Technical Information
Liquiport 2010 CSP44

Automatic sampler for liquid media
Integrated multiparameter controller with two measuring channels and digital Memosens technology as an order option

Application
Liquiport 2010 CSP44 is a portable sampler designed for the fully automated removal and defined distribution of liquid media.

- Municipal and industrial sewage treatment plants
  - Self-monitoring
  - Process monitoring
  - Monitoring of indirect dischargers
  - Sewage system monitoring
- Authorities and Water Conservancy Boards:
  - Water pollution control and water quality
  - Monitoring of indirect/direct dischargers
  - Laboratories and hydrological institutes

Depending on the version ordered, one or two digital sensors with Memosens technology can be connected to the CSP44. Furthermore, two 0/4 to 20 mA analog inputs/outputs, two binary inputs/outputs and a cleaning function are available as optional extras.

Your benefits

- Simple and easy to use:
  - Swift menu guidance, navigator and large display
  - Parts carrying medium are easy to disassemble, making cleaning and maintenance tasks easier
  - Sampler base can be locked and carried separately
- Flexible:
  - Practice-oriented programs ranging from simple time programs to event programs
  - Functionality can be extended by installing modular electronic components
- Communicative:
  - Integrated data logger for recording measured values
  - Service interface for data transmission
- Safe:
  - Lockable sampler base for tamper-proof samples

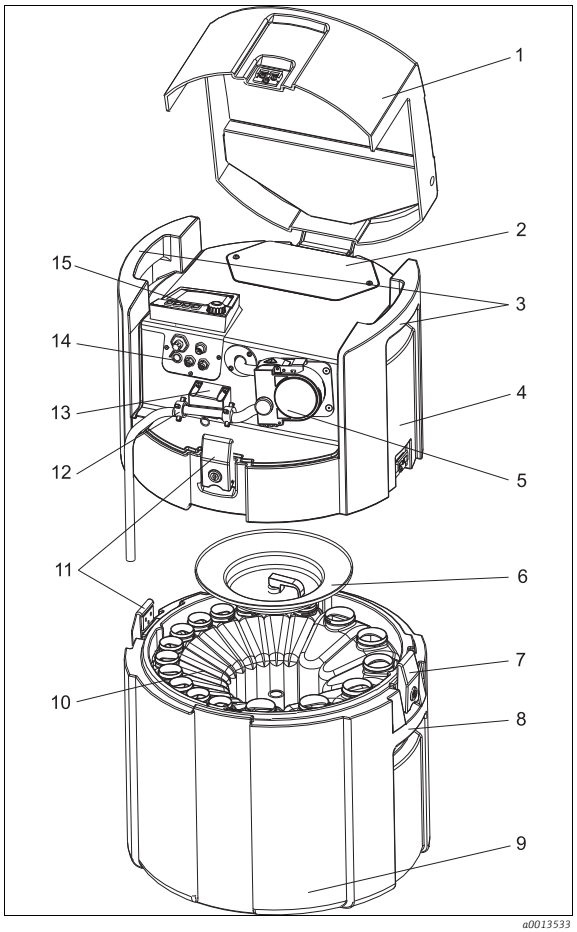
Endress+Hauser
People for Process Automation

Function and system design

Liquiport 2010 CSP44 sampler

A complete sampling unit comprises:

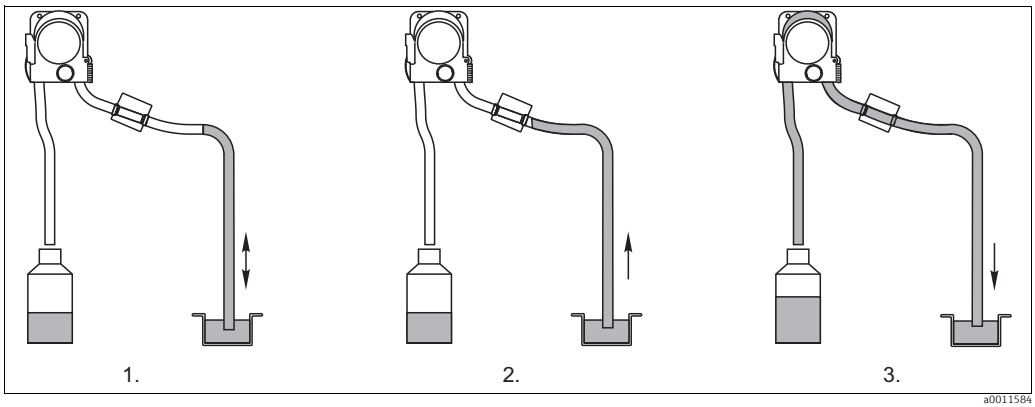
Sampler with
- Controller with display, soft keys and navigator
- Peristaltic pump for sampling
- PE or glass sample bottles for sample preservation
- Sampling chamber temperature regulator (optional) for safe sample storage
- Suction line with suction head



Example of a Liquiport 2010 CSP44

1	*Device cover*
2	*Cover of battery compartment*
3	*Top handles*
4	*Upper compartment*
5	*Peristaltic pump with pump hose*
6	*Bottle clamp*
7	*Fastening latches*
8	*Bottom handles*
9	*Sampler base*
10	*Bottle distribution*
11	*Fastening latches*
12	*Hose connection*
13	*Medium detection system*
14	*Electrical connections*
15	*Controller*

Mode of operation

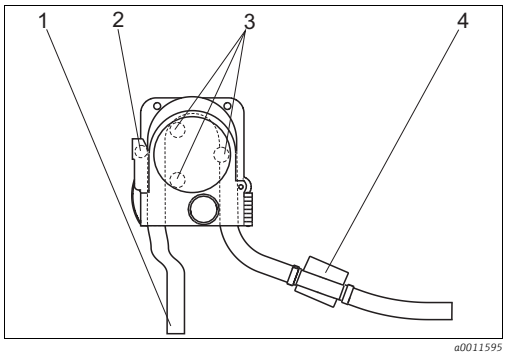


Sampling steps with a peristaltic pump

Sampling takes place in three steps:

1. **Rinse**
   The peristaltic pump runs in reverse and forces medium back to the sampling point.
2. **Intake**
   The peristaltic pump runs forward and draws in medium. If the medium detection system detects the sample, the pump is controlled by the flow and the specified sample volume is calculated automatically.
3. **Drain**
   The pump runs in reverse again and forces the medium back to the sampling point.

