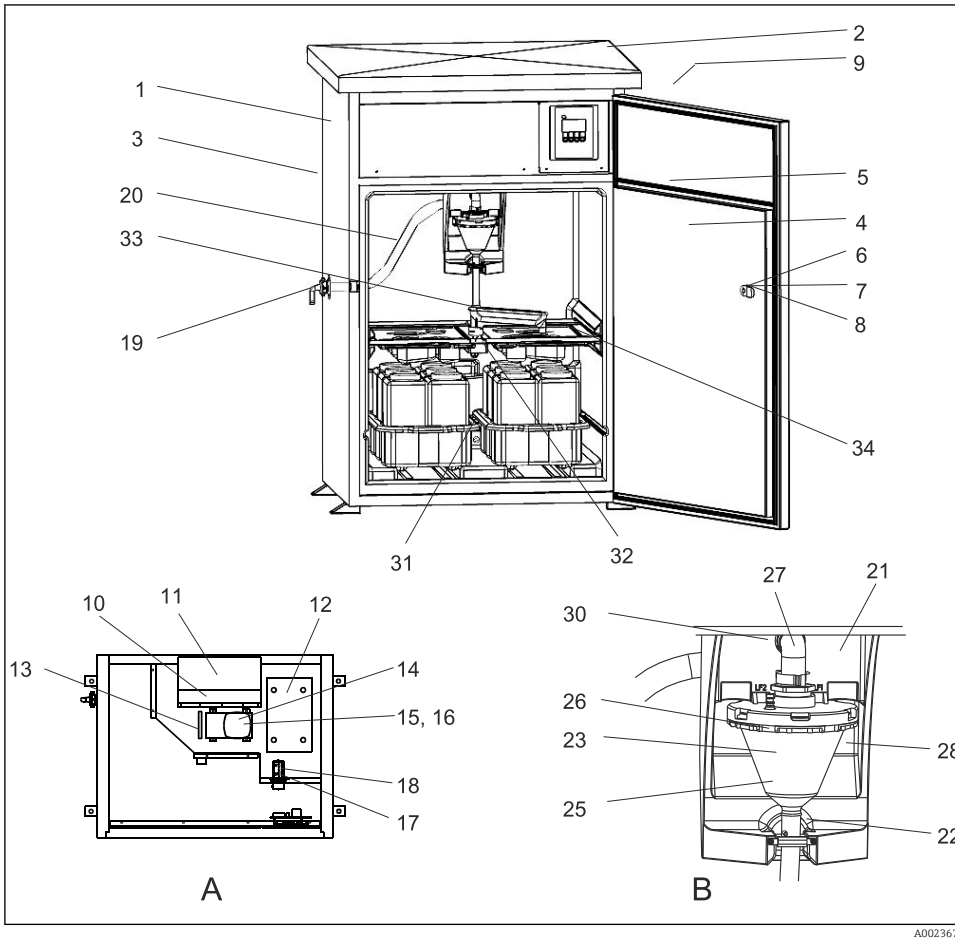
The sample compartment has a continuous inner plastic lining. Once the bottle trays, distribution pan and tap have been removed, the entire sample compartment can therefore be cleaned with a water hose.

11.2.4 Fan, liquefier

The fan and the liquefier must be purged with compressed air at regular intervals, depending on the ambient conditions (e.g. very dusty environments).

12 Repair

12.1 Spare parts



28 *Spare parts*

A Electronics compartment after roof installation
B Dosing system

Item	Designation	Order number
1	Housing (no spare part)	
2	Kit RPS20B: Roof cpl. 316(x)	71257657

Item	Designation	Order number
3	Kit RPS20B: Rear panel 316(x)	71257658
4	Kit RPS20B: Door 316(x)	71257659
5	Kit RPS20B: Set of gaskets for door	71257655
6	Key (no spare part)	
7	Kit RPS20B: Cylinder lock + keys	71256900
8	Kit RPS20B: Locking handle, without lock	71256901
9	Kit RPS20B: Retrofit door stop	71257705
10	Fan (no spare part)	
11	Kit RPS20B: Liquefier + fan	71257662
12	Kit RPS20B: Compressor + E-Box	71257663
	Kit RPS20B: Retrofit kit, cooling unit	71257664
	Kit RPS20B: LF-cable + Temp. sensor	71259914
13	Kit RPS20B: Heating top	71257671
14	Kit RPS20B: Membrane pump	71257675
15	Kit RPS20B: Pump: membrane set EPDM	71257669
16	Kit RPS20B: Pump: membrane set Viton	71257677
17	Kit RPS20B: Air manager complete	71257679
18	Kit RPS20B: Air manager: tubing set	71257681
None	Kit RPS20B: Vaporizer	71257665
	Kit RPS20B: Retrofit kit internal light	71257703
	Kit RPS20B: Small maintenance kit	71257707
	Kit RPS20B: Maintenance kit pump	71257710
19	Kit RPS20B: Equipment couplings	71257680
	Kit RPS20B: Sample feed	71257683
20	Kit RPS20B: Suction hose internal cpl.	71257684
21	Kit RPS20B: Carrier plate dosing chamber	71257694
22	Kit RPS20B: Diaphragm hose clamp	71259916
23	Dosing system (no spare part)	
25	Kit RPS20B: Acryl dosing chamber 200 ml	71257686
26	Kit RPS20B: Dosing chamber fixing ring	71259915
27	Kit RPS20B: Dosing bend	71257685
28	Kit RPS20B: Conductivity sensor set	71257696
30	Kit RPS20B: Dosing unit: Set of gaskets	71257687

