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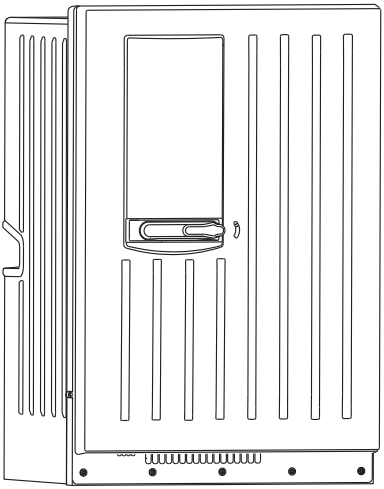
Operating Instructions
Liquiline System CAT860

Automatic sample preparation system for supplying process measurement devices with filtered sample from primary clarification and sludge activation



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1 Document information

1.1 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 **Causes (/consequences)** Possible consequences if ignored ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the situation **will** result in fatal or serious injury.
⚠ WARNING **Causes (/consequences)** Possible consequences if ignored ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the situation **can** result in fatal or serious injury.
⚠ CAUTION **Causes (/consequences)** Possible consequences if ignored ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in medium or minor injury.
NOTICE **Cause/situation** Possible consequences if ignored ▶ Action/note	This symbol alerts you to situations that can cause damage to equipment or property.

1.2 Symbols used

- Additional information, tips
- Permitted or recommended
- Forbidden or not recommended

2 Basic safety instructions

2.1 Requirements for personnel

- Installation, commissioning, operation and maintenance of the measuring system must only be carried out by specially trained technical personnel.
- Trained personnel must be authorized for the specified activities by the system operator.
- Electrical connection must only be carried out by a certified electrician.
- Technical personnel must have read and understood these Operating Instructions and must adhere to them.
- Measuring point faults may only be rectified by authorized and specially trained personnel.

Repairs not described in the enclosed Operating Instructions may only be carried out by the manufacturer directly or by the Service Organization.

2.2 Designated use

The Liquiline System CAT860 sample preparation system is designed to automatically supply process measuring systems with filtered samples from secondary clarification and sludge activation (see Technical Data).

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 therefore not permitted.
The manufacturer is not liable for damage resulting from improper or non-designated use.

2.3 Occupational safety

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

2.4 Operational safety

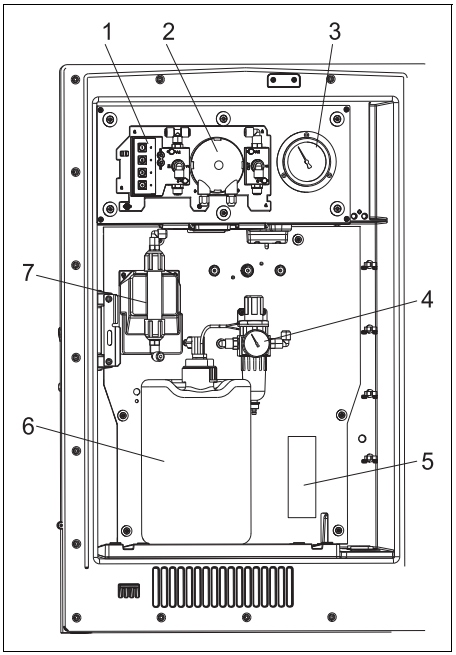
- Before commissioning the entire measuring point, check all the connections. Make sure that electric cables and hose connections are not damaged.
- Do not operate damaged products and secure them against unintentional commissioning. Label the damaged product as defective.
- If faults can not be rectified, the products must be taken out of service and secured against unintentional commissioning.

2.5 Product safety

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

3 Device design

A complete sample preparation system consists of:
- Liquiline System CAT860 sample conditioning
- Local operation with soft keys and status LEDs
- Filter unit with filter and holder in the configuration ordered
- Automatic cleaning function with compressed air (external compressed air supply necessary)
- Peristaltic pump for pumping the sample
- Vacuum pump for the automatic backflush function with cleaning solution
- Housing heating (optional)
- Sample hose, filter to pump in the configuration ordered, optionally heated
- Sample hose, pump to analyzer in the configuration ordered, optionally heated
- Cleaner (must be ordered separately)



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1 Soft keys
2 Peristaltic pump
3 Manometer
4 Pressure-reducing valve for compressed air
5 Housing heating (optional)
6 Cleaner
7 Vacuum pump

4 Incoming acceptance and product identification

4.1 Incoming acceptance

1. Make sure the packaging is not damaged.
   ↳ Notify your supplier of any damage to the packaging.
   Keep the damaged packaging until the matter has been settled.
2. Make sure the contents are not damaged.
   ↳ Notify your supplier of any damage to the contents of the delivery.
   Keep the damaged goods until the matter has been settled.
3. Check that the delivery is complete and nothing is missing.
   ↳ Compare it with the delivery documents and your order.
4. Pack the product in such a way as to protect it reliably against impact and moisture for storage and transportation.
   ↳ The original packaging materials provide optimum protection.
   The permitted ambient conditions must be observed (see technical data).

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

4.2 Product identification

4.2.1 Nameplate

The nameplate provides you with the following information on your device:
- Manufacturer's details
- Order code (device version)
- Serial number
- Power supply
- Degree of protection
- (Permitted) ambient conditions

Compare the data on the nameplate with your order.

4.2.2 Identifying the product

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

4.3 Scope of delivery

The scope of delivery comprises:
- 1 Liquiline System CAT860 in the version ordered
- 1 copy of the Operating Instructions (in the desired language on selection of the order option)
- 1 CD
- Optional accessories

4.4 Certificates and approvals

Declaration of Conformity
The product meets the requirements of the harmonized European standards.
It therefore complies with the statutory requirements of the EC directives.
The manufacturer confirms successful testing of the product by affixing the CE symbol.

5 Installation

⚠ CAUTION

Incorrect transportation or installation can cause injury and damage the device

- Always use a lifting truck or a fork-lift to transport the sample preparation system. Two people are needed for the installation.
- Lift the device by the recessed grips.
- Ensure that the sample preparation system is properly hooked into the wall holder unit at the top and bottom and fix it in place on the upper wall holder unit with the securing screw.

5.1 Installation conditions

5.1.1 Dimensions

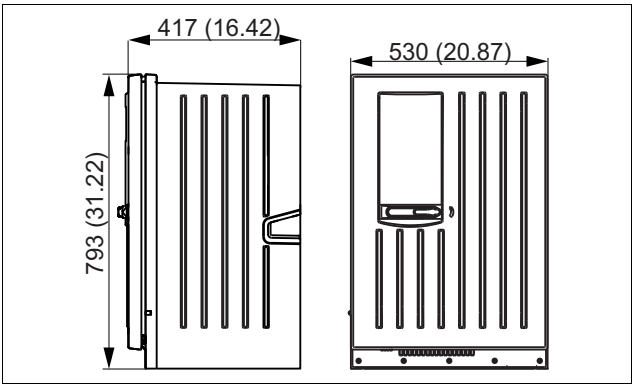


Fig. 1: Liquiline System CAT860 dimensions. Engineering unit mm (in).