One advantage this system offers for obtaining a representative sample is the possibility of rinsing the suction line several times:
Medium is initially drawn in until the medium detection system reacts, then the pump switches and forces the medium back to the sampling point. This process can be repeated a maximum of three times. The sample is then taken as described.



1 Pump tubing
2 Safety switch (optional)
3 Pump rollers
4 Medium detection system (patented)

Peristaltic pump

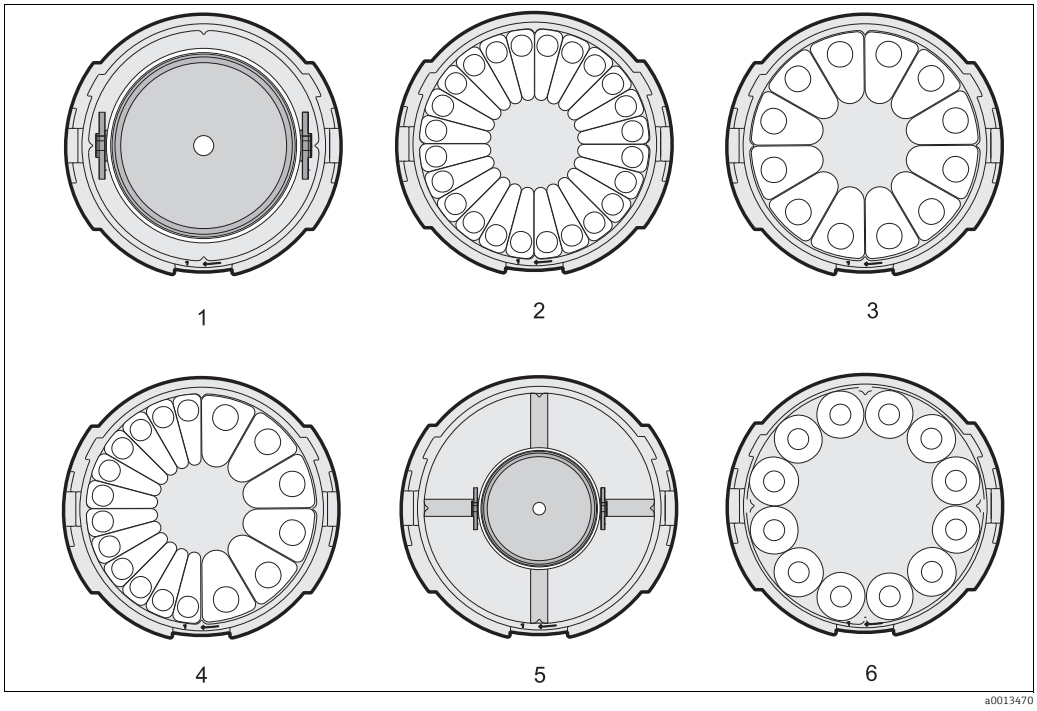
The pump rollers deform the hose, thereby causing a negative pressure and the suction effect.
The medium detection system is based on a pressure sensor which detects the difference between a pipe that is filled and not filled.
Thanks to a patented process for automatically detecting the suction height, the user does not have to enter the suction height or suction line length. The self-learning software guarantees that the sample volume remains constant.
An optional safety switch integrated in the pump housing immediately switches off the pump when the pump is opened (recommended if third-party staff are performing maintenance work).

Sample distribution

A distribution arm distributes the sample liquid into the individual bottles. In addition to a 20-liter PE composite container, various other bottle configurations are also available.
The distribution versions can be changed easily without the need for special tools. The Liquiport 2010 CSP44 allows the flexible configuration of sample distribution. Individual bottles and bottle groups can be defined freely for main, switching and event programs.

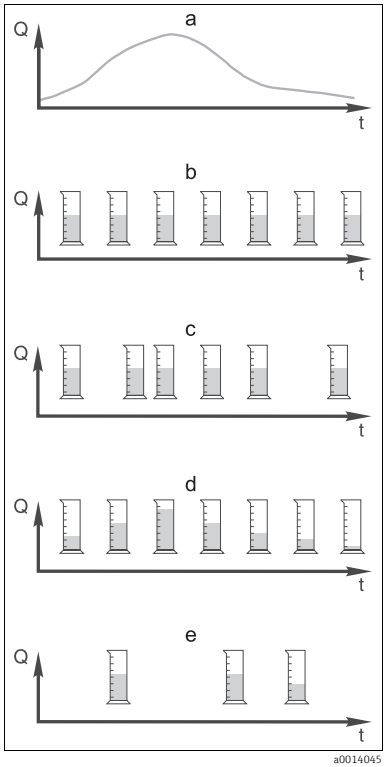
Sample preservation

The sample bottles are located in the sampler base. The sampler base can be sealed with a cover and transported separately from the upper sampler compartment.
All parts that transport medium (distribution arm, dosing system, distribution plate…) can be removed and cleaned easily without the need for tools.



