EA01612C/07/EN/01.25-00
71704367
2025-05-31

Installation Instructions
Sample preparation systems CAT820/860

Electronics compartment

Endress+Hauser
People for Process Automation

Table of contents

1 Overview

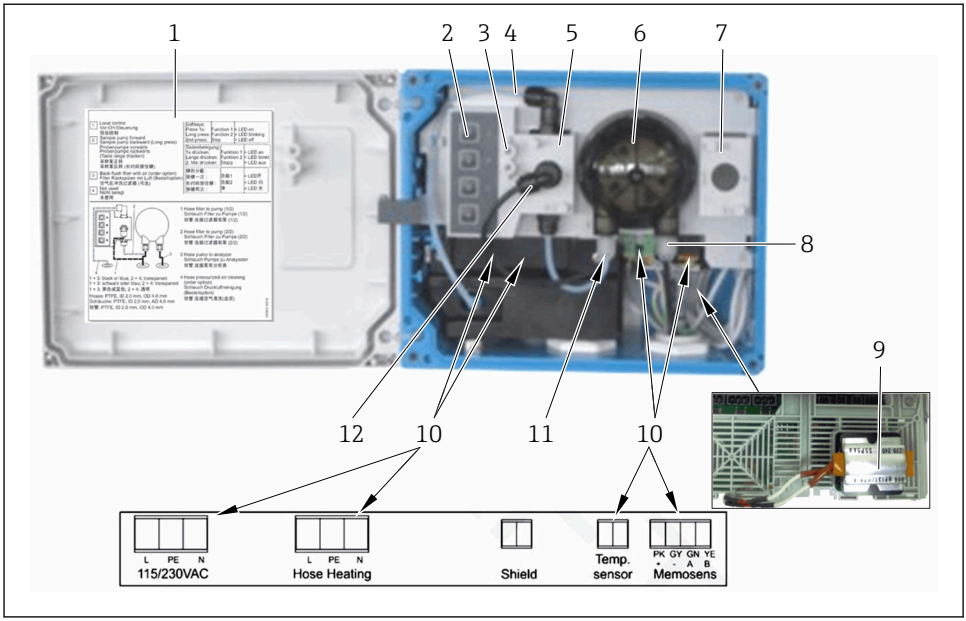
1.1 Spare parts kits

These installation instructions apply to the following spare parts kits:

Order code	Description	Page
71218548	CAT820/860 solenoid valve	→ 7
71218549	CAT820/860 peristaltic pump, complete	→ 8
71222201	CAT820/860 roller head pump	→ 8
71218554	CAT820 heater, complete	→ 9
71218551	CAT820 fan, small 40x40 mm	→ 10
71218553	CAT820 CPU module	→ 11
71247280	CAT820 CPU module, time-controlled	→ 11
71218557	CAT860 CPU module	→ 10
71222174	CAT820/860 control module, 100-240 V	→ 11
71222179	CAT820/860 keypad electronics	→ 11
71218552	CAT820 housing cover	→ 12
71247278	CAT820/860 temperature sensor	→ 13

1.2 CAT820 overview

The following graphic shows an overview of the CAT820:



