



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



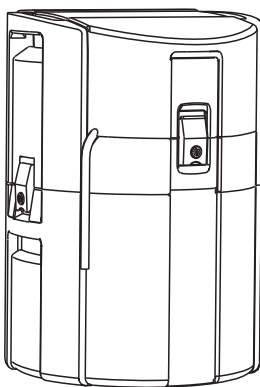
Solutions

Operating Instructions/Brief Operating Instructions

Liquiport 2010 CSP44

Automatic sampler for liquid media

Commissioning



BA465C/07/EN/13.11
71130340

Valid as of:
Software version 01.02.00

Endress+Hauser



People for Process Automation

Overview of documentation

Operating Instructions

The Operating Instructions are split into several parts:

Commissioning (BA465C)

- All steps that have to be carried out **once only** during the initial commissioning
- Description of menus:
 - Basic settings
 - Display/Operation
- Technical data

Operation & settings (BA 492C)

- General settings
 - Logbooks
 - Sampling
 - Extended setup (diagnostics settings, data management)
- Configuration of inputs and optional outputs
 - Analog inputs
 - Binary inputs/outputs
 - Sensor inputs (sensor-specific settings, calibration settings, sensor-related diagnostic settings)
 - Current outputs
- Sampling programs
- Additional functions
 - Limit switches
 - Cleaning programs

Calibration (BA493C)

- Calibration menus
- Examples

Maintenance & diagnostics (BA470C)

- Maintenance
- Troubleshooting and diagnostics
 - Diagnostic menu
 - Troubleshooting instructions (troubleshooting and fault elimination)
 - Process-related errors
- Accessories and spare parts



Operating Instructions BA465C, BA470C, BA492C and BA493C can be found in all the available languages on the CD-ROM enclosed.

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1 Safety instructions

1.1 Designated use

The Liquiport 2010 CSP44 is a portable sampler for liquid media for operation in non-hazardous areas. The samples are taken discontinuously using a peristaltic pump and are then distributed into sample containers.

The sampler is designed for use in the following applications:

- Municipal and industrial sewage treatment plants
- Laboratories and Water Conservancy Boards
- Monitoring of liquid media in industrial processes

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

The manufacturer does not accept liability for damage caused by improper or non-designated use.

1.2 Installation, commissioning and operation

Observe the following points:

- Installation, commissioning, operation and maintenance of the measuring system must only be carried out by trained technical personnel.
The technical personnel must be authorized to perform the tasks by the owner-operator.
- The electrical connection may only be established by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions they contain.
- Prior to commissioning the entire measuring point, check that all connections are correct. Make sure that electric cables and hose connections are not damaged.
- Do not commission damaged products. Protect them against unintentional startup. Label and identify the damaged product as defective.
- Faults at the measuring point may only be rectified by authorized and properly trained personnel.
- If the faults cannot be eliminated, take the products out of service and protect them against unintentional startup.
- Repairs not described in these Operating Instructions may only be carried out directly at the manufacturer's or by the Service Organization.

1.3 Operational safety

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. Relevant regulations and European standards have been observed.

Connected equipment to the sampler shall be in compliance with the relevant safety standard.

As the user, you are responsible for observing the following safety regulations:

- Installation guidelines
- Local standards and regulations

Electromagnetic compatibility

With regard to electromagnetic compatibility, this device has been tested in accordance with the applicable European standards for industrial applications.

The electromagnetic compatibility indicated only applies to a device that has been connected in accordance with the instructions in these Operating Instructions.

1.4 Return





If you need to return your instrument, contact your regional Endress+Hauser Sales or Service Representative to get the local return procedure.

To find your local contact, check our web site at www.endress.com and select your region.


1.5 Notes on safety conventions and icons

1.5.1 Warnings

The structure, signal words and safety colors of the signs comply with the specifications of ANSI Z535.6 ("Product safety information in product manuals, instructions and other collateral materials").

Safety message structure	Meaning
 DANGER Cause (/consequences) Consequences if safety message is not heeded ► Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the situation will result in a fatal or serious injury.
 WARNING Cause (/consequences) Consequences if safety message is not heeded ► Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the situation can result in a fatal or serious injury.
 CAUTION Cause (/consequences) Consequences if safety message is not heeded ► Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
 NOTICE Cause/situation Consequences if safety message is not heeded ► Action/note	This symbol alerts you to situations that can result in damage to property and equipment.

1.5.2 Document symbols

→  1 This symbol indicates a cross reference to a defined page (e.g. p. 1).

→  2 This symbol indicates a cross reference to a defined figure (e.g. fig. 2).



Additional information, tips



Permitted or recommended



Forbidden or not recommended

2 Identification

2.1 Device designation

2.1.1 Nameplate

Nameplates can be found:

- On the inside of the cover
- On the packaging (adhesive label, portrait format)

The nameplate provides you with the following information on your device:

- Order code
- Extended order code
- Serial number
- Device version (software package)
- Input, output values
- Environment
- Activation codes
- Safety notices, warnings

Compare the data on the nameplate with your order.

2.1.2 Serial number and order code

The order code and serial number of your device can be found in the following locations:

- On the nameplate
- On the front page of these Operating Instructions
- In the delivery papers



To find out the version of your device, enter the order code indicated on the nameplate in the search screen at the following address:
www.products.endress.com/order-ident

2.2 Scope of delivery

The scope of delivery comprises:

- 1 Liquiport 2010 CSP44 with:
 - The ordered bottle configuration
 - Optional hardware
- 1 "Commissioning" Operating Instructions
(In the preferred language if the "Default operating language" order option is selected. Otherwise, the Brief Operating Instructions are supplied in English.)
- 1 CD-ROM with Operating Instructions in all the languages available
- Optional accessories

If you have any queries, please contact your supplier or local sales center.

2.3 Certificates and approvals

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

The product 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.

CSA C/US General purpose

The product meets the requirements of "Class 8721 05, laboratory equipment, electrical; Class 8721 85, laboratory equipment, electrical, certified to US standards".