Sample preservation options

Sampling control



Sampling control

a. Flow curve

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

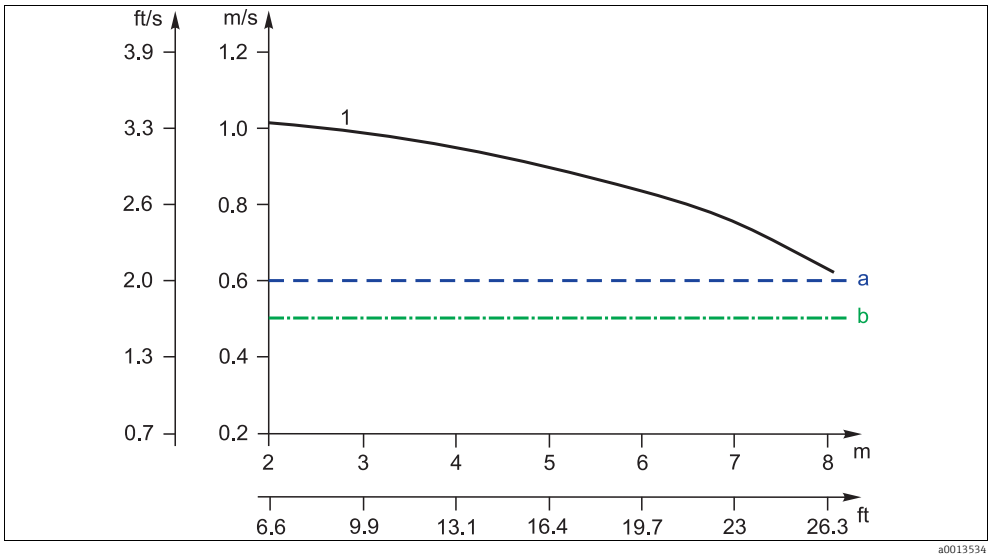
c. **Volume-proportional sampling**
A constant sample volume is taken at variable intervals (depending on the inflow volume).

d. **Flow-proportional sampling**
A variable sample volume (the sample volume depends on the inflow) is taken at regular intervals (e.g. every 10 min).

e. **Event-controlled sampling**
Sampling is triggered by an event (e.g. pH limit value). Sampling can be time-paced, volume-paced or flow-paced, or single samples can be taken.

Single and multiple samples can also be grouped in a program in addition to the sampling methods listed. Furthermore, the software allows interval sampling, switchover and event functions. The latter permit up to 24 subprograms to be active simultaneously for a variety of applications.
A sampling table makes it possible for users to program the bottle assignment, time interval and sample volume.
Signals for external control can be connected via 2 analog inputs and 2 binary inputs in the standard version of the product. Customized text is entered to ensure the correct assignment of the inputs in the memory.

Intake speed



Intake speed in m/s with suction height in m

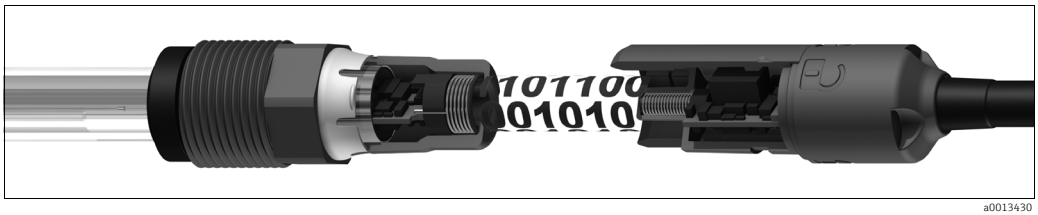
a Intake speed as per Ö 5893 (Austrian standard), US EPA
b Intake speed as per EN 25667, ISO 5667
1 ID 10 mm (3/8") peristaltic pump

Dependability

Reliability

Memosens technology

Memosens makes your measuring point safer and more reliable:
- Non-contact, digital signal transmission enables optimum galvanic isolation
- No contact corrosion
- Completely watertight
- Laboratory sensor calibration possible, thus increasing measured value availability
- Predictive maintenance thanks to recording of sensor data, e.g.:
  - Total hours of operation
  - Hours of operation with very high or very low measured values
  - Hours of operation with high temperatures
  - Number of steam sterilizations
  - Sensor condition



Sensor Check System (SCS)

The Sensor Check System (SCS) monitors the high impedance of the pH glass.
An alarm is triggered if a minimum impedance is not reached or if a maximum impedance is exceeded.
- The main cause of decreasing high-impedance is glass breakage.
- Causes of increasing impedance are:
  - dry sensor
  - worn out pH glass membrane.

The upper and lower limit values for the SCS can be switched on/off independently of each another.

Process Check System (PCS)

The PCS (Process Check System) tests the measuring signal for stagnation. If the measuring signal does not change over a certain period of time (several measured values), an alarm is triggered.

Main causes of stagnating measured values:
- Sensor is dirty or outside of medium
- Sensor is defective
- Process error (e.g. through control system)

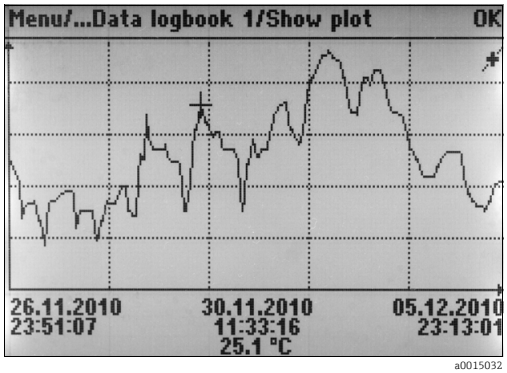
Sensor Condition Check (SCC)

This function monitors the electrode status or the degree of wear and tear on the electrode. The status is conveyed via the messages "SCC electrode status bad" or "SCC electrode status satisfactory". The electrode status is updated following each calibration.