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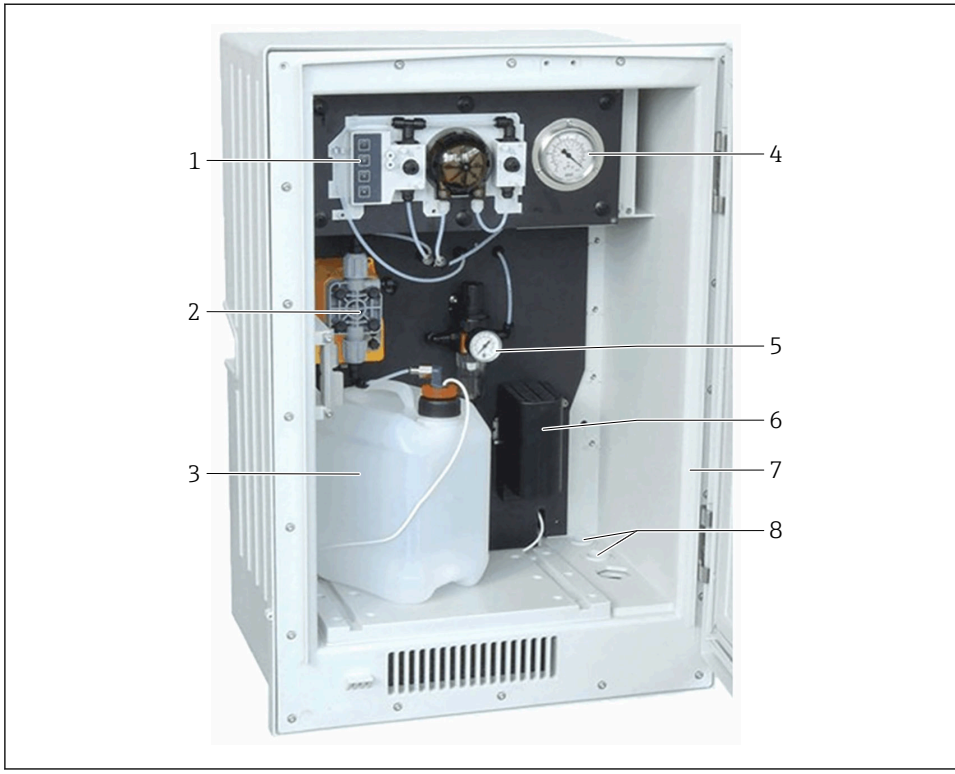
1 CAT820 overview

1 *Housing cover with notice label*
2 *Keyboard for local operation*
3 *LEDs for status indication*
4 *Compressed air (V1 compressed air input, optional)*
5 *Valve V1 (optional)*
6 *Peristaltic pump*
7 *Mounting location for valve V2 (only for CAT860)*
8 *Pump output (pressure side of pump, sample to analyzer)*
9 *Internal heater and fan (optional)*
10 *Terminals for temperature sensor, Memosens control line, hose heater and power connection*
11 *Pump inlet (sample intake)*
12 *Sample inlet with compressed air cleaning*

1.3 CAT860 overview

CAT860 and CAT820 are based on the same electronics module. CAT860 also offers an automated filter cleaning system using a special cleaner.

The following graphic shows an overview of the CAT860:



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2 *CAT860 overview*

1 *CAT820/860 electronics module (details → 1, 4)*
2 *Vacuum pump for cleaner (identical design to CAT430 pump MP-OL5)*
3 *5-liter cleaner canister*
4 *Pressure gauge*
5 *Pressure-reducing valve*
6 *CAT860 housing heating (optional)*
7 *Housing (same design as CA80)*
8 *Sample inlet and outlet (rear two couplings)*

2 Intended use

- The parts of the kits must only be used as spare parts for CAT820/860 sample preparation systems. Any other use is not permitted!
- Use only original parts from Endress+Hauser.
- In the W@M Device Viewer, check if the spare part is suitable for the existing device.

3 Personnel authorized to carry out conversion

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to perform the stated tasks.
- The electrical connection may only be established by an electrical technician.
- The technical personnel must have read and understood these Installation Instructions and must follow the instructions they contain.
- Measuring point faults may be repaired only by authorized and specially trained personnel.
- In the case of Ex-certified devices, the technical staff must also be trained in explosion protection.

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

4 Safety instructions

⚠ WARNING

Risk of electric shock!

- ▶ When disconnecting from the power supply, secure the circuit breaker to prevent unintentional recommissioning.
- ▶ Check that mains supply circuits are de-energized (only applies to heated hoses).
- ▶ Follow the instructions in the relevant chapters of this manual, as the procedure for electrical safety depends on the service kits used. The CAT820 and CAT860 sample preparation systems do not have their own switches for power supply.
- ▶ All work must be carried out according to applicable safety standards.

⚠ CAUTION

Risk to health due to contact with the process medium!

- ▶ Wear protective gloves, protective goggles and protective clothing, particularly when working with reagents, chemicals or process solutions.

⚠ CAUTION

Electronic assemblies are sensitive to electrostatic discharges (ESD)!

- ▶ Before removing an assembly from the antistatic packaging, it must be discharged, e.g. at a protective ground. Continuous grounding, e.g. with an ESD wristband, is recommended.