3 Device description

A complete sampling unit comprises:

Sampler with:

- Controller with display, soft keys and navigator
- Peristaltic pump for sampling
- Plastic (PE) or glass sample bottles for sample preservation
- Sample compartment temperature control (optional) for safe sample storage
- Suction line with suction strainer

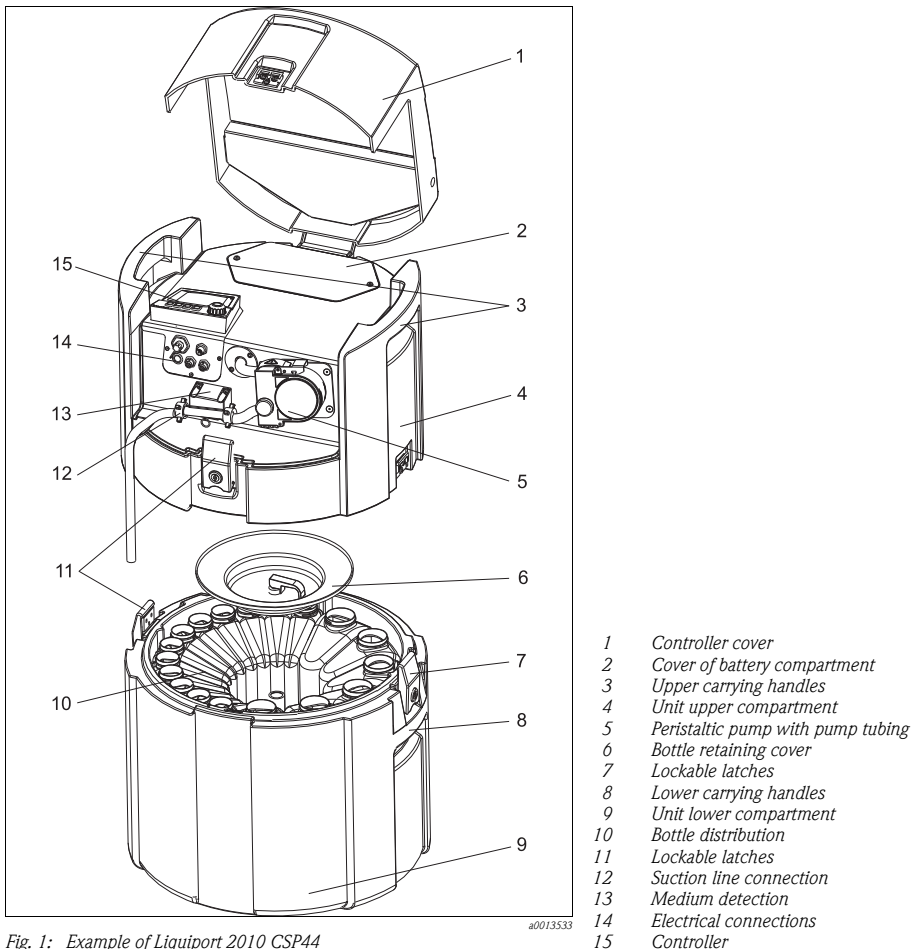


Fig. 1: Example of Liquiport 2010 CSP44

⚠ WARNING

Danger of injury due to rotating parts

- ▶ Do not open the cover of the peristaltic pump while the pump is operating.
- ▶ Secure the sampler against unintentional start-up whilst you work on the opened hose pump.

4 Installation

4.1 Incoming acceptance, transport, storage

- Make sure the packaging is not damaged!
Inform your supplier of any damage to the packaging.
Please keep the damaged packaging until any issues have been resolved.
- Make sure the contents are not damaged!
Inform your supplier of any damage to the contents.
Please keep the damaged goods until any issues have been resolved.
- Check the scope of delivery against the delivery papers and your order to ensure it is complete and nothing is missing.
- Pack the product in such a way as to protect it reliably against impact and moisture for storage and transportation. Optimum protection is provided by the original packaging materials. In addition, the permitted ambient conditions must be observed (see Technical data).
- If you have any queries, please contact your supplier or local sales center.