5.1.2 Holder unit

Mounting materials for securing the unit on the wall (screws, wall plugs) are not included in the delivery and must be provided by the client.

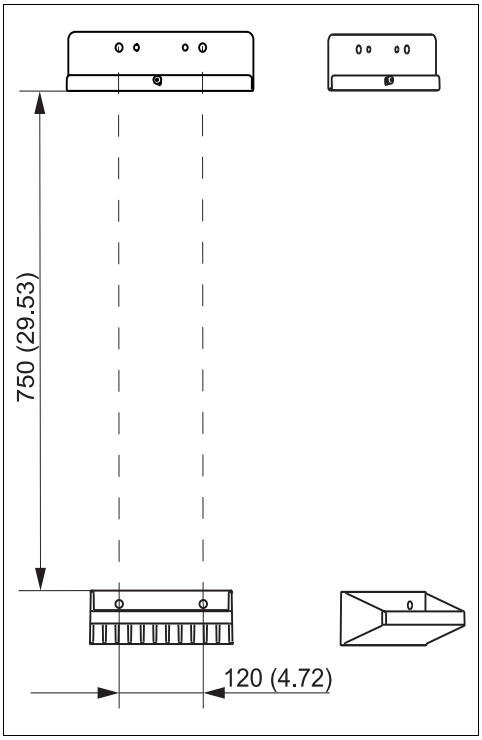


Fig. 2: Holder unit dimensions. Engineering unit mm (in).

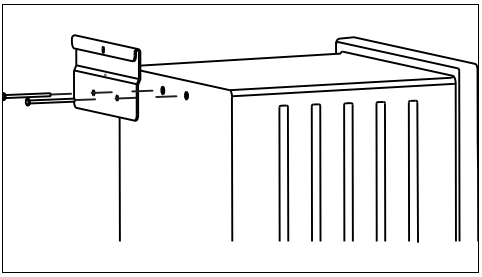


Fig. 3: Securing the holder unit on the housing

5.1.3 Spacing required for mounting the wall holder units

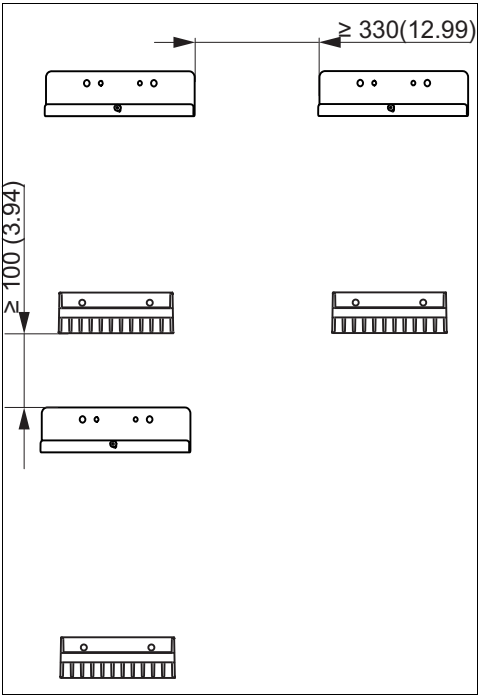


Fig. 4: Minimum spacing required for mounting. Engineering unit mm (in).

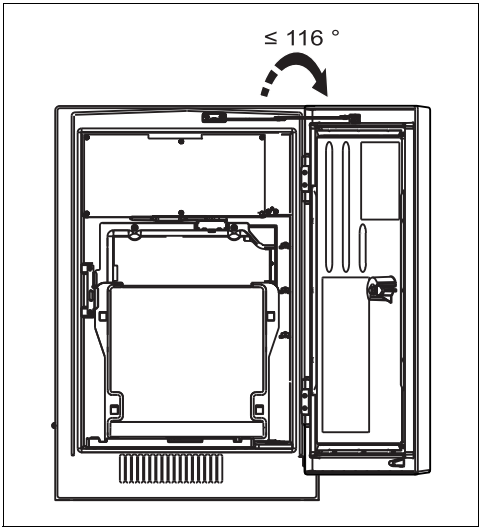


Fig. 5: Maximum opening angle

5.1.4 Hooking the sample preparation system into the wall holder unit

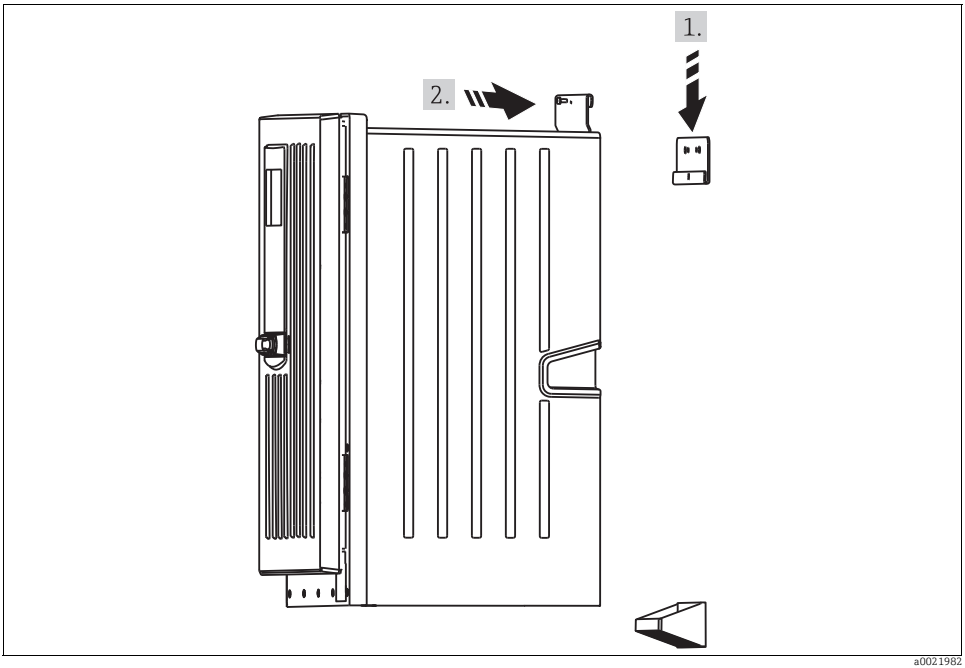


Fig. 6: Hooking into the wall holder unit

1. Hook the analyzer into the wall holder unit.
2. Secure the two upper parts of the wall holder unit with the screw supplied.