Maintainability

Memory

- Independent, integrated ring memories (FIFO) or stack memories for recording
  - an analog value (e.g. flow, pH value, conductivity)
  - events (e.g. power failure)
  - sample statistics (e.g. sample volume, filling times, bottle assignment)
- Program memory: max. 100 programs
- Data logbooks
  - Adjustable scan time: 1 to 3600 s (1 h)
  - max. 8 data logbooks
  - 150,000 entries per logbook
  - Graphic display (load curves) or numeric listing
- Calibration logbook: max. 75 entries
- Hardware logbook:
  - Hardware configuration and modifications
  - max. 125 entries
- Version logbook:
  - e.g. software updates
  - max. 50 entries
- Operation logbook: max. 250 entries
- Diagnostic logbook: max. 250 entries



Data logbook: Graphic display

Mathematical functions (virtual process values)

In addition to "true" process values provided by connected physical sensors or analog inputs, you can have maximum 6 "virtual" process values calculated using mathematical functions.

The "virtual" process values can be:
- issued via a current output or fieldbus
- used as a control variable
- assigned as a measured variable to a limit contactor
- used as a measured variable to trigger cleaning
- displayed in user-defined measuring menus.

These mathematical functions are possible:
- pH calculation based on two conductivity values as per VGB 405 RL, e.g. in boiler feedwater
- Difference between two measured values from different sources, e.g. for membrane monitoring
- Differential conductivity, e.g. for monitoring the efficiency of ion exchangers
- Degassed conductivity, e.g. for process control systems in power plants
- Redundancy for monitoring two or three redundant measuring sensors
- rH calculation based on measured values of a pH sensor and an ORP sensor

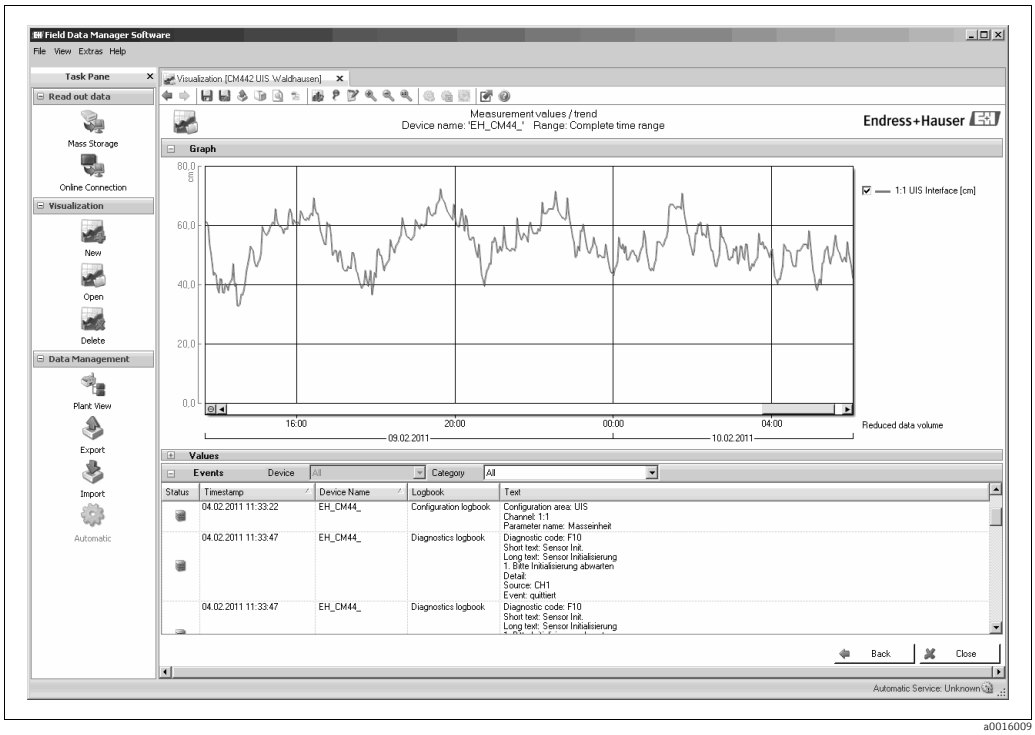
FieldCare and Field Data Manager

FieldCare

Software based on FDT/DTM technology for configuration and asset management
- Complete device configuration when connected via FXA291 and service interface
- Access to a number of configuration parameters and identification, measuring and diagnostic data when connected via HART modem
- Logbooks can be downloaded in CSV format or binary format for "Field Data Manager" software

Field Data Manager

Visualization software and database for measuring, calibration and configuration data
- SQL database which is protected against manipulation
- Functions to import, save and print out logbooks
- Load curves to display measured values



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Field Data Manager: Load curves

Safety

Real-time clock

The device contains a real-time clock. In the event of a power failure, a button cell battery is used. This ensures that if the device is restarted, the date and time settings are retained and the time stamp for the logbooks is correct.

Data security

All settings, logbooks etc. are stored in a non-volatile memory to ensure that the data are retained even if there is a disruption to the power supply.