4.2 Installation conditions

4.2.1 Dimensions

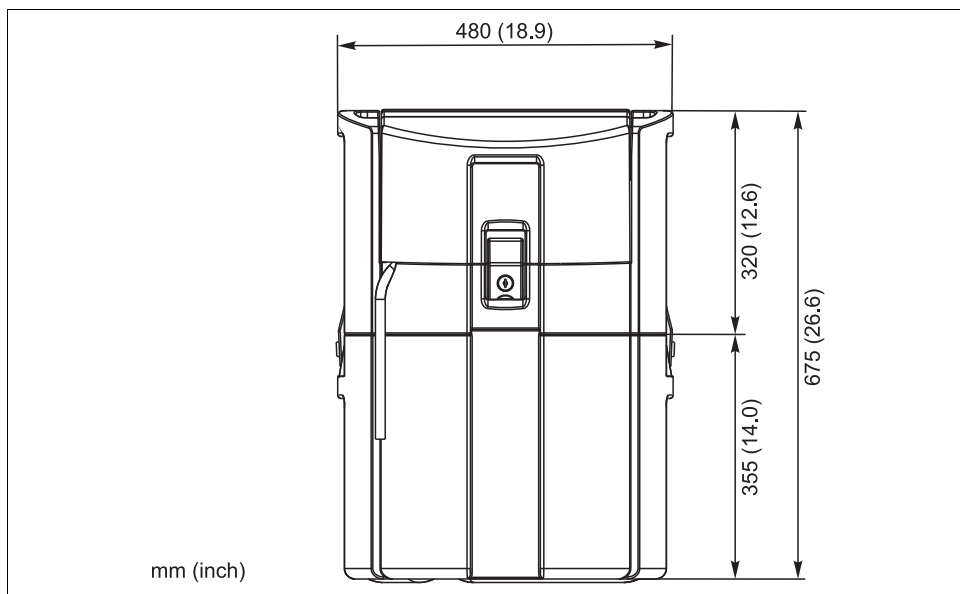


Fig. 2: Dimensions Liquiport 2010 CSP44 standard version

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4.2.2 Mounting location

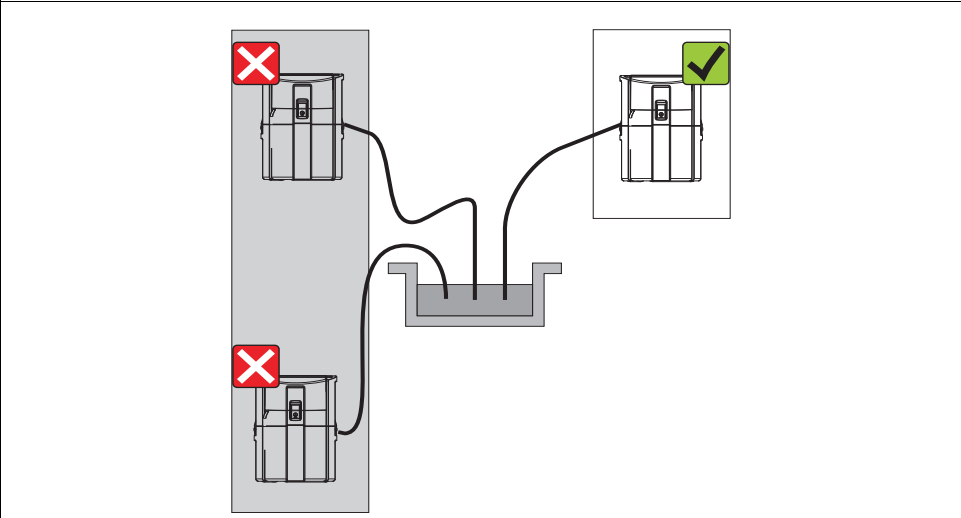


Fig. 3: Mounting location Liquiport 2010 CSP44

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The suction line must be routed with a downward slope to the sampling point, this helps to drain the line during purges and avoids siphoning!

Note the following when mounting the sampler:

- Place the sampler on a level surface.
- Protect the sampler from additional heating (e.g. from heaters).
- Protect the sampler from mechanical vibrations.
- Protect the sampler from strong magnetic fields.

4.2.3 Connection for sampling

- Maximum suction height: 8 m (26 ft)
- Maximum hose length: 30 m (98 ft)
- Hose connection diameter:
Internal diameter of 10 mm (3/8")
- Intake speed:
> 0.5 m/s (> 1.6 ft/s) in accordance with EN 25667, ISO 5667
> 0.6 m/s (> 1.9 ft/s) in accordance with Ö 5893, US EPA

Note the following when mounting the sampler:

- Always route the suction line with an upward slope from the sampling point to the sampler
- The sampler should always be located above the sampling point
- Avoid siphoning effects in the suction line

The following conditions must be met at the sampling point:

- Do not connect the suction line to pressurized systems
- Use a suction strainer to catch bigger, abrasive solids that could clog the system
- Immerse the intake hose in the direction of flow
- Take samples at a representative point (turbulent flow; not directly at the base of the channel)

Useful sampling accessories

- Suction strainer:
Catches bigger, abrasive solids that could clog the system.
- Immersion assembly:
The adjustable immersion assembly fixes the suction line to the sampling point.

4.3 Connecting the suction line

1. Observe the installation conditions when installing the sampler.
2. Open the unit cover by releasing the front latch.
3. Route the suction line from the sampling point to the sampler.
4. Screw the suction line onto the suction line connection of the sampler.

4.4 Post-installation check

- Make sure the suction line is securely fitted to the sampler.
- Perform a visual inspection to ensure the suction line is routed correctly from the sampling point to the sampler.
- Make sure the distribution arm is correctly mounted and adjusted.

5 Wiring

⚠ WARNING

Danger due to damage of the unit

- If it is assumed that the unit can no longer be operated safely (e.g. by visible damage), it must immediately be taken out of operation. Ensure that the unit is secured against unintentional use.

5.1 Electrical connection

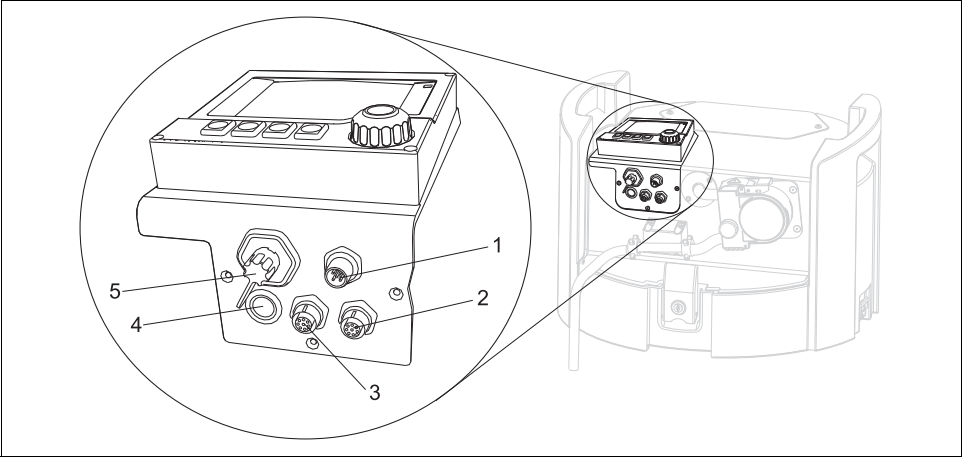


Fig. 4: Electrical connections of the controller

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- 1 Battery charger connection socket
- 2 Socket for M12 sensor connector (optional)
- 3 Socket for M12 sensor connector (optional)
- 4 Signal cable connection socket (optional)
- 5 Service interface

5.2 Battery connection and disconnection

The unit is shipped with the battery built-in. The battery is not connected. Before the first commissioning, charge the battery. The battery needs approx 5 hours for a full charge. For further information on the battery charger, please read the accompanying handbook.