5.1.5 Mounting location

When installing the device, observe the following:
- Make sure that the wall has sufficient load-bearing capacity.
- Protect the device against additional heating (e.g. from heaters).
- Protect the device against mechanical vibrations.

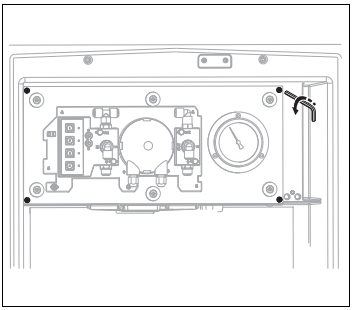
5.2 Manometer transportation lock

NOTICE

The manometer transportation lock is not open

Damage to the manometer or device

▶ Open the transportation lock of the manometer before commissioning



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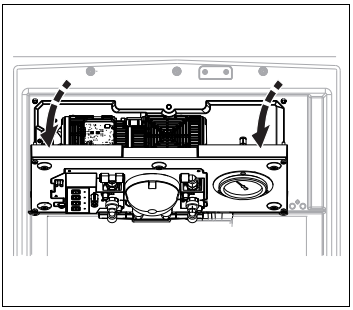
Release the four screws with a 3 mm Allen key.



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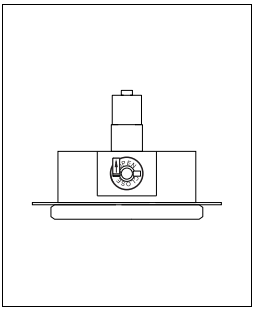
Fold out the cover towards the front.



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Open the transportation lock by moving the bar from "CLOSE" to "OPEN".

5.3 Mounting the filter in the process

Select the installation location in such a way that a suitable distance from the fixed installations is maintained, and the filter cannot be damaged even when moved (moving medium).
For fixed installation, the retaining point must be selected in such a way that the proper operation and maintenance of the assembly is guaranteed. The immersion tube must project at least 100 mm (3.94") above the retaining point (see figure).

The filter may only be installed with an assembly.

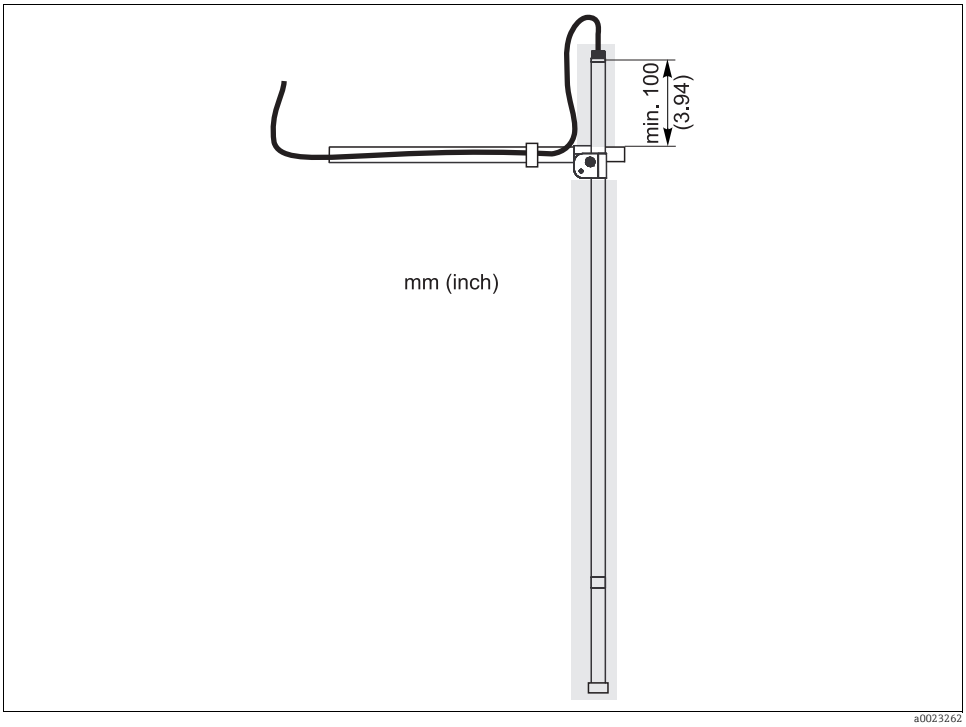
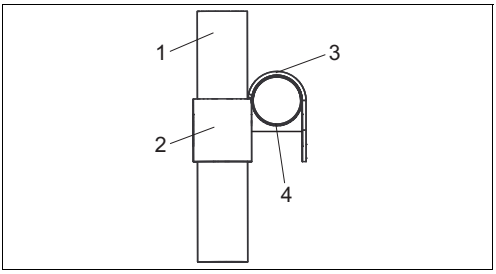


Fig. 7: Retaining point (shown without splash protection cap)

5.3.1 Mounting as fixed installation with immersion tube

The cross clamp is mounted in such a way that one closed side faces the center of the basin while the other closed side faces upwards.

Mount the immersion tube as follows:



1 Immersion tube
2 Cross clamp, closed side facing center of basin
3 Cross clamp, closed side facing upwards
4 Holder transverse pipe

Fig. 8: Mounting the cross clamp

1. Adjust the clamps on the cross clamp.
2. Slide the cross clamp over the immersion tube. Make sure that the closed side of the cross clamp is at the top.
3. Mount the multifunctional clamp ring (funnel-shaped side facing upwards) on the immersion tube above the cross clamp. The multifunctional clamp ring acts as an anti-slip lock.
4. Attach the cross clamp, along with the immersion tube, to the transverse pipe. Make sure that the closed side of the cross clamp faces the basin.
5. Align the assembly and the holder.
6. Tighten the clamp screws finger-tight (finger-tight corresponds to 13 Nm (9.6 lbf ft)).

Mount the filter as follows:

1. Screw the immersion tube connection (straight, 90°) onto the immersion tube.
2. Where applicable, screw the quick release fastener onto the immersion tube connection (optional).
3. Remove the thread adapter nut from the hose. The thread adapter nut is not required when installing with an immersion tube.
4. Guide the "filter to pump" hose with the connection for sample preparation through the splash protection cap from below.
5. Guide the "filter to pump" hose with the connection for the filter through the immersion tube from above.
6. If you are using a quick release fastener, insert the inner sleeve into the quick release fastener (see "Quick release fastener" section).
7. Connect the 4 mm, blue polytetrafluoro-ethylene sample hose to the filter (replacement hose PTFE, 4 mm, black).
8. Screw the filter onto the immersion tube connection or onto the quick release fastener if one is used.