Input

Input types (optional)

- Up to 2 analog inputs
- Up to 2 binary inputs
- 1 or 2 digital inputs for sensors with Memosens protocol

Measured variables

--> Documentation of the connected sensor

Temperature inputs (optional)

Measuring range

-30 to 70 °C (-20 to 160 °F)

Input type

Pt1000

Accuracy

±0.5 K

Binary input, passive (optional)

Span

12 to 30 V, galvanically isolated

Signal characteristics

Minimum pulse width: 100 ms

Analog input, passive/active (optional)

Span

0/4 to 20 mA, galvanically isolated

Accuracy

±0.5 % of measuring range

Output (optional)

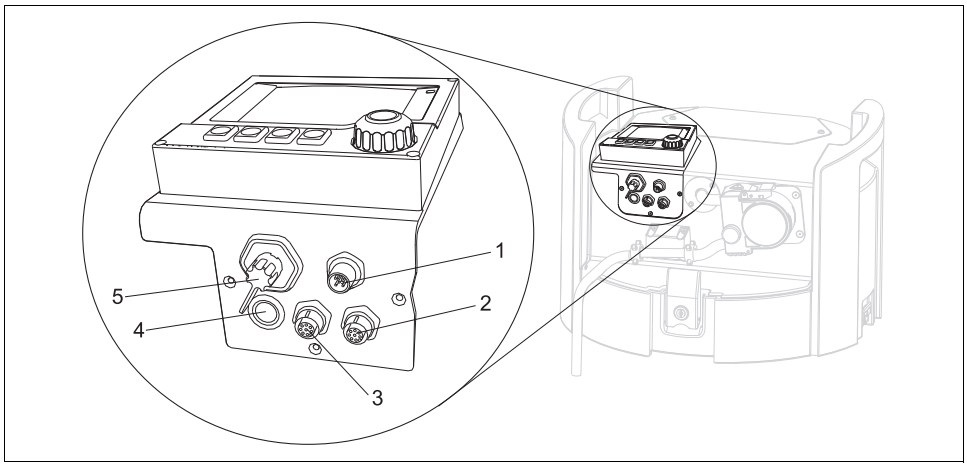
Output types

Up to 2 binary outputs:
Open collector, max. 30 V, 200 mA

Up to 2 x 0/4 to 20 mA, active, galvanically isolated from one another and from the sensor circuits

Power supply

Electrical connections



Electrical connections of the controller

1 Connection socket for charger
2 Socket for M12 sensor connector (optional)
3 Socket for M12 sensor connector (optional)
4 Connection socket for signal cable (optional)
5 Service interface

--> For a detailed wiring diagram, see the Operating Instructions for Liquiport 2010 CSP44

Supply voltage

Sampler: internal 24 V DC, 7.2 Ah lead-acid battery

The sampler cannot be operated without the battery.

Chargers for Liquiport 2010 CSP44:

Suitable for outdoor use IP 67	100 to 240 V AC; charging power 2.0 A; also suitable for buffer charging operation
Indoors	100 to 240 V AC; charging power 2.0 A; also suitable for buffer charging operation
Buffer charging operation means that the sampler is in operation during the charging process.	

Specifications for the charger for Liquiport 2010 CSP44:
- Max. output current = 2 A
- Max. output voltage = 29.5 V
- Additional isolation
- Constant current
- CSA or UL recognized as per UL 60950-1, UL 60601-1 or UL 61010-1, or as per the relevant CSA standards

Power consumption

Max. 60 W (only applies if the chargers specified by the manufacturer are used)

Battery capacity

42 hours ≙168 samples (with a sampling interval of 15 minutes, a sampling volume of 100 ml and a suction height of 4 meters)
Standby capacity: 144 hours

The specifications are valid with switched off analog input and devices without Memosens input.

Performance characteristics

Sampling methods

- Event sampling
- Single and multiple samples
- Sampling table
- In proportion to time
- In proportion to volume
- In proportion to flow

Dosing volume

10 to 10,000 ml (0.3 to 340 fl.oz.)

A sample volume < 20 ml can vary in dosing accuracy and repeatability, depending on the application.

Dosing accuracy

±5 ml (0.17 fl.oz.) or ±5 % of the set volume

Repeatability

5 %

Intake speed

> 0.5 m/s (> 1.6 ft/s) for ≤ 10 mm (3/8") ID, in accordance with EN 25667, ISO 5667
> 0.6 m/s (> 1.9 ft/s) for 10 mm (3/8") ID, in accordance with Ö 5893 (Austrian standard), US EPA

Suction height

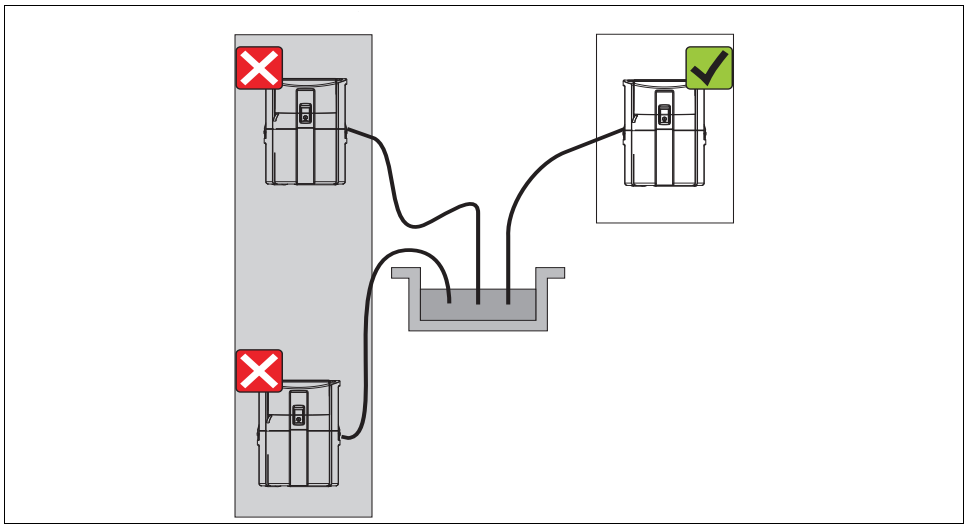
Max. 8 m (26 ft)

Hose length

Max. 30 m (98 ft)

Installation

Mounting conditions



Liquiport 2010 CSP44 mounting location

The suction line must be routed with a downward gradient to the sampling point. Avoid siphoning!