1. Unscrew the battery compartment cover, see Fig. 1, pos. 2.
2. Remove the battery from the battery compartment.
3. Connect the plugs in the unit to the marked connections on the battery (red → red; black → black).
4. Make sure the connections are solidly fixed.
5. Place the battery into the battery compartment. The connections of the battery have to be in the front.


6. Once the battery has been successfully connected, replace the battery compartment cover and screw down tight.
7. To disconnect the battery proceed in the reverse order.

 Replace the rechargeable batteries with type Panasonic LC-R127R2PG1. Use rechargeable batteries only.

5.2.1 Battery charger connection with built-in batteries

 The appliance inlet of the charger must be reached easily and always be accessible to disconnect the charger from mains.

Connect the battery charger to the unit connection socket, see Fig. 3, pos. 1. On "low battery" indication the battery is automatically recharged.

 Only use the battery chargers indicated by the manufacturer (see section "Technical data").

5.2.2 Battery charger connection with removed batteries

When recharging the removed batteries use the charging adapter cable (accessories nb. 71111882).

5.3 Terminal assignment for input/output signals

The following signals can be configured for external sampler control:

Input signals

- 2 analog signals 0/4 to 20 mA (optional)
- 2 binary signals > 100 ms pulse or edge (optional)
- Signals of digital sensors with Memosens protocol (optional)

Output signals

- 2 binary signals > 1 s pulse or edge (optional)
- 2 current outputs 0/4 to 20 mA (optional)

5.4 Signal cable connection (optional)

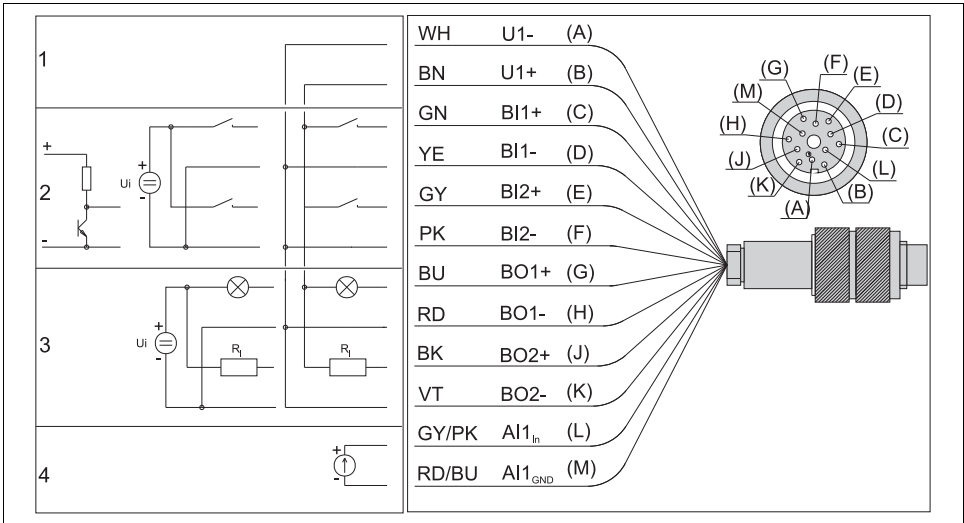
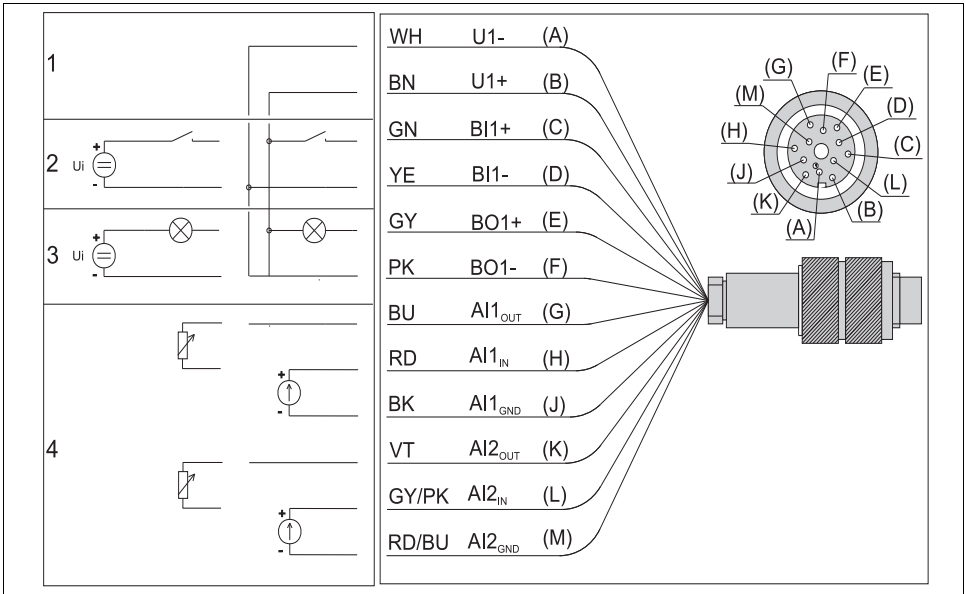


Fig. 5: Pin connection and wiring diagram for the signal cable (option K3)

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- 1 Power supply U: 10 V max. 30 mA load
- 2 Binary inputs BI: > 20 ms, only low voltage $U_i \leq 30$ V DC
- 3 Binary outputs BO: only low voltage $U_i \leq 30$ V DC, max. current when using ext. voltage (max. 200 mA)
- 4 Analog input AI: 0 to 20 mA, 4 to 20 mA



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Fig. 6: Pin connection and wiring diagram for the signal cable (option K4)

- 1 Power supply U: 10 V max. 30 mA load
- 2 Binary input BI: > 20 ms, only low voltage $U_i \leq 30$ V DC
- 3 Binary output BO: only low voltage $U_i \leq 30$ V DC, max. current when using ext. voltage (max. 200 mA)
- 4 Analog inputs AI: 0 to 20 mA, 4 to 20 mA