Screw the pipes together finger-tight (without any gaps). The threads are lubricated and provided with an O-ring.

5.3.2 Mounting on a chain retainer

Prerequisite:

- The immersion tube is fitted with a filter.
- The transverse pipe is fitted with a chain

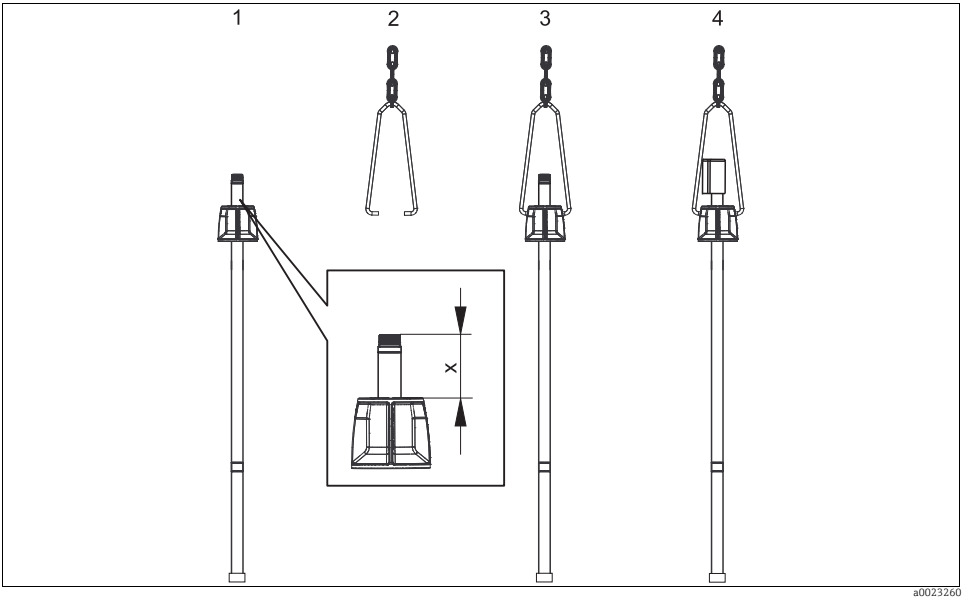


Fig. 9: Mounting the chain retainer

1 Mount the multi-functional clamp ring
2 Guide the bracket into the chain
3 Hook the bracket into the multi-functional clamp ring
4 Fit the splash protection cap
x 60 to 80 mm (2.35 to 3.15")

1. Insert the weights into the immersion tube.
2. Screw the multifunctional clamp ring onto the immersion tube.
3. Guide the bracket into the lowest link in the chain.
4. Attach the bracket to the multifunctional clamp ring.
5. Guide the "filter to pump" hose through the splash protection cap from below (do not bend).
6. Fit the Teflon hose onto the filter connection.
7. Secure the chain on the holder with the triangular carabiner.

5.3.3 Mounting with a float

Mount the filter as follows:

1. Screw the thread adapter nut onto the plastic insert of the float.
2. Connect the 4 mm, blue polytetrafluoro-ethylene sample hose to the filter.
3. Screw the filter adapter into the plastic insert of the float.
4. Guide the metal bracket through the lowest link in the chain.
5. Secure the metal bracket to the bores provided for this purpose.
6. Fix the "filter to pump" hose to the transverse pipe of the CYH112 holder using hook and loop Velcro fasteners.

Make sure that the filter is vertical and medium flows over it fully.

5.3.4 Quick release fastener

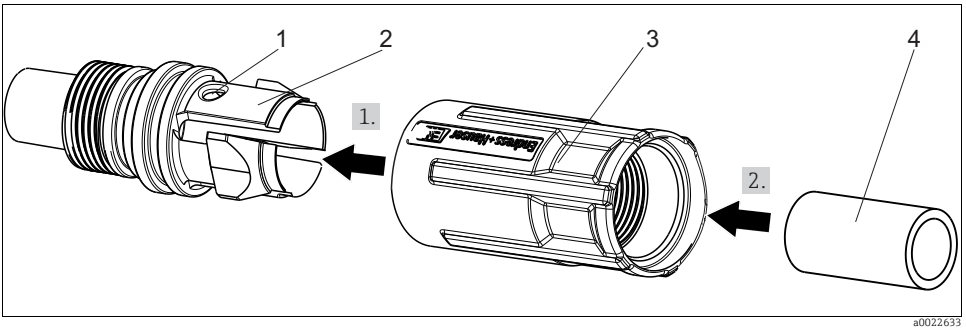


Fig. 10: Mounting the chain retainer

1 Bore - makes it possible to screw the adapter tight
2 Adapter
3 Thread adapter nut
4 Inner sleeve

Install the quick release fastener as follows:

1. Screw the adapter (item 2) into the immersion tube connection bracket.
2. Insert the Allen key or a similar tool through the bores (item 1) to secure the adapter.
3. Slide the thread adapter nut (item 3) over the adapter until the thread adapter nut engages with a click.
4. Guide the inner sleeve (item 4) through the thread adapter nut into the adapter as far as it will go.
5. Guide the hose for "filter to pump" through the immersion tube first of all and then through the quick release fastener.
6. Connect the sample hose (polytetrafluoro-ethylene, 4 mm, blue) to the filter.
7. Screw the filter into the quick release fastener as far as it will go. In doing so, turn the thread adapter nut, not the filter.

5.4 External compressed air connection

⚠ CAUTION

If not connected properly, this can result in injury and damage to the device

▶ Set a pressure of max. 5 bar (73 psi) at the pressure-reducing valve.

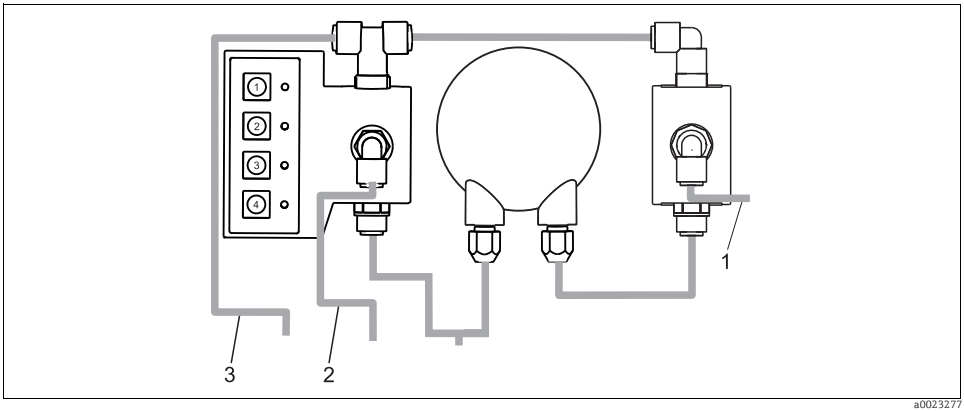


Fig. 11: Connecting external compressed air

1 Hose, pump to analyzer
2 Hose, filter to pump
3 Hose, compressed air / cleaner

Prerequisites:
- Compressed air of 2 to 5 bar (29 to 73 psi)
- The compressed air must be filtered (40 µm) and free from water and oil
- No continuous air consumption
- Minimum nominal diameter for air ducts: 4mm (0.16 ")

1. Connect the compressed air line to the connection provided on the bottom of the housing.
2. Run the valve's rinsing air connection at an air pressure of 2 to 5 bar (29 to 73 psi).