Environment

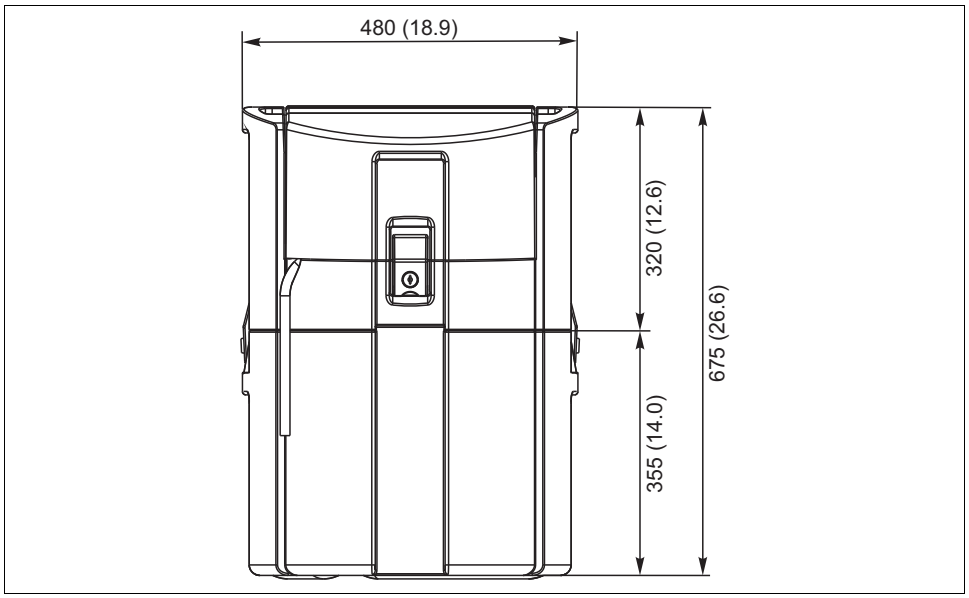
Ambient temperature range	0 to 40 °C (32 to 100 °F) Do not expose the device to strong fluctuations in temperature and direct sunshine!
Storage temperature	-20 to 60 °C (0 to 140 °F)
Degree of protection	Sampler with cover closed: IP 54 Controller: IP 65
Electromagnetic compatibility	Interference emission and interference immunity as per EN 61326-1: 2006, class A for industry
Electrical safety	In accordance with EN 61010-1, class III equipment (charger: class I equipment), environment ≤ 2000 m (6500 ft) above MSL. The device is designed for Pollution Degree 2.
Relative humidity	10 to 95%, not condensing

Process

Medium temperature range	2 to 50 °C (36 to 122 °F)
Process pressure	Unpressurized
Medium properties	Sample media have to be free of abrasive substances. Pay attention to the material resistance of the wetted parts.

Mechanical construction

Dimensions



Dimensions of Liquiport 2010 CSP44, standard version. Engineering unit mm (in).

Weight

	Liquiport 2010 CSP44
Empty weight	15 kg (33 lbs)
Total weight with battery and 24 x 1 l bottles	19 kg (42 lbs)
Upper compartment with battery	10 kg (22 lbs)
Base with 24 x 1 l bottles	9 kg (20 lbs)

Material

	Liquiport 2010 CSP44
Housing	Plastic PE
Housing parts	Plastic PE
Bottles	Plastic PE, glass (depending on version)
Distribution arm	Plastic PE
Sensor housing	Plastic PP
Pump tubing	Silicone
Intake hose	Reinforced PVC, EPDM black

Operability

Operating concept

The simple and structured operating concept sets new standards:
- Intuitive operation with the navigator and soft keys
- Fast configuration of application-specific measurement options
- Easy configuration and diagnosis thanks to plain-text display
- All languages that can be ordered are available in every device

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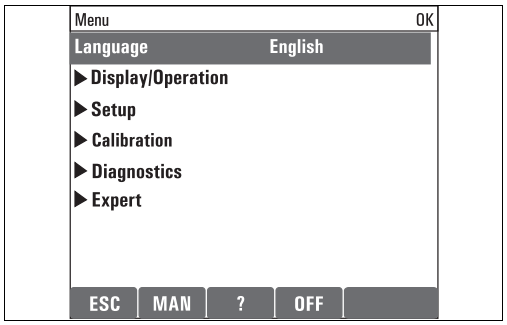
Easy operation



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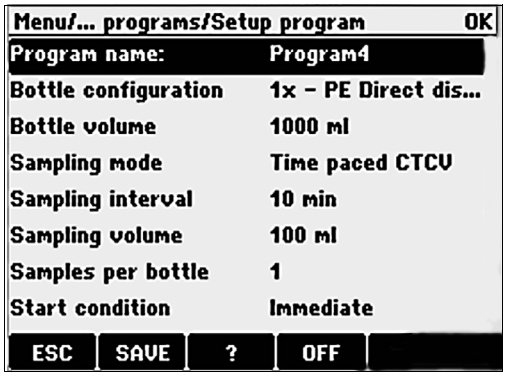
Plain-text menu

Display

Graphic display:
- Backlight with switch-off function
- Red display background for alarms alerts users to errors
- Transflective display technology for maximum contrast even in bright environments
- User-definable measuring menus mean you can always keep track of the values that are important for your application.



