Technical information
TI 049R/09/e/04.96
Mat.Nr. 50079270

Transportable water sampler *asp-port 2*

Automatic sampling for liquids

A reliable partner
- For local or industrial waste water in sewage plants and for industrial and environmental self monitoring.
- For use by water authorities
  – for monitoring discharge into sewers
  – for monitoring water quality.
- In laboratories and environmental protection organisations
  – changing applications in varying areas.
- Suitable for outside use.
- Automatic, cyclic sampling at the touch of a button.
- Sample conservation in multiple bottles.
- Modular construction giving different distribution system options.

For universal application
- Self contained vacuum principle, no further feed systems required.
- Sampling modes: time / quantity or event controlled.
- Built in pump has no liquid contact.
- "Air-manager" no more electro-mechanical valves, no more corrosion.
- Double overfill protection in dosing chamber.
- Large diameter hose reduces the chance of blockages.
- 230 V mains version or 12 V battery powered unit.
- Mains version can be fitted with a heater.

Quality made by Endress+Hauser

ISO 9001

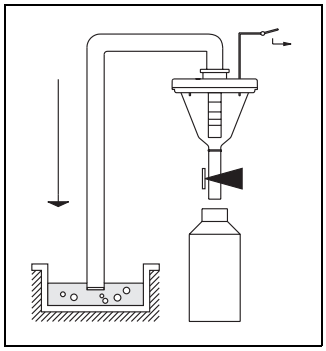
Endress+Hauser

Nothing beats know-how

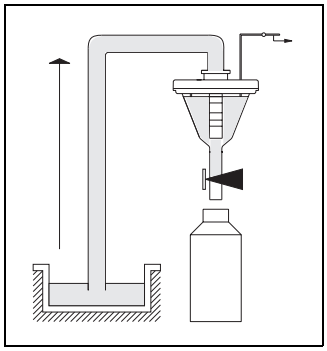
Sampling sequence

The microprocessor controlled water sampler is fitted with a diaphragm pump. Sequence control is performed by the built-in "air-manager" (suction, blow out, hose clamp open/close, etc.).

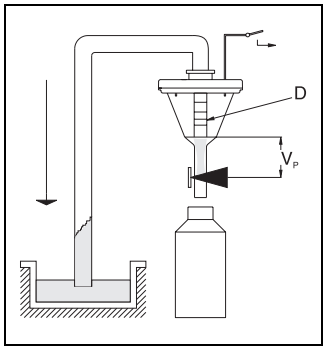
Vacuum principle



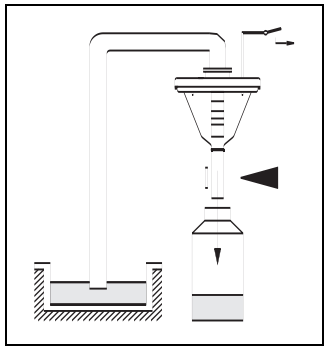
1. The dosing system is pneumatically isolated at the begining of each sampling sequence. The diaphragm pump blows air into the dosing chamber and through the suction hose clearing any obstructions.



2. A new sample is sucked into the dosing chamber until the electrodes fitted in the dosing chamber lid are active.



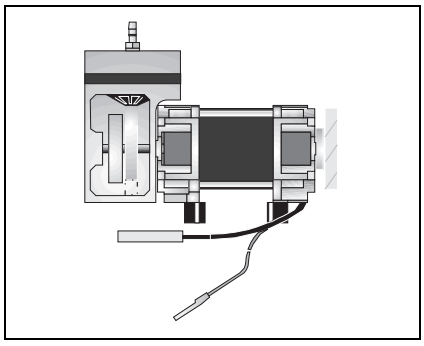
3. Dependent on the setting of the dosing tube D excess liquid flows back to the sampling point and the preset dosing volume (V_P) is dosed.