Potential impact on the process

Before decommissioning an active device, the potential impact on the overall process must be taken into account! This applies in particular when using the switching contacts, the analog signal outputs or the communication interface of the associated measuring instrument to control process variables. Coordinate service tasks with the operator!

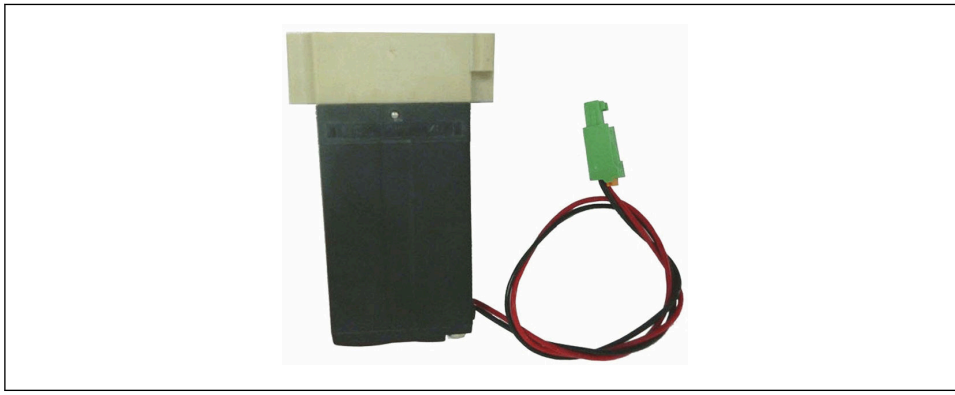
Contact Endress+Hauser Service if you have questions: www.addresses.endress.com

5 Scope of delivery

5.1 71218548 Kit CAT820/860 solenoid valve

The kit contains the following parts → 3, 7:

1 x	Solenoid valve	1 x	Kit instructions



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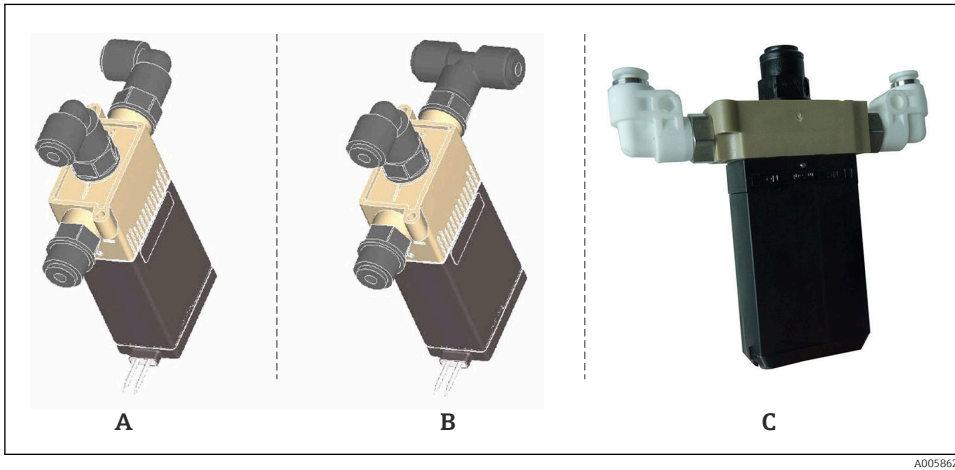
3 *CAT820/860 solenoid valve*



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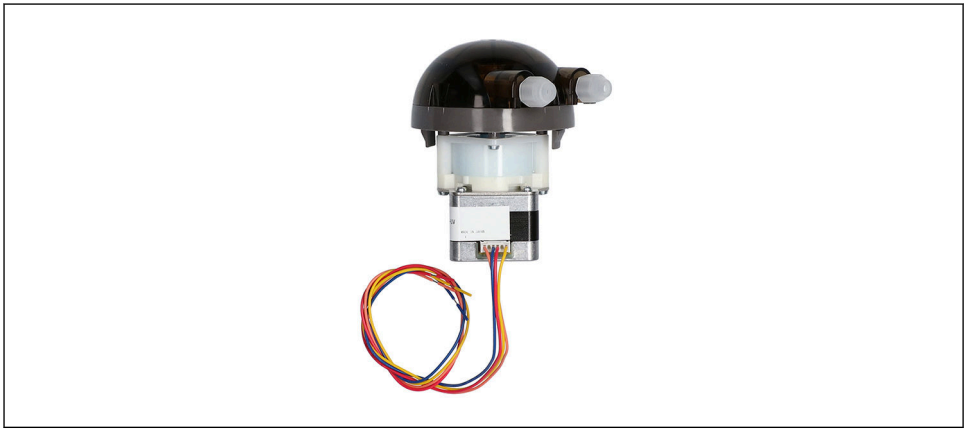
4 *Valve with couplings*