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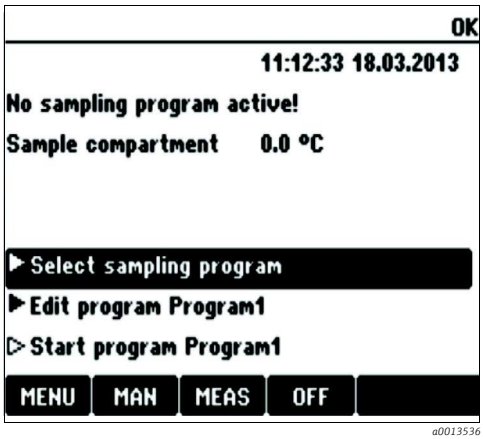
Example of program setup

Local operation



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- *Liquid crystal display, backlighting*
- *160 x 240 pixels*
- *4 operating keys (soft key function) and navigator*
- *Menu-guided operation*

Software (optional)

Field Data Manager
- Standardized user interface under Windows®
- Reading out the internal memory containing the measured flow rate, sample volume taken etc.

FieldCare
- Device settings saved in a database
- Configuration

Ordering information

Product structure

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

Enter the following URLs in your browser to access the relevant product page:
www.products.endress.com/csp44

1. You can find the following options on the right-hand side of the product page:

Product page function
:: Add to product list
:: Price & order information
:: Compare this product
:: Configure this product

2. Click "Configure this product".
3. The Configurator opens in a separate window. You can now configure your device and you will receive the complete order code valid for that device.
4. Now 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:
- 1 Liquiport 2010 CSP44 with:
  - The ordered bottle configuration
  - Optional hardware
- 1 set of Brief Operating Instructions
  (In the preferred language if the "Default operating language" order option is selected. Otherwise, the Brief Operating Instructions supplied are in English)
- 1 CD-ROM with Operating Instructions in all available languages, an application handbook and simulation software
- Optional accessories

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.

MCERTS

MCERTS
The device has been assessed by Sira Certification Service and complies with "MCERTS Performance Standards for Water Monitoring Equipment Part 1, Version 2.1 dated November 2009".
Certificate no.: Sira MC100176/00

cCSAus

cCSAus General purpose
The product meets the requirements in accordance with "Class 8721 05, laboratory equipment, electrical; Class 8721 85, laboratory equipment, electrical, certified to US standards".

Accessories

The most important accessories that could be delivered at the time this document went to print are listed below.
For accessories not listed here, please contact your service department or sales center.

Accessories for Liquiport 2010 CSP44

	Base, complemented
71111864	CSP44 base + 1x 20 liter (5.28 US gal.), PE
71111866	CSP44 base + 12 x 2 liter (0.53 US gal.), PE
71111867	CSP44 base + 12 x 0.7 liter (0.18 US gal.), glass
71111868	CSP44 base + 24 x 1 liter (0.26 US gal.), PE
71111870	CSP44 base + 12 x 1 liter (0.26 US gal.) + 6 x 2 liter (0.53 US gal.), PE

	Bottles + caps
71112221	20 liter (5.28 US gal.) PE + cap, 1 pc.
71111178	2 liter (0.53 US gal.) PE wedge-shaped bottle + cap, 12 pcs.
71111176	1 liter (0.26 US gal.) PE wedge-shaped bottle + cover, 24 pcs.
71111874	0.7 liter (0.18 US gal.) glass + cap, 12 pcs.

	Accessories base
71111878	Kit CSP44 base cover, transporting
71111880	Kit CSP44 freezer cartridge

	Suction line
71111233	Suction line ID 10 mm (3/8"), PVC reinforced braided, clear, length 10 m (33 ft), strainer V4A
71111234	Suction line ID 10 mm (3/8"), EPDM black, length 10 m (33 ft), strainer V4A
71111482	... m; suction line ID 10 mm (3/8"), PVC clear
71111484	... m; suction line ID 10 mm (3/8"), EPDM black
71111184	Strainer V4A for ID 10 mm (3/8"), 1 pc.

	Tubing customized
71114701	Pump tubing, 2 pcs.
71114702	Pump tubing, 25 pcs.

	Installation
71111881	CSP44 suspension kit, for use in 500 to 600 mm diameter manhole

	Power supply
71111872	Lead-acid battery 24 V DC
71111882	Kit CSP44 charging adapter cable, battery to power pack/charger
71111883	Kit CSP44 power pack/charger for indoor use, 100 to 120/200 to 240 V AC ±10 %, 50/60 Hz
71111884	Kit CSP44, power pack/charger for outdoor use, IP 65, 100 to 120/200 to 240 V AC ±10 %, 50/60 Hz

	Communication; Software
51516983	Commubox FXA291 + FieldCare Device Setup
71129799	Field Data Manager software; 1 license

	Retrofit kits
71111879	Kit CSP44 retrofit distribution system (distribution arm, distribution drive)

Accessories for parameter measurements

Sensors

You can only connect sensors with an M12 plug.