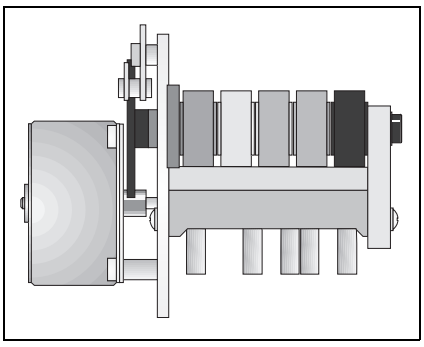
4. The hose clamp is opened and the sample is released into a container.

Pneumatic components

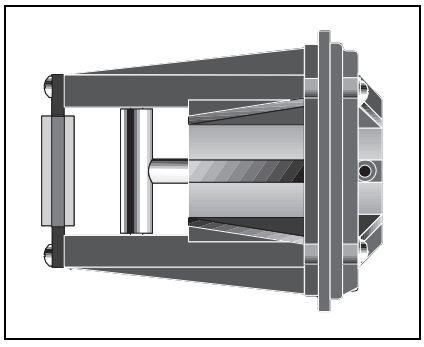
The vacuum diaphragm pump supplies the "air-manager" and the hose clamp valve.



Vacuum diaphragm pump

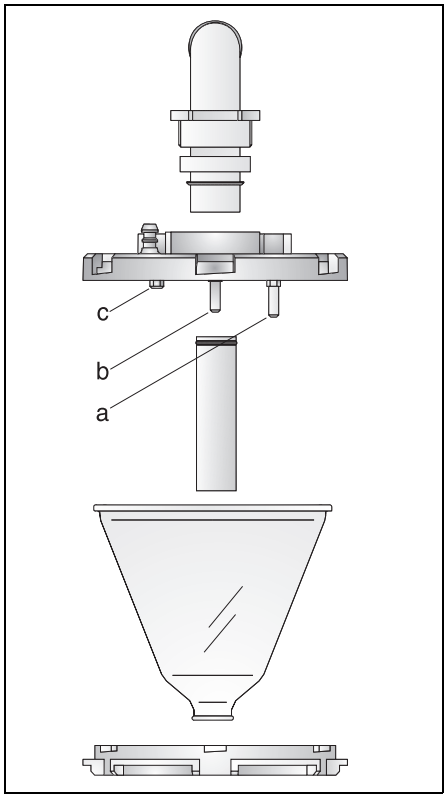


"air-manager" pneumatic controller constructed as a stepped cam switch



Pneumatic hose clamp valve with cylindrical membrane

The dosing system

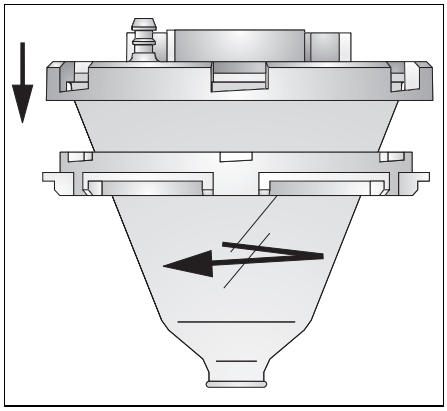


Dosing chamber, dosing tube and lid with conductivity level electrodes (a,b,c).

Double safety
There are three pins (conductivity level electrodes) in the lid of the dosing chamber, each of a different length.
In the suction phase the sample reaches the two longest electrodes (a and b). The controller recognises that the dosing chamber has been filled and the suction phase has ended.
The shortest electrode (c) should normally not be reached.

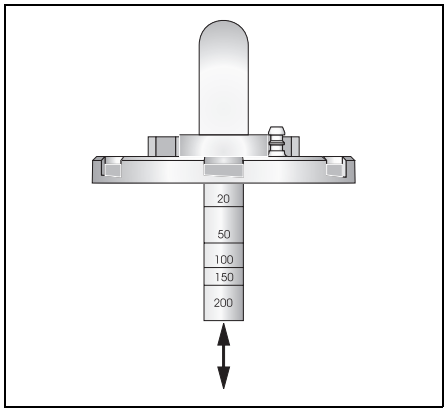
Should the liquid reach the short electrode this means the other electrodes are dirty.
The unit initiates an emergency stop and displays this as a message.