   ↳ Connect the pressure to the pressure-reducing valve.

5.5 Mounting the solenoid valve

The scope of delivery of the Liquiline System CAT860 includes a solenoid valve and a liquid detector for mounting in the Liquiline System CA80. For further information on mounting the valve in the analyzer, please refer to the enclosed kit instructions.

5.6 Post-installation check

- Once installation is complete, check the sample preparation system and hoses for damage.
- After mounting, check whether all the screws are tightened correctly.
- When mounted, check all the connections to ensure that they are properly seated and leak-proof.
- Make sure that the hoses cannot be removed without use of force.

6 Electrical connection

⚠ WARNING

The device is live!

Incorrect wiring can result in injury or fatality

- ▶ The electrical connection must only be carried out by a certified electrician.
- ▶ Technical personnel must have read and understood the instructions in this manual and must adhere to them.
- ▶ **Prior** to beginning any wiring work, make sure voltage is not applied to any of the cables.

NOTICE

The device does not have a power switch

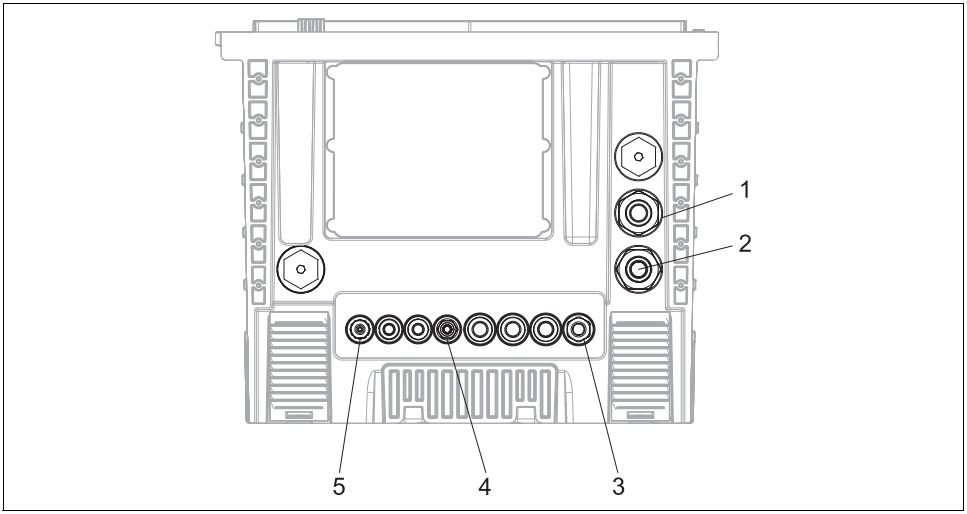
- ▶ As soon as there is a power supply to the device, it starts up.
- ▶ The customer must provide a fuse with a maximum rating of 6.0 A at the installation location. Please observe local installation regulations.
- ▶ The protective ground connection must be established before any other connections are made. Disconnecting the protective ground could result in danger.

NOTICE

Torn off or buckled hoses can damage the device

- ▶ When folding down the carrier board make sure this does not damage any hoses.

6.1 Cable and hose entries

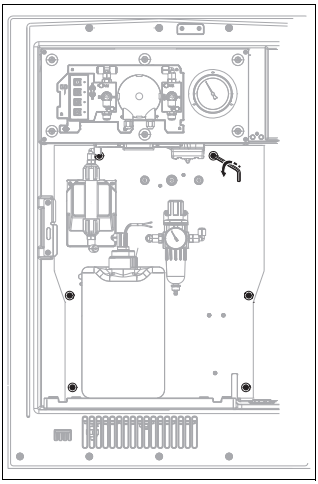


1 *Hose, "pump to analyzer"*
2 *Hose, "filter to pump"*
3 *Power cable*
4 *External compressed air line*
5 *Temperature sensor (optional)*

1. Release a suitable cable or hose gland on the underside of the housing and remove the dummy plug from the entry.
2. Making sure the gland is facing in the right direction, thread the gland onto the cable or hose end and pull the cable or the hose through the entry and into the housing.
   ↳ Make sure that the hose projects approx. 2 cm over the entry inside the housing.
3. Connect the cables as per the wiring diagram.
4. Lastly, tighten the cable gland or hose gland from the outside.

6.2 Terminal connection

- Power supply: e.g. NYY-J; 3-wire; max. 2.5 mm^2
- Analog, signaling and transmission cables: e.g. LiYY 10 x 0.34 mm^2



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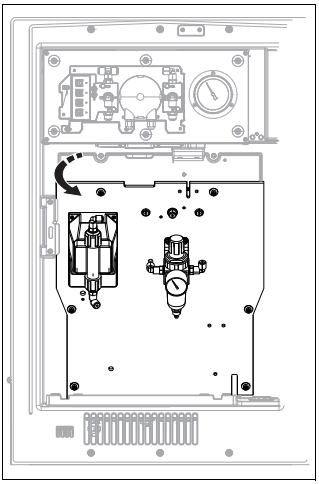
Release the six screws with a 4 mm Allen key.



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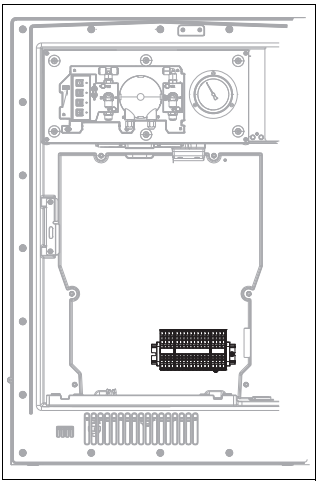
Fold out the carrier board as far as the lock plate.