Glass electrodes

Orbisint CPS11D
- pH sensor with Memosens technology
- Dirt-repellent PTFE diaphragm
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps11d)
- Technical Information TI00028C/07/EN

Memosens CPS31D
- pH sensor with Memosens technology
- Gel-filled reference system with ceramic diaphragm
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps31d)
- Technical Information TI00030C/07/EN

Ceraliquid CPS41D
- pH sensor with Memosens technology
- Ceramic diaphragm and KCl liquid electrolyte
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps41d)
- Technical Information TI00079C/07/EN

Ceragel CPS71D
- pH sensor with Memosens technology
- Poison-resistant reference with ion trap
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps71d)
- Technical Information TI00245C/07/EN

Orbipore CPS91D
- pH sensor with Memosens technology
- Open aperture diaphragm for media with a high dirt load
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps91d)
- Technical Information TI00375C/07/EN

Orbipac CPF81D
- Compact pH sensor for installation or immersion operation in process water and wastewater
- Order as per product structure (--> Online Configurator, www.products.endress.com/cpf81d)
- Technical Information TI00191C/07/EN

Pfaudler electrodes

Ceramax CPS341D
- pH electrode with pH-sensitive enamel
- Meets toughest requirements for accuracy, pressure, temperature, sterility and durability
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps341d)
- Technical Information TI00468C/07/EN

ORP sensors

Orbisint CPS12D
- ORP sensor with Memosens technology
- Dirt-repellent PTFE diaphragm;
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps12d)
- Technical Information TI367C/07/EN

Ceraliquid CPS42D
- ORP sensor with Memosens technology
- Ceramic diaphragm and KCl liquid electrolyte
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps42d)
- Technical Information TI373C/07/EN

Ceragel CPS72D
- ORP sensor with Memosens technology
- Poison-resistant reference with ion trap
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps72d)
- Technical Information TI374C/07/EN

Orbipac CPF82D
- Compact pH sensor for flow or immersion operation in process water and wastewater
- Order as per product structure (--> Online Configurator, www.products.endress.com/cpf82d)
- Technical Information TI191C/07/EN

Orbipore CPS92D
- ORP sensor with Memosens technology
- Open aperture diaphragm for media with a high dirt load
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps92d)
- Technical Information TI435C/07/EN

pH ISFET sensors

Tophit CPS471D
- Sterilizable and autoclavable ISFET sensor with Memosens technology
- For the food and pharmaceutical industries, process engineering, water treatment and biotechnology
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps471d)
- Technical Information TI283C/07/EN

Tophit CPS441D
- Sterilizable ISFET sensor with Memosens technology
- For media with low conductivity, with liquid KCl electrolyte
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps441d)
- Technical Information TI352C/07/EN

Tophit CPS491D
- ISFET sensor with Memosens technology
- Open aperture diaphragm for media with high dirt load
- Order as per product structure (--> Online Configurator, www.products.endress.com/cps491d)
- Technical Information TI377C/07/EN

Inductive conductivity sensors

Indumax CLS50D
- High-stability inductive conductivity sensor for standard, Ex and high-temperature applications
- Memosens protocol
- Order as per product structure (--> Online Configurator, www.products.endress.com/cls50d)
- Technical Information TI182C/07/EN

Conductively measuring conductivity sensors

Condumax CLS15D
- Conductive conductivity sensor for pure and ultra-pure water and Ex applications
- Order as per product structure (--> Online Configurator, www.products.endress.com/cls15d)
- Technical Information TI00109C/07/EN

Condumax H CLS16D
- Hygienic, conductive conductivity sensor for pure and ultra-pure water and Ex applications
- With EHEDG and 3A approval
- Order as per product structure (--> Online Configurator, www.products.endress.com/cls16d)
- Technical Information TI227C/07/EN

Condumax W CLS21D
- Two-electrode sensor in plug-in head and fixed cable version
- Order as per product structure (--> Online Configurator, www.products.endress.com/cls21d)
- Technical Information TI085C/07/EN

Oxygen sensors

Oxymax COS51D
- Amperometric sensor for dissolved oxygen, with Memosens technology
- Order as per product structure (--> Online Configurator, www.products.endress.com/cos51d)
- Technical Information TI413C/07/EN

Oxymax COS61D
- Optical oxygen sensor for drinking water and industrial water measurement
- Measuring principle: quenching
- Memosens protocol
- Material: stainless steel 1.4571 (AISI 316Ti)
- Order as per product structure (--> Online Configurator, www.products.endress.com/cos61d)
- Technical Information TI387C/07/EN

Chlorine sensors

CCS142D
- Membrane-covered amperometric sensor for free chlorine
- Memosens technology
- Measuring range 0.01 to 20 mg/l
- Order as per product structure (--> Online Configurator, www.products.endress.com/ccs142d)
- Technical Information TI419C/07/EN

Ion-selective sensors

ISEmax CAS40D
- Ion-selective sensors
- Order as per product structure (--> Online Configurator, www.products.endress.com/cas40d)
- Technical Information TI491C/07/EN

Turbidity sensors

Turbimax CUS51D
- For nephelometric measurement of turbidity and solids in wastewater
- 4-beam scattered light method
- With Memosens protocol
- Order as per product structure (--> Online Configurator, www.products.endress.com/cus51d)
- Technical Information TI461C/07/EN

SAC and nitrate sensors

Viomax CAS51D
- SAC and nitrate measurement in drinking water and wastewater
- With Memosens protocol
- Order as per product structure (--> Online Configurator, www.products.endress.com/cas51d)
- Technical Information TI459C/07/EN

Interface measurement

Turbimax CUS71D
- Immersion sensor for interface measurement
- Ultrasonic interface sensor
- Order as per product structure (--> Online Configurator, www.products.endress.com/cus71d)
- Technical Information TI490C/07/EN

Measuring cable

Memosens data cable CYK10
- For digital sensors with Memosens technology
  pH, ORP, oxygen (amperometric), chlorine, conductivity (conductive)
- Order as per product structure (--> Online Configurator, www.products.endress.com/cyk10)
- Technical Information TI00118C/07/EN

Measuring cable CYK81
- Unterminated cable for extending the sensor cables (e.g. Memosens)
- 2 x 2 wires, twisted with shield and PVC sheath (2 x 2 x 0.5 mm^2 + shield)
- Goods sold by meter, Order no, Order No.: 51502543

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