To remove this fault simply clean the conductivity electrodes.



Opening the dosing chamber

Easy handling
By twisting and pulling (bayonet fitting) the cover ring connection to the dosing chamber lid is removed.
The dosing chamber can now be removed from the lid.
The chamber and electrodes can now be cleaned without any obstructive cable connections.



Varying the dosing tube

Setting up sample volume
The sample volume is dependent on the position of the dosing tube.
Engraved markings on the side of the dosing tube assist in setting the volume.
Sample volumes of 20 ml to 200 ml can be set (option: 20 - 350 ml).

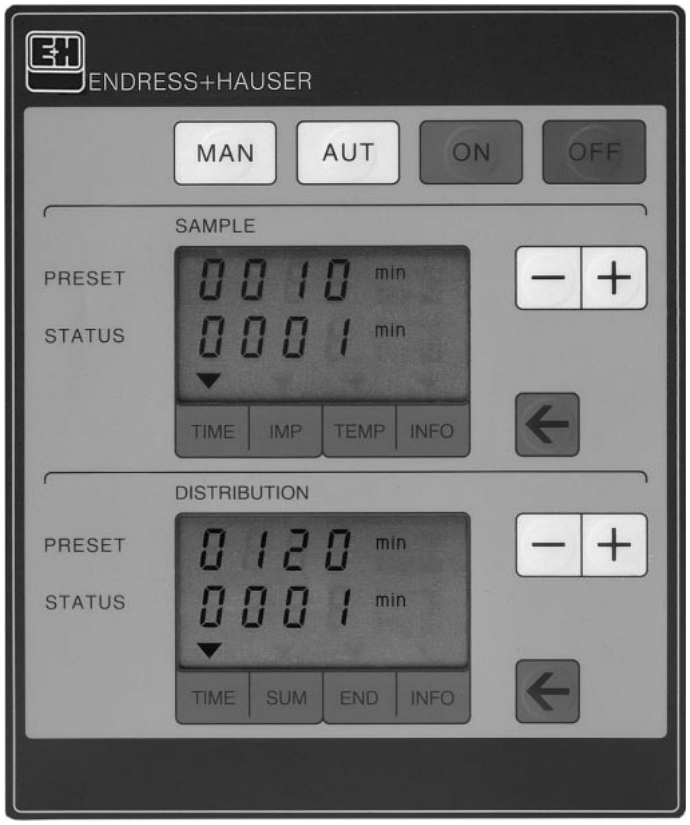
Choice of two controllers

Standard controller A:
Operating the AUT push button starts the automatic sample cycle. This can be initiated on a timed sequence, quantity proportional or by an external event.

Sample distribution is done either on a preset time (...minutes to bottle change) or after a preset number of samples per bottle.

Example:
Sampling is required every 10 minutes: The preset value is set to 10 min. The actual (status) value is increased by 1 every minute, sampling occurs once both counters register the same value. The status counter is reset to zero and the sequence is repeated.
Sample distribution is to be filling time per bottle every 2 hours; Set the preset value in the lower display to 120 min, the sample distribution system moves to the next container after 2 hours.

Other features:
1 impulse input for flow, 1 stop input, 2 outputs (sequence end and alarm). Presettable sample start time delay "count-down".



Controller A
The upper display indicates sampling sequences, the lower one the sample distribution

Multi functional controller D:
Expanded functions:
– Four line LC-Display
– Operator information for sample sequence programmes
– 6 user programmes
– Programme change criteria
– Timer functions
– Matrix operation

Other features:
1 impulse input for flow, 1 analogue input (eg. 0/4 to 20 mA), 1 stop input, 1 control input for event control or programme change, 3 presettable outputs for alarm, messages and signals.

Controller D
Matrix operation with alphanumeric display

Sample distribution and storage

Composite container or distribution
The sampler can operate using either a composite container or sample distribution system into more than one bottle. Changing from one form of distribution to another is done by simply exchanging the modular distribution systems. Retrofitting is also done by exchanging systems. Sample distribution enables timed allocation of individual bottle filling. Distribution into 24 bottles using a 2 hourly bottle change means that the sampler will be operational for at least 2 days.