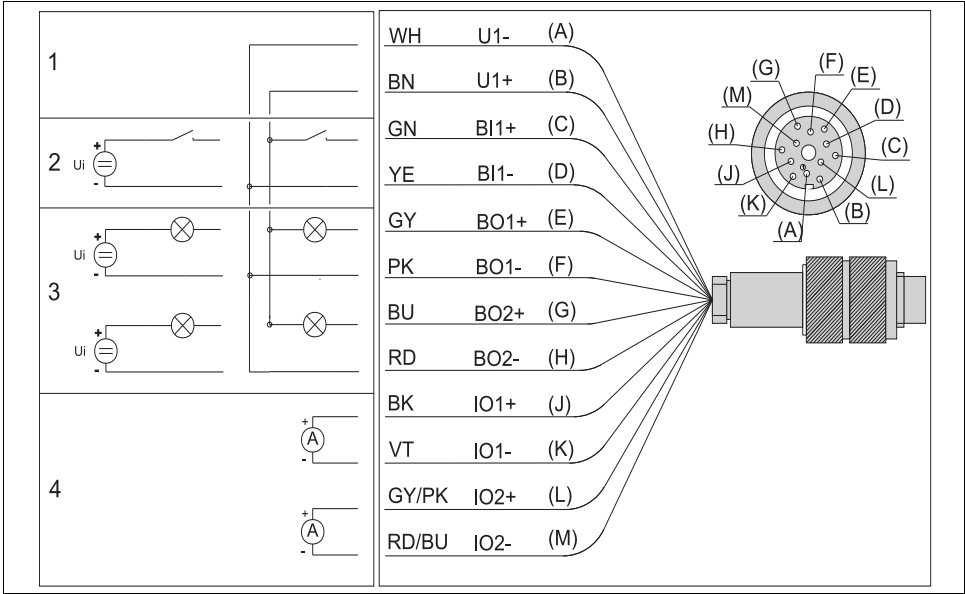


Fig. 7: Pin connection and wiring diagram for the signal cable (option K5)

- 1 Power supply U: 10 V max. 30 mA load
- 2 Binary input BI: > 20 ms, only low voltage $U_i \leq 30$ V DC
- 3 Binary output BO: only low voltage $U_i \leq 30$ V DC, max. current when using ext. voltage (max. 200 mA)
- 4 Current outputs IO: 0 to 20 mA, 4 to 20 mA

5.5 Sensor connection (optional)

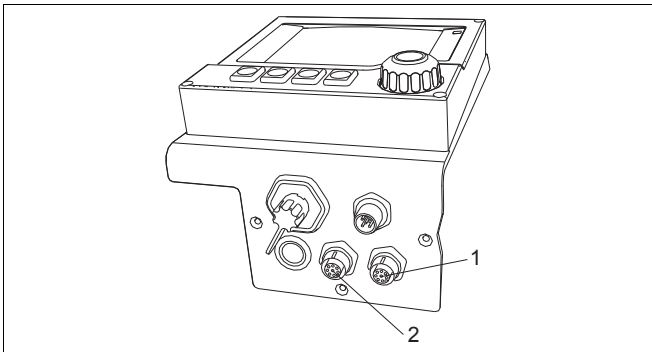


Fig. 8: Connection sockets for sensors

- 1 Socket for M12 sensor connector (= Channel 1 for versions with one sensor)
- 2 Socket for M12 sensor connector (= Channel 2 for versions with two sensors)

5.6 Post-connection check

⚠ WARNING

Wiring errors

Incorrect wiring puts the safety of people and the measuring point at risk. The manufacturer does not accept any responsibility for errors that result from failure to comply with the instructions in this manual.

► Only put the transmitter into operation if you can answer **yes** to **all** of the following questions.

Device state and specifications

1. Are the sampler, suction line and cables free from damage on the outside?

Electrical connection

2. Are the mounted cables strain relieved?
3. Do the used cables fulfil the required specifications?
4. Does the supply voltage match the voltage indicated on the nameplate?

Suction line connection

5. Is the suction line connected along with the suction strainer?
6. Is the suction line routed at a gradient without any loops?
7. Are all the sample connections leak-tight?
8. Are sample bottles in the sampling compartment?

6 Operation

6.1 Display and operating elements

6.1.1 Overview

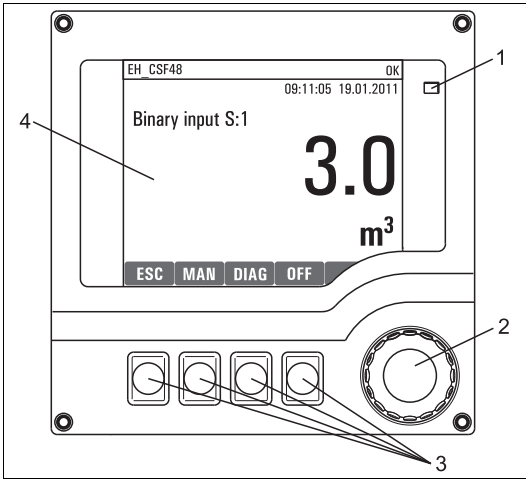


Fig. 9: Overview of operation

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- 1 LED
- 2 Navigator (jog/shuttle and press/hold function)
- 3 Soft keys (function depends on the menu)
- 4 Display (red background in the event of an error)

6.1.2 Display

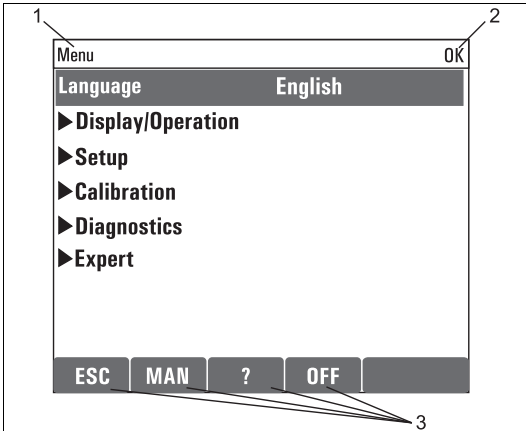


Fig. 10: Display (example)