A Valve with couplings - used as V1 in CAT820, used as V2 in CAT860
B Valve with couplings - used as V1 in CAT860
C Valve with couplings - used as compressed air valve in CAT860

5.2 71218549 Kit CAT820/860 peristaltic pump, complete

The kit contains the following parts → 5, 8:

1 x	Peristaltic pump, complete	1 x	Kit instructions



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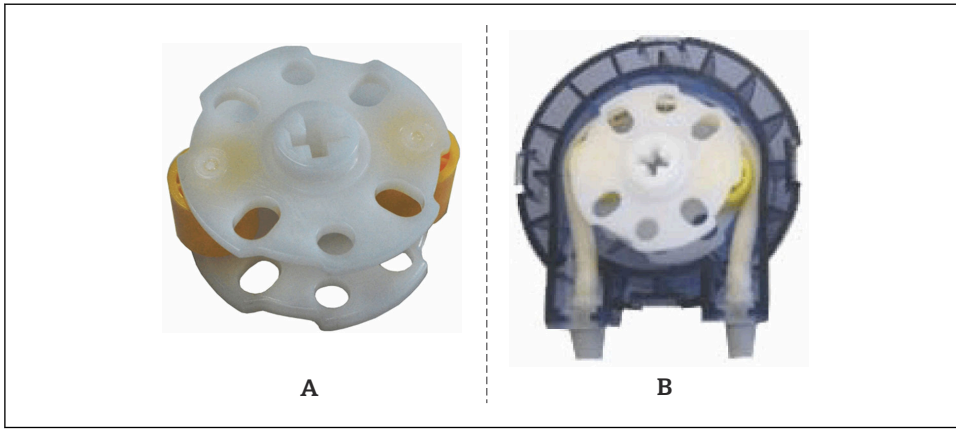
5 *CAT820/860 Peristaltic pump cpl.*

5.3 71222201 Kit CAT820/860 roller head pump

The kit contains the following parts → 6, 9:

10 x	Roller head with two rollers	1 x	Kit instructions



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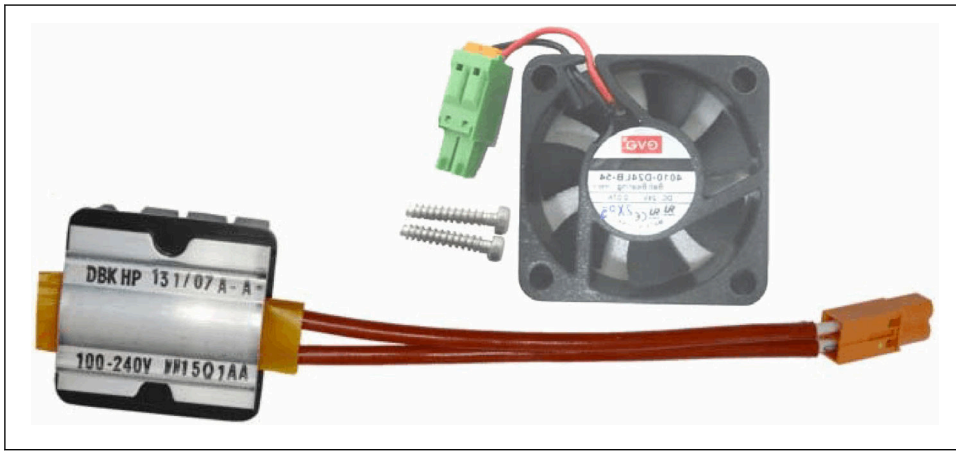
6 *CAT820/860 roller head pump*