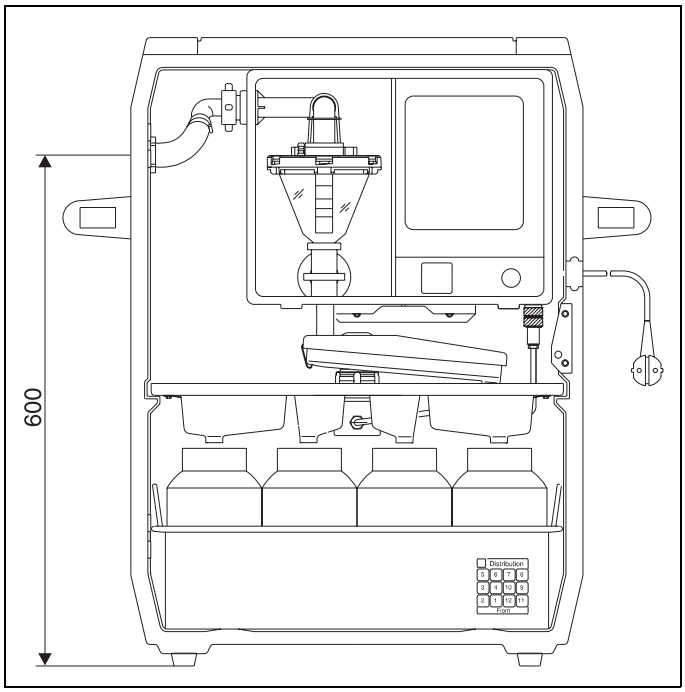
There are 5 sample distribution systems:
- 13 l composite container (no distribution)
- 4 x 9 l PE bottles (with distribution, no bottle tray)
- 12 x 1,9 l PE bottles (with distribution and bottle tray)
- 12 x 1 l glass bottles (with distribution and bottle tray)
- 24 x 1 l PE bottles (with distribution and bottle tray)

The bottle tray is constructed in stainless steel with carrying handles.

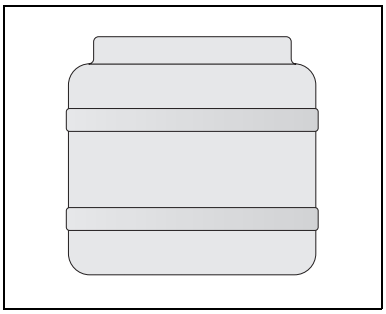
Sample distribution
The sampling programme always starts by releasing the first sample taken into the first bottle. The number of samples to be released into each bottle or the individual bottle filling time is presettable. Once the preset criteria has been reached the distribution arm moves to the next bottle position. Sampling finishes once the last bottle has been filled. This is also indicated by an event message. This function can be switched off causing the distribution system to continuously move round all the bottles (continuous operation).

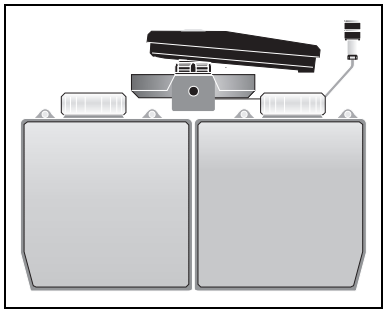
Notes:
- Maximum hose length 30 m.
- Suction height up to 6 m.
- Hose connections 13 mm and 15 mm.
- Sampling point level must always be below the sampler.
- Avoid creating syphons.
- Sampling from pressure lines is not possible.
- Install vertically on a level solid base.

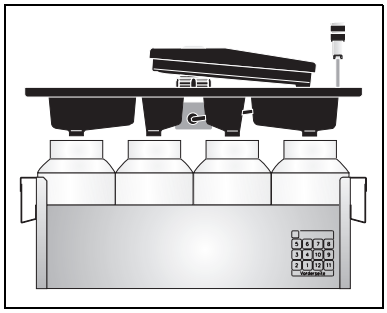
Battery operation
Battery capacity approx. 400 samples in 5 minute cycle with 3.5 m hose length.