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- 1 Menu path and/or device designation
- 2 Status display
- 3 Assignment of the soft keys, e.g.
ESC: escape or abortion of a sampling process
MAN: manual sample
?: help, if available
OFF: switches the device to standby or aborts a program

6.2 Operation concept

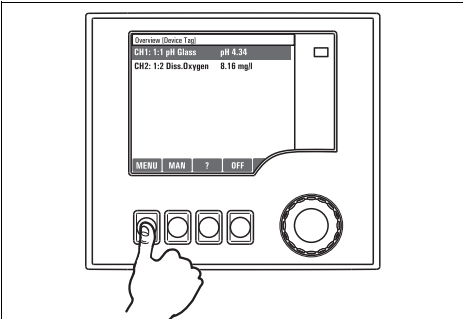


Fig. 11: Pressing the soft key: selecting the menu directly

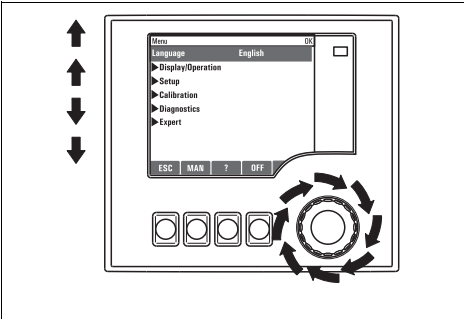


Fig. 12: Turning the navigator: moving the cursor in the menu

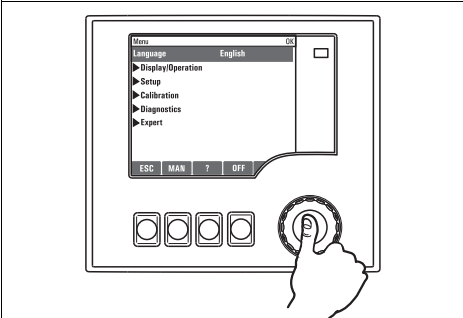


Fig. 13: Pressing the navigator: launching a function

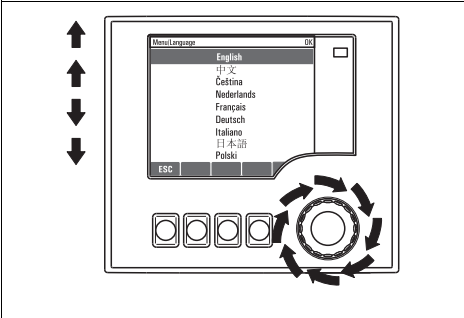


Fig. 14: Turning the navigator: selecting a value (e.g. from a list)

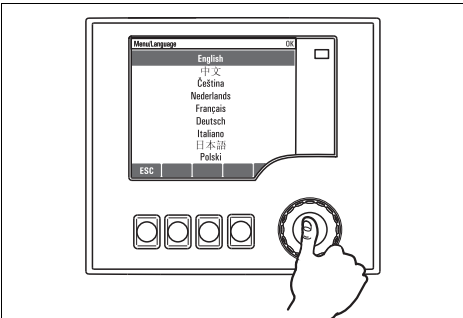


Fig. 15: Pressing the navigator: accepting the new value

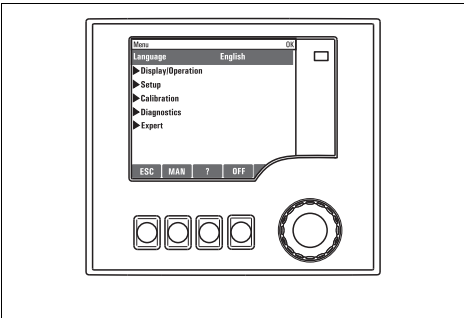


Fig. 16: Result: new setting is accepted

6.3 Configuration options

6.3.1 Display only

- You can only read the values but cannot change them.
- Typical read-only values are: sensor data and system information
- Example: Menu/Setup/Inputs/../../Sensor type

6.3.2 Picklists

- You receive a list of options.
- You select one of the options.
- Example: Menu/Setup/General settings/Temperature unit

6.3.3 Numerical values

- You are changing a variable.
- The maximum and minimum values for this variable are shown on the display.
- Set a value within this range.
- Example: Menu/Display/Operation/Contrast

Menu/DisplayOperation/Contrast

OK

52

Min5

Max95

01234

56789

←C

X✓

X

←

✓

6.3.4 Actions

- You trigger an action with the appropriate function.
- You know that the item in question is an action if it is preceded by the following symbol: ▷
- Examples of typical actions include:
 - Starting a sampling program
 - Starting manual sampling
 - Saving or loading configurations
- Example: Menu/Manual sampling/Start sampling

6.3.5 Customized text

- You are assigning an individual designation.
- Enter a text. You can use the characters in the editor for this purpose (upper-case and lower-case letters, numbers and special characters).
- Using the soft keys, you can:
 - Cancel your entries without saving the data (✕)
 - Delete the character in front of the cursor (✕)
 - Move the cursor back one position (←)
 - Finish your entries and save (✓).
 - Example: Menu/Setup/General settings/Device tag

7 Commissioning

7.1 Function check

⚠ WARNING

Incorrect connection, incorrect supply voltage

Safety risks for staff and incorrect operation of the device


- ▶ Check that all connections have been established correctly in accordance with the wiring diagram.
- ▶ Make sure that the supply voltage matches the voltage indicated on the nameplate.

7.2 Switching on the unit

7.2.1 First steps

1. Connect the battery (see section "Wiring").
2. Wait for the initialization to complete.
3. Press the softkey for "MENU" and then configure your language in the top menu item.

4. Go to the "Display/Operation" menu and configure your desired display settings (Contrast, Backlight, Screensaver and Screen rotation).

 Close the unit cover before starting the sampling process.