Item	Designation	Order number
31	Kit RPS20B: Temp. sensor wet compartment	71257697
None	Kit RPS20B: Flange dosing unit cond. cpl.	71257691
	Kit RPS20B: Retrofit kit, heating bottom	71257673
	Kit RPS20B: 3 contact spring + cable	71257689
	Kit RPS20B: Locking handle dosing system	71257690
	Kit RPS20B: Locking handle bolt cpl.	71257693
32	Kit RPS20B: Rotary tap drive cpl	71257699
33	Kit RPS20B: Rotary tap cpl. + adapter	71257700
	Kit RPS20B: Adapter rotary tap	71257698
None	Kit RPS20B: Cable set rotary tap	71257701
	Kit RPS20B: Terminal board	71257702
	Kit RPS20B: Air filter for membrane pump	71257688
	Kit RPS20B: Dosing hose 15x2	71259919

12.2 Return

The sampler is repaired on site.

Contact your Endress+Hauser Service.

12.3 Disposal

The device contains electronic components. The product must be disposed of as electronic waste.

- ▶ Observe the local regulations.

13 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.	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
71251046	Kit RPS20B: flow assembly V4A, 316, without stand, with stand cover
71119408	Flow assembly, sample

14 Technical data

14.1 Power supply

See the "Electrical connection" section (→ 21)

14.1.1 Supply voltage

200 to 240 V AC, 50/60 Hz

Mains fluctuation

+/- 10%

Mains fuse

Max. 10 A

14.1.2 Power consumption

355 VA

14.1.3 Overvoltage protection

Overvoltage category 2

14.2 Environment

Pollution level 2

14.2.1 Ambient temperature

-20 to +40 °C (0 to 100 °F)

14.2.2 Storage temperature

–20 to 60 °C (–4 to 140 °F)

14.2.3 Electromagnetic compatibility

In accordance with EN 61 326

14.2.4 Electrical safety

In accordance with EN 61010-1, Class I equipment, environment < 2000 m (6500 ft) above MSL

14.3 Process

14.3.1 Process temperature

2 to 50 °C (36 to 120 °F)

14.3.2 Process pressure

Unpressurized

14.4 Mechanical construction

14.4.1 Design, dimensions

→ 15

14.4.2 Weight

Approx. 110 kg (242 lbs)

14.4.3 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

In contact with medium	
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

Index

A
Accessories 52
Adapting the device 31
Ambient temperature 53
Analog input 32

C
Cable types 21
Certificates and approvals 14
Check
  Connection 25
  Function 28
  Installation 20
Cleaning
  Device 46
  Fan, liquefier 48
  Parts conveying medium 46
  Sample compartment 48
Commissioning 28
Configuration
  Event program 40
  Inputs 31
  Main program 35
  Outputs 33
  Parallel program 41
  Program selection 34
  Sample volume 30
  Switching program 39
  Tap 30
Connecting the sampler 21
Connection
  Check 25
  Ensuring the degree of protection 24
  Sampler 21
  Supply voltage 53

D
Degree of protection 24
Designated use 6
Device description 8
Device design 8
Diagnostics 44
Digital inputs 31
Display 26
Disposal 51
Distribution 37, 39, 41, 42
Dosing system 9

E
Electrical connection 21
Electrical safety 54
Electromagnetic compatibility 53
Environment 53
Event program 40

F
Flow assembly 19
Function 9

I
Incoming acceptance 13
Installation
  Installation 19
  Installation conditions 15
  Post-installation check 20
  Sampling with a flow assembly 19
Installation conditions
  Connection for suctioning samples 18
  Dimensions 15
  Foundation plan 17
  Installation site 18

K
Key assignment 26

L
Laying the cable 21

M
Main program 35
Maintenance 46
Maintenance intervals 46
Materials 54

N
Nameplate 13

O
Operating concept 26
Operating elements 26
Operation 31

Operation options 26

P

Parallel program 41
Power supply 53
    Supply voltage 53
Process error messages 44
Process errors without messages 45
Process pressure 54
Process temperature 54
Product identification 13
Program selection 34
Program stop options 42

Q

Quick Setup 29

R

Removing the cover 21
Removing the rear panel 21
Repair 49
Return 51

S

Safety instructions 6
Sample distribution 10
Sample preservation 11
Sample volume 30
Sampling mode 36, 39, 40, 42
Scope of delivery 14
Start-stop operation 37
Storage temperature 53
Supply voltage 53
Switching on 28
Switching program 39
Symbols 4, 5
Synchronization 38

T

Tap 30
Technical data
    Environment 53
    Mechanical construction 54
    Process 54
Terminal assignment 23
Troubleshooting 44
Troubleshooting instructions 44

U

Use 6

W

Warnings 4
Weight 54



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