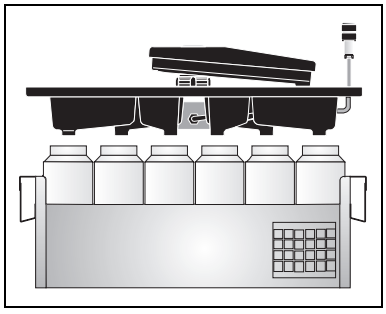


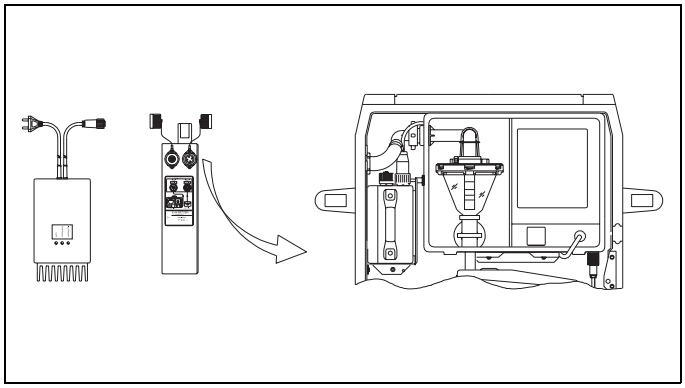
ASP-Port 2
with distribution


13 Liter composite container


4 x 9 Litre distribution

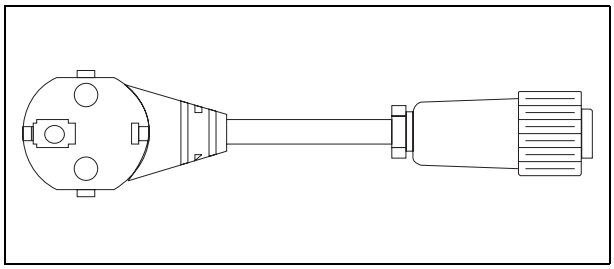

12 x 1,9 Litre distribution
Bottles and basket


24 x 1 Litre distribution
Bottles and basket



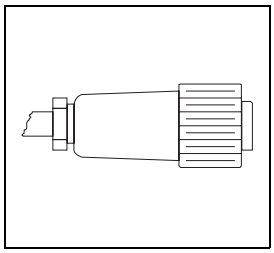
Electrical connections

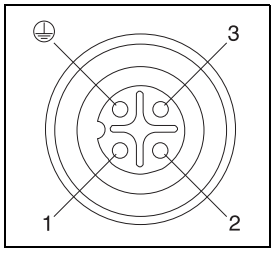
On mains versions (AC)



Connections marked on the amphenol connector:
1 = L
2 = not used
3 = N
⏚ = PE

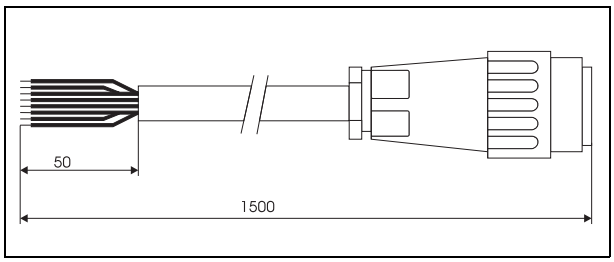
On DC versions (12 V DC)





Connections:
1 = not used
2 = Plus pole
3 = not used
⏚ = Minus pole

Signal cable with plug



Dimensions in mm

Plug connections:

Controller version A:

1	= white	Auxiliary voltage (-) 0 V, common
2	= brown	Auxiliary voltage (+) 8 to 18.5 V (output)
3	= green	Quantity impulses (input)
4	= yellow	External stop (input)
5	= grey	Do not use
6	= pink	Alarm (output)
7	= blue	Sequence end (output)
8	= red	Do not use