7.2.2 Display settings

Path: Menu / Display/Operation

Function	Options	Info
Contrast	5 ... 95 %	Adjust the screen settings to suit your working environment. Backlight="Automatic" The backlighting is switched off automatically after a short time if a button is not pressed. It switches back on again as soon as you press the navigator button. Backlight="On" The backlighting does not switch off automatically.
Backlight	Options <ul style="list-style-type: none">■ On■ Off■ Automatic Factory setting Automatic	
Screensaver	Options <ul style="list-style-type: none">■ Off■ Automatic Factory setting Off	The screensaver switches off the display if more than 5 minutes have elapsed since the last action executed in the software. The controller continues to work as normal even when the display is switched off. Press the Navigator button to reactivate the display.
Screen rotation	Options <ul style="list-style-type: none">■ Manual■ Automatic Factory setting Manual	If "Automatic" is selected, the single-channel measured value display switches from one channel to the next every second.
▶ User definable screens		
▶ Meas. screen 1 ... ▶ Meas. screen 6		You can create 6 measuring screens of your own and give them a descriptive name. As the functions are the same for all 6 measuring screens, only one measuring screen is described below.
Meas. screen	Options <ul style="list-style-type: none">■ Off■ On Factory setting Off	Once you have defined your own measuring screen, you can switch it on here. You can find the new screen under "User definable screens" in the "All measured values" measuring mode.
Label	Customized text, 20characters	The new name is then displayed in the list of measuringscreens instead of the factory default name.
Number of lines	1 ... 8 Factory setting 1	Specify the number of measured values displayed.
▶ Line 1 ... ▶ Line 8		As the following functions are the same for all the lines, theyare only described once.

Path: Menu / Display/Operation

Function	Options	Info
Source of data	Options <ul style="list-style-type: none"> ■ Binary input ■ Current input ■ Temperature ■ Memosens sensor input (optional) Factory setting None	Select a binary-, current- or temperature input as the data source.
Measured value	Options <ul style="list-style-type: none"> ■ Depends on the source of data Factory setting None	You can display different main, secondary and raw measured values depending on the source of data.
Label	Customized text, 20 characters	You can assign an individual name to the line, or accept the suggested name using the subsequent "Set label to "%OV"" function.
Current program:	Read only	The name of the sampling program currently selected is displayed.
Status:	Read only	Display "Active": The sampling program has been started and the device takes a sample as per the set parameters. Display "Inactive": No sampling program has been started, or a program that was running has been stopped.
▶ Start	Action	The selected sampling program is started.

7.3 Basic setup

1. Make the following settings in the "Setup/Basic setup" menu:
 - a. Device tag: Give your device any name of your choice (max. 20 characters).
 - b. Set date: Correct the set date if necessary.
 - c. Set time: Correct the set time if necessary.
 - d. Number of bottles: Correct the set number of bottles if necessary.
 - e. Bottle volume: Correct the set bottle volume if necessary.
2. For quick commissioning, you can ignore the additional settings for outputs etc. You can make these settings later in the specific menus (see table below).
3. Return to the general overview by pressing and holding the soft key for "ESC" for at least one second.

→ Your sampler now works with your general settings.

If you want to configure your most important input and output parameters already in the "Basic setup" proceed as follows:

- ▶ Configure the current outputs, limit contactors, device diagnostics and cleaning cycles with the following submenus.

- A description is provided in BA492C "Operation & settings" on the CD-ROM.
- The table helps you locate the description in the specific section of the manual.

Menu in Basic setup	Section in BA492C	Software path in main menu
Current output x:y	Outputs	Setup/Outputs/Current output x:y
Limit switches	Additional functions	Setup/Additional functions/Limit switches
Diagnostics settings	General settings	Setup/General settings/Extended setup/Diagnostics settings
Cleaning	Additional functions	Setup/Additional functions/Cleaning

7.3.1 Manual sampling


- Manual sampling is triggered by the "MAN" soft key. This pauses any program currently running.
- The current bottle configuration and the current sample volume are displayed. The distributor position and sample volume can be changed.
- A new screen is displayed indicating the progress of the sampling process.
- After manual sampling a running program can be displayed by the "ESC" soft key.
- Example:

Menu/Manual sampling		OK
Bottle configuration	1x - PE Direct dis...	
Bottle volume	30000 ml	
Sample volume	100 ml	
▷ Start sampling		
ESC	Start	?
OFF		

7.3.2 Programming for automatic sampling

Create a sampling program in the general overview under "Select sampling program/New/Basic" or in the menu "Menu/Setup/Sampling programs/Setup program/New/Basic":

- 1. Enter the "Program name".
- 2. The bottle configuration from the setup is displayed.
- 3. "Time paced CTCV" is preset.
- 4. Enter the "Sampling interval".
- 5. Enter the "Sampling volume" per sample. (For device versions with a vacuum pump, configure under "Menu/Setup/General settings/Sampling".)
- 6. "Bottle change mode" after time or number for average samples.

 With the option bottle change after a time you can chose the bottle synchronization before the start condition (None, 1. bottle change time, 1. time of change + bottle number). A description is provided in BA492C "Operation & settings" on the CD-ROM.
- 7. "Multiple bottles": same sample in several bottles.
- 8. "Start condition" immediately or time-delayed.
- 9. "Stop condition" after the last sample or continuous operation.
- 10. Pressing the "SAVE" soft key saves the program and ends data entry.
- 11. Example: "Menu/Setup/Sampling programs/Setup program/New/Basic"

Menu/... programs/Setup program		OK
Program name:	Program4	
Bottle configuration	1x · PE Direct dis...	
Bottle volume	30000 ml	
Sampling mode	Time paced CTCV	
Sampling interval	10 min	
Sampling volume	100 ml	
Samples per bottle	1	
Start condition	Immediate	
ESC	SAVE	?
OFF		

7.4 Display

7.4.1 Measuring values

To display the measuring values go to "Measurement" in the general overview or press the "MEAS" soft key when a program is running.