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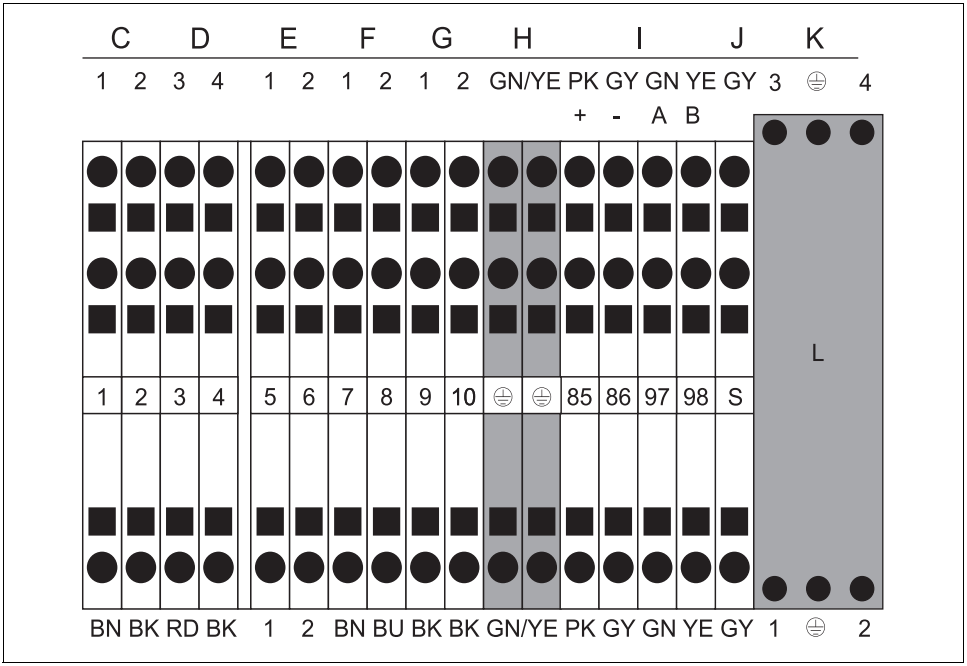
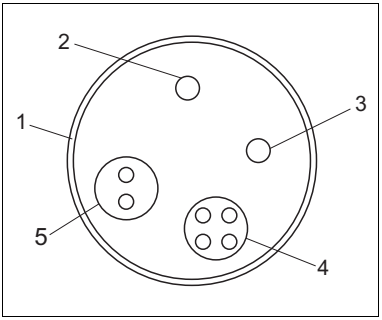
The terminal block is located behind the carrier board.

6.3 Wiring diagram



C	*Level monitoring*	*H*	*Grounding*
D	*Valve 3*	*I*	*Memosens*
E	*Housing heating (optional)*	*J*	*Shield*
F	*Vacuum pump*	*K*	*Supply voltage (115/230 VAC)*
G	*Hose heating (optional)*	*L*	*Line filter*

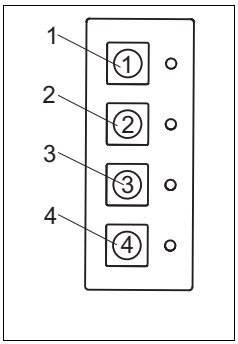
6.4 Structure of the spiral hose



1 Spiral hose, PVC, green
2 PTFE, blue
3 PTFE, black
4 Memosens and power supply
5 Hose heating

Fig. 12: Structure of the spiral hose

7 Operation



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1 *On-site controller*

2 *Sample pump forwards*
Sample pump in reverse (hold down the operating key)

3 *Backflush filter with air*

4 *Backflush filter with cleaner*

Key functions

Press once	Function 1	= LED on
Press and hold key down	Function 2	= LED flashes
Press twice	Stop	= LED off

8 Commissioning

8.1 Function check

⚠ WARNING

Risk of injury from medium leakage, incorrect supply voltage

Safety risks for staff and incorrect operation of the device

- ▶ Check all the connections to ensure that the device has been properly connected.
- ▶ Make sure that the supply voltage matches the voltage indicated on the nameplate.

8.2 Venting the diaphragm pump

First vent the diaphragm pump.

1. Open the vent valve.
2. Fill the pipe from the canister to the diaphragm pump completely with cleaning solution.
3. Close the vent valve.

9 Operation

The sample preparation menu is configured via the display and operating elements of a Liquiline System CA80 analyzer. The status and the current process step of the Liquiline System CAT860 sample preparation system are also displayed here. For further information please refer to the relevant documentation.

To ensure the optimum synchronization of the measuring point, all the components (analyzer, sensors, sample preparation system) are controlled in automatic mode by the Liquiline System CA80 analyzer. If key 1 on the Liquiline System CAT860 is pressed, this causes a request to activate the onsite mode. If this conflicts with a program cycle that has already begun, the system waits until the cycle is finished before the necessary activation is performed.

This process can take a few minutes, and sometimes even up to 30 minutes (e.g. if cleaning the sample preparation system). Status LED 1 flashes during this time.

10 Diagnostics and troubleshooting

The Liquiline System CAT860 sample preparation system with Memosens technology supports the user with diagnostic messages when diagnosing and rectifying faults as per NAMUR NE 107. The relevant diagnostic message is output on the Liquiline System analyzer display.
If an error category "F" diagnosis message occurs, the status LED of the Liquiline System CAT860 is lit red and the display background of the Liquiline System CA80 changes to red.
--> Additional information is provided in BA01240C

11 Maintenance

⚠ WARNING

Electrical voltage

Possible risk of serious or fatal injury

- De-energize the device before opening it.

⚠ CAUTION

Risk of injury/infection from medium leakage or unclean filter

- Before carrying out any maintenance work, ensure that the automatic cleaning function is deactivated
- Before carrying out any maintenance work, ensure that the sample line is unpressurized and that it is empty and has been rinsed.
- Clean the filter immediately every time it is removed from the process; only store cleaned filters.

11.1 Cleaning

⚠ CAUTION

Risk of injury from cleaning solutions

- Wear protective clothes, goggles, and protective clothing.
- When disposing of unused cleaning solution, please comply with the local regulations.

NOTICE

Prohibited cleaning agents

Danger of damaging the housing surface or housing seal!

- For cleaning purposes, never use concentrated mineral acids or bases.
- Never use organic cleaners such as benzyl alcohol, methanol, methylene chloride, xylene or concentrated glycerol cleaner.
- Never use high-pressure steam for cleaning purposes.

11.1.1 Housing

Only clean the front of the housing with commercially available cleaning agents.

The front is resistant to the following as per DIN 42 115:

- Ethanol (short periods)
- Diluted acids (max. 2% HCl)
- Diluted bases (max. 3% NaOH)
- Soap-based household cleaners

11.1.2 Cleaning agents

The type of cleaning agent selected depends on the degree and type of contamination. For the most common types of contamination and the suitable cleaning agent, please refer to the table below.