Cable LiYY 8 pole. (approx.1.5 m long)
Cores 7 x 0,23 / 0,25

Controller version D:

1	= white	Auxiliary voltage (-) 0 V, common
2	= brown	Auxiliary voltage (+) 8 to 18.5 V (output)
3	= green	Quantity impulses (input)
4	= yellow	External stop (input)
5	= grey	Do not use
6	= pink	Output 1
7	= blue	Output 2
8	= red	Do not use
9	= black	Auxiliary voltage (+) 8 to 18.5 V (output)
10	= violet	Analogue input (-)
11	= white/black	Analogue input (+)
12	= white/red	Output 3
13	= white/green	Control input
14	= brown/green	TXD
15	= white/yellow	RXD (+)
16	= white/blue	RXD (-)
17	= white/grey	0 V TTY
18	= white/brown	+U TTY

Cable LiYY 18 pole. (approx.1.5 m long)
Cores 7 x 0,23 / 0,25

Technical data

Housing (with handles and lock):
Dimensions H x W x D
approx. 740 x 695 x 455 mm
Material PUR-IHS
Weight approx. 28 kg
Protection class: Controller IP 55 to DIN 40050

Temperatures:
Allowable medium temperature:
> 0 °C to + 50 °C
Ambient temperature:
Without heater +0 °C to +40 °C
With heater -15 °C to +40 °C
Storage temperature: +5 °C to +40 °C

Minimum medium conductivity:
> 30 µS/cm (others on request)

Power supply:
230 V_{AC}, + 10% - 15%, 50/60 HZ
Option: 12 V_{DC}, range 11 - 14 V
Off < 9.8 V, On > 10.8 V

Power consumption:
Port A2:
12 V_{DC} version: 40 W,
OFF approx. 20 mA, ON approx. 25 mA, during sampling approx. 3.3 A.
AC version 50 W, with heater 80 W.
Port D2:
12 V_{DC} version: 45 W,
OFF approx. 20 mA, ON approx. 25 mA, during sampling approx. 3.3 A.
AC version 65 W, with heater 95 W.

Safety:
To EN 61010-1

EMC-immunity:
To EN 50082-1

RF:
To EN 50081-2

Data security:
> 500 h during power failure
Condition: 7 days on power before failure.

Transfer:
Transfer system: Built-in diaphragm pump
Transfer conditions: Height max. 6 m at 1013 hPa, distance max. 30 m at 1013 hPa, suction speed 0.6 m/s at 4 m suction height and 4 m hose length, 13 mm hose diameter.
Sampling from pressure lines is not possible.

Dosing:
Volume per sample presettable from 20 ml to 200 ml.
(option 20 - 350 ml suction speed < 0.6 m/s)

Sample distribution:
Using a stepper motor driven distribution tap and distribution pan.
Each step controlled by either time or number of samples.
Presettable fill time per bottle or number of samples per bottle. Presettable cycle end or continuous operation.

ASP-Port A2:

Sampling using the vacuum principle:
Time proportional 1 min. to 9999 min.
Quantity proportional 1 imp. to 9999 imp.
Event controlled 1 Imp.
Manual start using MAN push button.

Count down:
Presettable time delay before automatic sample start
0 ... 9999 minutes.

Impulse input (for quantity impulses):
Optocoupler input positive edge controlled, galvanically isolated.
Min. impulse length 10 ms,
Low 0 ... + 3 V, High + 7 ... + 27 V.

Stop input:
Optocoupler input positive edge controlled, stop when High.
Low 0 ... + 3 V, High + 7 ... + 27 V.

Two outputs:
Transistor outputs NPN open collector
I_{max} 50 mA, U_{max} + 25 V_{DC}
Deactive during alarm and power failure.

Auxiliary output voltage:
Uext + 8 ... + 18.5 V_{DC} (200 mA).

ASP-Port D2:

Sampling:
6 presettable programmes, presettable programme change criteria
(eg. Q-t changeover etc.)
Sample types:
Time proportional 1 min. to 9999 min.
Quantity proportional
Event controlled 1 Imp.
Manual start using MAN push button.