There are various display modes:

(Press the navigator button to change the mode)

1. Channel overview
The names of all the channels, each sensor type connected and the current primary values are shown on the display.
2. Primary value of the selected channel
The name of the channel, the sensor type connected and the current primary value are shown on the display.
3. Primary and secondary measured value of the selected channel
The name of the channel, the sensor type connected and the current primary and secondary value are shown on the display.
4. All the measured values of all the inputs and outputs
The current primary and secondary value, as well as all the raw values, are shown on the display.
5. User-defined measuring screens
You configure what values you want to display. You can choose from all the measured values of physical and "virtual" sensors (calculated using mathematical functions) and output parameters.




In the first 3 modes, you can switch between channels by turning the navigator. In addition to having an overview of all the channels, in the 4th mode you can also select a value and press the navigator to see more details for the value. You can also find your user-defined screens in this mode.

7.4.2 Device status

Icons on the display alert you to special device conditions.

Icon	Location	Description
F	Title bar	Diagnostics message "Failure"
M	Title bar	Diagnostics message "Maintenance request"
C	Title bar	Diagnostics message "Check"
S	Title bar	Diagnostics message "Out of specification"
↔	Title bar	Fieldbus or TCP/IP communication active
⏸	Title bar	Hold active
⏸	At measured value	Hold for the actuator (current output, limit contactor etc.) is active
⏸	At measured value	An offset has been added to the measured value
ATC	At measured value	Automatic temperature compensation active
MTC	At measured value	Manual temperature compensation active
SIM	Title bar	Simulation mode active or Memocheck SIM connected
SIM	At measured value	The measured value is influenced by a simulated value
SIM	At measured value	The displayed measured value is simulated

 If two or more diagnostics messages occur simultaneously, only the icon for the message with the highest priority is shown on the display.

7.4.3 Assignment views

"Assignment views", e.g. Channel assignment view, appear as the last function in many sections of the menu.
You can use this function to see what actuators or functions are connected to a sensor channel.
The assignments appear in hierarchical order.

8 Technical data

8.1 Input

8.1.1 Input types (optional)

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

8.1.2 Measured variables

See documentation of the connected sensor.

8.2 Temperature inputs (optional)

8.2.1 Measuring range

-30 to 70 °C (-20 to 160 °F)

8.2.2 Input type

Pt1000

8.2.3 Accuracy

±0.5 Kelvin

8.3 Binary input, passive (optional)

8.3.1 Span

12 to 30 V, galvanically isolated

8.3.2 Signal characteristics

Minimum pulse width: 100 ms

8.4 Analog input, passive/active (optional)

8.4.1 Span

0/4 to 20 mA, galvanically isolated

8.4.2 Accuracy

±0.5 % of measuring range

8.5 Output (optional)

8.5.1 Output signal

2 binary outputs (standard):
Open collector, max. 30 V, 200 mA

Depending on the version:

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

8.5.2 Communication

- 1 service interface
- Commubox FXA291 (accessory) required for communication with the PC


8.6 Power supply

8.6.1 Electrical connection


See "Wiring" chapter.

8.6.2 Supply voltage

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

 The sampler cannot be operated without the battery.

Charger for Liquiport 2010 CSP44:

Field-suitable IP 67	100 to 240 V AC; charge current 2.0 A; also suitable for mains operation
Indoor use	100 to 240 V AC; charge current 2.0 A; also suitable for mains operation
 Mains operation means that the sampler is in operation during the charging process.	

Specification of charger for Liquiport 2010 CSP44:

- Max. output current = 2 A
- Max. output voltage = 29.5 V
- Double/reinforced insulation
- Constant current
- CSA or UL recognized according to UL 60950-1, UL 60601-1 or UL 61010-1 or the relevant CSA standards

8.6.3 Power consumption

Max. 60 W (only when using the battery chargers indicated by the manufacturer)

8.6.4 Capacity of battery

42 hours (at a sampling interval of 15 minutes, a sampling volume of 100 ml and a suction height of 4 metres) \cong 168 samples.

Standby capacity: 144 hours

8.6.5 Fuses

Input fuse: (behind the plate of the distribution arm in the black box)

T3.15A

Electronics fuse: (in the controller)

T4.0A

8.7 Performance characteristics

8.7.1 Sampling methods

- Event sampling
- Single and multiple samples
- Sampling table
- Time proportional sampling (CTCV)
- Flow proportional sampling (VTCV)
- Flow proportional sampling/time override (CTVV)

8.7.2 Dosing volume

10 to 10000 ml (0.3 to 340 fl.oz.)

8.7.3 Dosing accuracy

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

8.7.4 Repeatability

5 %

8.7.5 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, US EPA

8.7.6 Suction height

Max. 8 m (26 ft)

8.7.7 Hose length

Max. 30 m (98 ft)

8.8 Environment

8.8.1 Ambient temperature range

0 to 40 °C (32 to 100 °F)

Do not install the sampler in areas with high temperature and direct sunlight!

8.8.2 Storage temperature

–20 to 60 °C (0 to 140 °F)

8.8.3 Degree of protection

Sampler with cover closed: IP 54

Controller: IP 65

8.8.4 Electromagnetic compatibility

Interference emission and interference immunity as per EN 61326-1: 2006, class A for industry

8.8.5 Electrical safety

In accordance with EN 61010-1, protection class III (charger: protection class I), environment
≤ 3000 m (9800 ft) above MSL; The device is designed for pollution degree 2.

8.8.6 Relative humidity

10 to 95%, not condensing

8.9 Process

8.9.1 Medium temperature range

2 to 50 °C (36 to 122 °F)

8.9.2 Process pressure

Unpressurized

8.9.3 Medium properties

Sample media has to be free of abrasive substances.



Pay attention to the material compatibility of the wetted parts.


8.10 Mechanical construction

8.10.1 Dimensions

—> "Mounting" section

8.10.2 Weight

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

 With full bottles the weight of the sampler is more than 25 kg (55 lbs). To comply with ISO 11228-1 only transport the sampler together with a second person.

8.10.3 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
Suction line	Plastic PVC reinforced braided, EPDM black

8.10.4 Process connections

Intake hose ID 10 mm (3/8")

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