Type of contamination	Cleaning agents
Greases and oils:	CY820 alkaline cleaning solution
Limescale deposits, metal hydroxide buildup:	CY820 acidic cleaning solution
Protein buildup:	CY820 acidic cleaning solution
Fibers, suspended substances:	CY820 alkaline cleaning solution
Light biological buildup:	CY820 oxidizing cleaning solution
Antisoluble biological buildup:	CY820 oxidizing cleaning solution, then CY820 acidic cleaning solution

11.1.3 Process-wetted parts

For stable and reliable sampling, sample preparation system components that come in contact with the media must be cleaned regularly. The cleaning frequency and intensity depend on the medium.

Manual cleaning

- Remove minor contamination using a suitable cleaning solution (see "Cleaning solution" section).
- Heavy dirt can be removed with a soft brush and a suitable cleaning agent.
- In the case of difficult-to-remove contamination, soak the parts in a cleaning solution. Then clean the parts with a brush.

Manual filter cleaning

1. Use the transport packaging of the filter as the cleaning vessel.
2. First clean the filter for 1 to 2 days in a combination of alkaline (1.5 %) and oxidizing cleaner (1.0 %).
   ↳ See documentation on cleaner CY820.
3. Rinse the filter thoroughly with water.
4. Then clean the filter for 2 days in an acidic cleaning solution (1.5 %)
5. Rinse the filter thoroughly with water.

A typical filter cleaning interval, e.g. for installations in the primary clarification system, is 1 week.

Collecting vessel and hoses between the solenoid valve and collecting vessel

The automatic cleaning function of the Liquiline System CAT860 comprises the filter and practically all the hoses. The collecting vessel and the hose between the solenoid valve and collecting vessel do not fall within the scope of the automatic cleaning function. This excludes the possibility of the measurement result being affected by the cleaning solution. Therefore, the collecting vessel and the hose between the solenoid valve and collecting vessel must be cleaned manually on a regular basis. The cleaning interval in a typical application is 1 week.

11.2 Replacing the pump hose and pump head

1. Open the sample preparation system door.
2. Press operating key 1 to activate on-site mode.
   ↳ The status LED beside key 1 first starts flashing and is then lit continuously once the on-site mode has been enabled. This may take a few minutes, see "Operation" section.
3. Remove the filter from the medium.
4. Press key 2.
   ↳ The status LED beside key 2 comes on and the peristaltic pump rotates forward. The medium in the hoses is now replaced by intake air.
5. Wait until all the hoses have been completely emptied.
6. Press key 2 again.
   ↳ The pump stops and the status LED goes off.
7. Open the bayonet lock on the peristaltic pump.
8. Replace the hose and, where necessary, the pump head.
9. Close the bayonet lock on the peristaltic pump.
10. Check that all the hoses and connectors are properly seated.
11. Press operating key 1 to return to automatic mode.
    ↳ The settings are accepted, the status LED beside operating key 1 goes out.
12. Close the sample preparation system door.

11.3 Replacing the filter

Fig. 13: Removing the filter cartridge

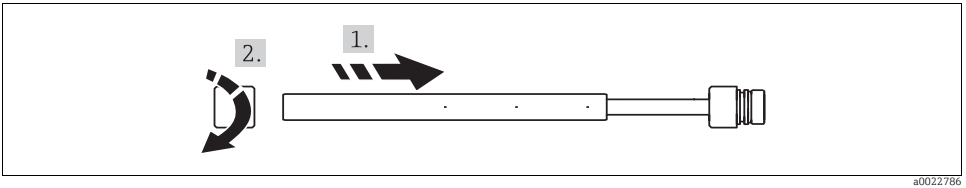

Fig. 14: Installing the new filter cartridge

- The filter unit can stay on the assembly when replacing. Only the ceramic is replaced.
- Lubricate the O-rings regularly.

12 Repair

⚠ CAUTION

Risk posed by unprofessional repairs

- Any time repairs or maintenance work is carried out, suitable measures must then be taken to ensure that the sample preparation system is leak-tight. Once the work is complete, the sample preparation system must once again meet the specifications in the technical data. Replace any other damaged parts immediately.

12.1 Spare parts

Item	Spare parts kit	Order number
201	CAT820/860 kit: solenoid valve (1 pc) ▪ Kit instructions: CAT820 / 860, electronics compartment	71218548
202	CAT820/860 kit: control module 100-240 V ▪ Kit instructions: CAT820 / 860, electronics compartment	71222174
204	CAT820/860 kit: key electronics ▪ Kit instructions: CAT820 / 860, electronics compartment	71222179
205	CAT820/860 kit: ceramic filter, pipe 0.1µm ▪ Kit instructions: CAT8xx filter	71222181
206	CAT820/860 kit: 10 x conn. peristaltic pump ▪ Kit instructions: CA8x / CAT8xx hose connection	71241442
208	CAT820/860 kit: pump head (10 x) ▪ Kit instructions: CAT820 / 860, electronics compartment	71222201
209	CAT8xx kit: filter O-ring set (20 x) ▪ Kit instructions: CAT8xx filter	71222206
210	CAT820/860 kit: pump hoses (10 pc) ▪ Kit instructions: CAT820 / 860, maintenance	71222209
211	CAT860 kit: 10 x hose conn. T ▪ Kit instructions: CA8x / CAT8xx hose connection	71222212
212	CAT820/860 kit: 10 hose conn. straight ▪ Kit instructions: CA8x / CAT8xx hose connection	71222213
213	CAT8xx kit: 10 x 90° hose connections ▪ Kit instructions: CA8x / CAT8xx hose connection	71222214
214	CAT8xx kit: 10 x G1/4" hose connections ▪ Kit instructions: CA8x / CAT8xx hose connection	71222216
217	CAT820/860 kit: peristaltic pump, complete ▪ Kit instructions: CAT820 / 860, electronics compartment	71218549
219	CAT8xx kit: PTFE hose, transparent, 5m ▪ Kit instructions: CAT820 / 860, maintenance	71222222
225	CAT860 kit: CPU module ▪ Kit instructions: CAT820 / 860, electronics compartment	71218557

Item	Spare parts kit	Order number
226	CAT860 kit: canister for cleaner 5 l ▪ Kit instructions: CAT860 sample preparation inlet	71218561
227	CAT860 kit: impact/expanding rivets (30 pcs) ▪ Kit instructions: CAT860 sample preparation inlet	71222223
228	CAT860 kit: complete diaphragm pump ▪ Kit instructions: CAT860 sample preparation inlet	71218563
229	CAT860 kit: complete heating module ▪ Kit instructions: CAT860 sample preparation inlet	71218567
230	CAT860 kit: complete manometer ▪ Kit instructions: CAT860 sample preparation inlet	71218568
231	CAT860 kit: door excl. window, insulated ▪ Kit instructions: CAT860 sample preparation inlet	71229927
235	CAT860 kit: complete pressure-reducing valve ▪ Kit instructions: CAT860 sample preparation inlet	71222224
244	Kit CAT820/860: ceramic filter, complete ▪ Kit instructions: CAT8xx filter	71241492
247	CAT820/860 kit: T-sensor (1 pc.) ▪ Kit instructions: CAT820 / 860, electronics compartment	71247278
249	CAT820/860 kit: ceramic filter, PVC holder ▪ Kit instructions: CAT8xx filter	71222217
251	CAT8xx kit: compressor 230 V	71249987

Detailed information on the spare parts kits is available in the "Spare Part Finding Tool", which can be accessed on the Web at: www.products.endress.com/spareparts_consumables

12.2 Return

The product has to be returned in the event of repair, factory calibration, incorrect delivery or incorrect ordering. As an ISO-certified company and due to legal regulations, Endress+Hauser is obligated to use particular handling techniques for all returned products that have come in contact with medium.