Timer:
Individual start/stop operation or daily/weekly switch functions.

Impulse input:
Optocoupler input positive edge controlled, galvanically isolated.
Min. impulse length 10 ms,
Low 0 ... + 3 V, High + 7 ... + 27 V.

Analogue input:
Switchable as current or voltage input
Current input: 0 ... + 20 mA
+ 4 ... + 20 mA
Input impedence 50 Ohm
Voltage input: 0 ... + 1 Volt
0 ... + 10 Volt.
Impedence 1 Megaohm

Stop input:
Optocoupler input, galvanically isolated, stop when High.
Low 0 ... + 3 V, High + 7 ... + 27 V.

Control input:
Optocoupler input, galvanically isolated, presettable as programme change or event input.
Programme change when High, programme return when Low.
Event command on positive edge.
Min. impulse length 20 m/s.
Low: 0 ... + 3 Volt, High: + 7 ... + 27 Volt.

Three outputs:
For alarms, events and signals, allocated during setting up.

Outputs 1 and 2:
Transistor output NPN open collector
I_{max} 50 mA, U_{max} + 25 V_{DC}
Deactive during alarm and power failure.

Output 3:
Transistor output NPN open collector
I_{max} 50 mA, U_{max} +25 V_{DC}.
Switch function can be defined as "Standard" or "Inverse" during setting up.

Auxiliary output voltage:
U_{ext} + 8 ... + 18,5 V_{DC} (200 mA).

Interface:
TTY: Formated for data printers Uni-Bit or Primo-Bit.
V24: Option.

How to order

ASP-Port 2

Controller type

A Controller A /for standard applications
D Controller D, /Danish
E Controller D, /English
F Controller D, /French
G Controller D, /German
I Controller D, /Italien
N Controller D, /Dutch
S Controller D, /Spanish

Power supply / Heater

1 230 V_{AC}
2 230 V_{AC} with heater
3 12 V_{DC} without battery
4 12 V_{DC} with battery
5 12 V_{DC} with charger and battery

Sample containers / distribution

A 1 x 13 l PE container
B 4 x 9 l PE bottles
C 12 x 1,9 l PE bottles
D 12 x 1 l Glass bottles / white
E 24 x 1 l PE bottles

Dosing phase

A Pressureless dosing
B Dosing under pressure

RPT10-					← **Order code**

Accessories

Accessory	Order code
Suction hose, internal diameter 13 mm	50074496
Suction hose, internal diameter 15 mm	50031904
Suction hose, internal diameter 16 mm	50076633
Hose weight 400 mm V2A 13 mm	UE-SDH
Hose weigth 400 mm V2A 15 mm	UE-SDB
Submersion armature PVC, V2A (pivoted in all directions)	50038168
Hose filter complete	UE-LDK
Glass dosing chamber with fixings (350 ml)	UE-LDL
12 V / 3A/ IP 20 charger	50046154
12 V / 10 Ah battery pack	50046155
13 l container with lid and stopper	50038012
4 x 9 l ASP-Port distribution with bottles	50059862
12 bottle ASP-Port distribution	UE-SVF
12 x 1,9 l - PE bottle ASP-Port spare tray	FLKORB-F
12 x 1 l - glass bottle ASP-Port spare tray	FLKORB-G
24 bottle ASP-Port distribution	UE-SVG
24 x 1 l - PE bottle ASP-Port spare tray	FLKORB-C

United Kingdom

Endress+Hauser Ldt.
Floats Road
Manchester
M23 9NF
Tel. 0161-998 0321
Fax. 01661-998 1841

Export division

E+H II
Endress+Hauser Instruments International
Postfach 2222
79574 Weil am Rhein
Germany
Tel. (07621) 975-02
Fax. (07621) 975-346

Endress+Hauser
Nothing beats know-how

TI 049R/09/e/04.96 Mat.-Nr. 50079270 Printed in France/EHF CV4.2