To ensure swift, safe and professional device returns:
visit our website to obtain information about the procedure and basic conditions.
www.services.endress.com/return-material

12.3 Disposal

The product contains electronic components and must therefore be disposed of in accordance with regulations on the disposal of electronic waste.
Please observe local regulations.

13 Accessories

The most important accessories available at the time this document went to print are listed below. Contact your service representative or Sales Center for accessories that are not listed here.

Quick release fastener, filter, G1
- Order no. 71238203

Post
- Order no. 71221053

Post mount clamp
- For securing the sample preparation to horizontal and vertical posts and pipes
- Order no. 71214646

Please refer to TI00432C for the order numbers of accessories for the Flexdip CYA112 assembly. The quick release fastener for Flexdip CYA112 is not compatible with Liquiline System CAT8x0.

14 Technical data

14.1 Temperature inputs

14.1.1 Measuring range

-30 to 70 ˚C (-20 to 160 ˚F)

14.1.2 Type of input

Pt1000

14.1.3 Accuracy

± 2.5 K

14.2 Power supply

14.2.1 Supply voltage

100 to 120/200 to 240 V AC ± 10 %, 50/60 Hz

14.2.2 Power consumption

300 VA (with housing heating)

14.2.3 Cable entries

Depending on the version:
- 2 x M32 cable gland (assigned internally)
- 1 x M20 cable gland (for power cable)
- 1 x M12 (used by temperature sensor, optional)

Permitted cable diameter:
- M20 x 1.5 mm: 7 to 13 mm (0.28 to 0.51")

14.2.4 Fuse

5x20 mm, 250 V, 3.15 A slow-blow (T3.15A)

14.3 Performance characteristics

14.3.1 Type of sampling

Control unit, Liquiline System CA80 analyzer

14.3.2 Filtrate quantity

- 5.5 to 16.5 ml/min
- Factory setting: 8.25 ml/min

All the values have been determined with new filters.

14.3.3 Suction height of peristaltic pump

Max. 5 m (16 ft)

14.3.4 Hose length, filter to pump

Max. 5 m (16 ft)

14.3.5 Hose length, pump to analyzer

Max. 30 m (98 ft)

14.4 Environment

14.4.1 Ambient temperature range

Unheated
- 5 to 50 °C (41 to 122 °F)

Heated
- -20 to 50 °C (-4 to 122 °F)

14.4.2 Storage temperature

-20 to 60 °C (-4 to 140 °F)

14.4.3 Humidity

10 to 95%, not condensating

14.4.4 Degree of protection

IP55

14.4.5 Pollution degree

The product is suitable for pollution degree 2.

14.4.6 Electromagnetic compatibility

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

14.4.7 Electrical safety

IEC 61010-1, Class I equipment
Low voltage: overvoltage category II
Environment < 2000 m (< 6562 ft) above MSL

14.5 Process

14.5.1 Sample temperature

4 to 40 °C (39 to 104 °F)

14.5.2 Sample consistency

TS < 8 g/l

14.5.3 Process pressure

Unpressurized

14.5.4 pH value of the sample

pH 4 to 14

14.5.5 Salt content of the sample

NaCl concentration < 10,000 mg/l (ppm)

14.6 Mechanical construction

14.6.1 Dimensions

See "Installation" chapter.

14.6.2 Weight

33 kg (73 lbs)

14.6.3 Materials

Housing material	
Housing exterior cover	Plastic ASA+PC
Housing inner lining	Plastic PP

Process-wetted parts	
Filter (ceramic) ▪ End caps	Al_2O_3, coated ▪ PVC
Hose, sample preparation	PTFE
Couplings, peristaltic pump ▪ Nut + sleeve	 ▪ PP
Hose, peristaltic pump	PHARMED
Coupling, solenoid valve and T-section	POM
Solenoid valve on sample collecting vessel	PVDF
Seal, solenoid valves	EPDM
Seal, valve sample collecting vessel	FKM
Solenoid valve for backflushing	PEEK
Hose from solenoid valve to sample collecting vessel	NORPRENE
Cleaning solution canister	PE
Conductivity detection before valve ▪ Double nipple ▪ Sleeve	 ▪ PP ▪ Stainless steel 1.4571 (AISI 316Ti)

14.6.4 Hoses and cables

Hose, filter to pump
- Lengths: 3 m (9.8 ft), 5 m (16.4 ft)
- Spiral hose:
  - PVC material
  - OD 21.6 mm (0.85")
  - ID 16 mm (0.63")
- Sample hose 1 / 2:
  - PTFE material
  - OD 4 mm (0.16")
  - ID 2 mm (0.08")
  - Color: blue/black
- Heated version:
  - Hose heating: 115V/230V (connection to sample preparation system)
  - Heating capacity 17 Watt per meter, self-limiting

If a 2400 mm immersion pipe is used, a 5 m hose must be selected from the filter to the pump.

Hose, pump to analyzer
- Lengths: 2 m (6.6 ft), 5 m (16.4 ft), 10 m (32.8 ft), 15 m (49.2 ft), 20 m (65.6 ft), 30 m (98.4 ft)
- Spiral hose:
  - PVC material
  - OD 24.6 mm (0.97")
  - ID 19 mm (0.75")
- Memosens cable
- Sample hose 1 / 2:
  - PTFE material
  - OD 4 mm (0.16")
  - ID 2 mm (0.08")
  - Color: blue/black
- Heated version:
  - Hose heating: 115V/230V (connection to CA80)
  - Heating capacity 17 Watt per meter, self-limiting

Compressed air hoses
- Permitted hose lengths: 5 m (16.4 ft)(included in delivery), 10 m (32.8 ft), 15 m (49.2 ft), 20 m (65.6 ft), 30 m (98.4 ft), 50 m (164.0 ft)

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