A Roller head with 2 rollers for CAT820/860 peristaltic pump
B Complete view of pump head with roller head and pump hose (only for information)

5.4 71218554 Kit CAT820 heater, complete

The kit contains the following parts → 7, 9:

1 x	Heating element	2 x	Fixing screw
1 x	Fan 40 x 40 mm	1 x	Kit instructions



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7 *CAT820 heater, complete*

5.5 71218551 Kit CAT820 fan 40 x 40 mm

The kit contains the following parts → 8, 10:

1 x	Fan 40 x 40 mm	1 x	Kit instructions

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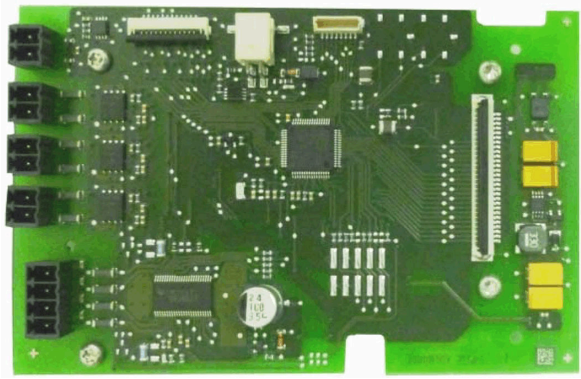
8 *CAT820 fan 40 x 40 mm*

5.6 71218557 Kit CAT860 CPU module

The kit contains the following parts → 9, 10:

1 x	CPU module, depending on kit order code for CAT860	1 x	Kit instructions



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9 *CAT820/860 CPU module*

5.7 71218553 Kit CAT820 CPU module

The kit contains the following parts → 9, 10:

1 x	CPU module, depending on kit order code for CAT820	1 x	Kit instructions

5.8 71247280 Kit CAT820 CPU module, time-controlled

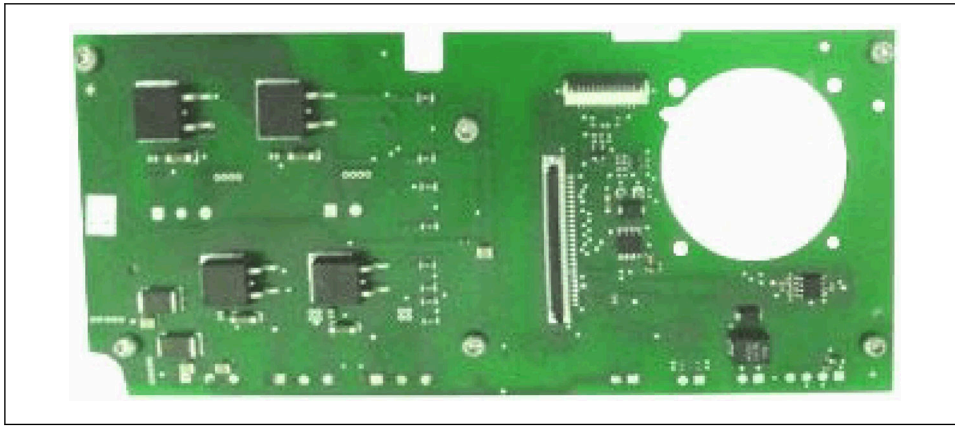
The kit contains the following parts → 9, 10:

1 x	CPU module, depending on kit order code for CAT820	1 x	Kit instructions

5.9 71222174 Kit CAT820/860 control module

The kit contains the following parts → 10, 11:

1 x	Control module 100-240 V	1 x	Kit instructions



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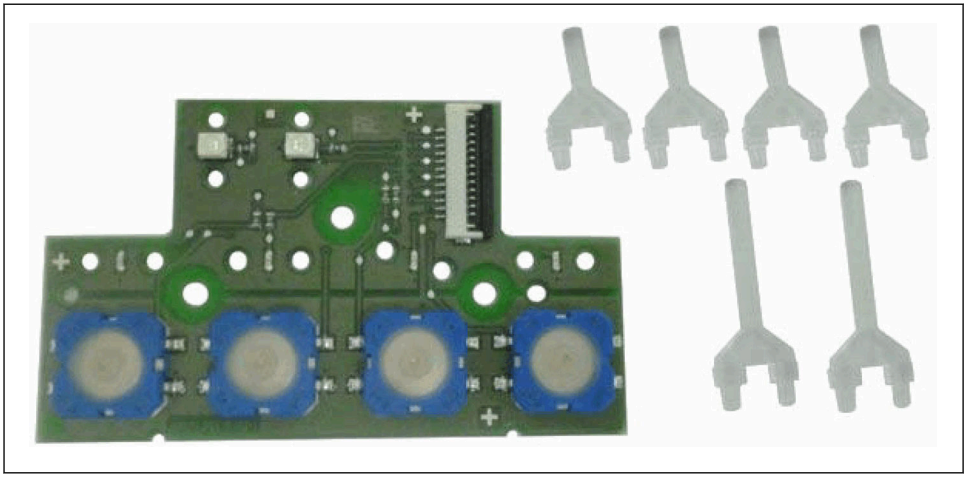
10 CAT820/860 control module

5.10 71222179 Kit CAT820/860 keypad electronics

The kit contains the following parts → 11, 12:

1 x	Keypad electronics	4 x	Light conductor, short (15 mm)
2 x	Light conductor, long (26 mm)	1 x	Kit instructions



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11 CAT820/860 keypad electronics

5.11 71218552 Kit CAT820 housing cover

The kit contains the following parts → 12, 12:

1 x	Housing cover cpl. with hinges	1 x	Kit instructions

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12 CAT820 housing cover

5.12 71247278 Kit CAT820/860 temperature sensor

The kit contains the following parts → 🖼 13, 🖹 13:

1 x	Temperature sensor Pt1000	1 x	Kit instructions

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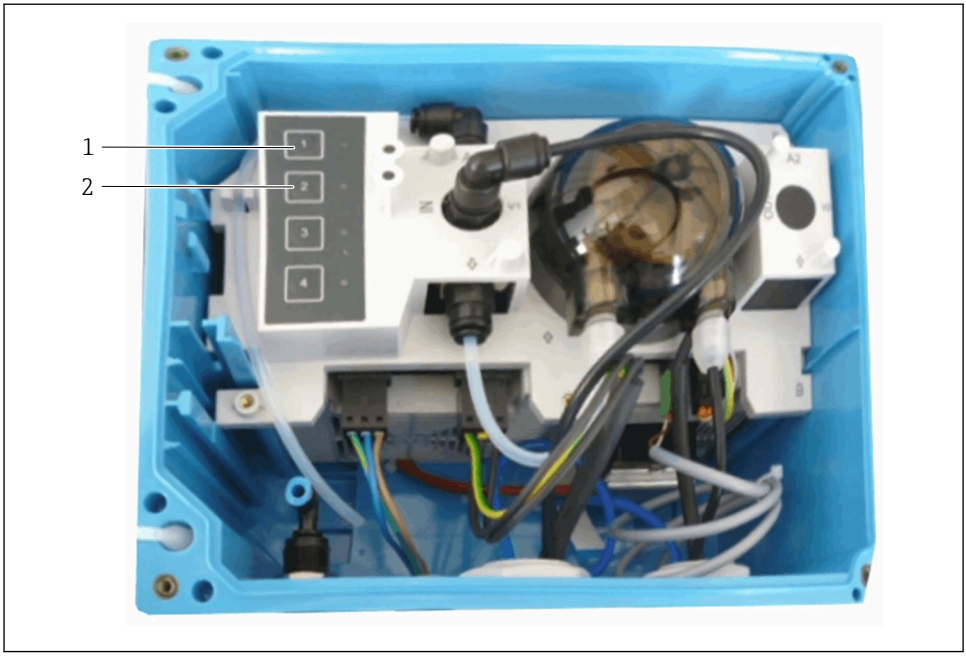
🖼 13 *CAT820/860 temperature sensors*

6 Preparation

1. Open the cover of the sample preparation system.
2. Switch the sample preparation system with button (1) to manual mode → 🖼 14, 🖹 14.
3. Remove the entire filter unit from the water.



14 *Local operation CAT820/860*

1 Manual mode on/off
2 Press briefly: Pump feeds towards the analyzer. Press and hold: Pump feeds towards the filter.

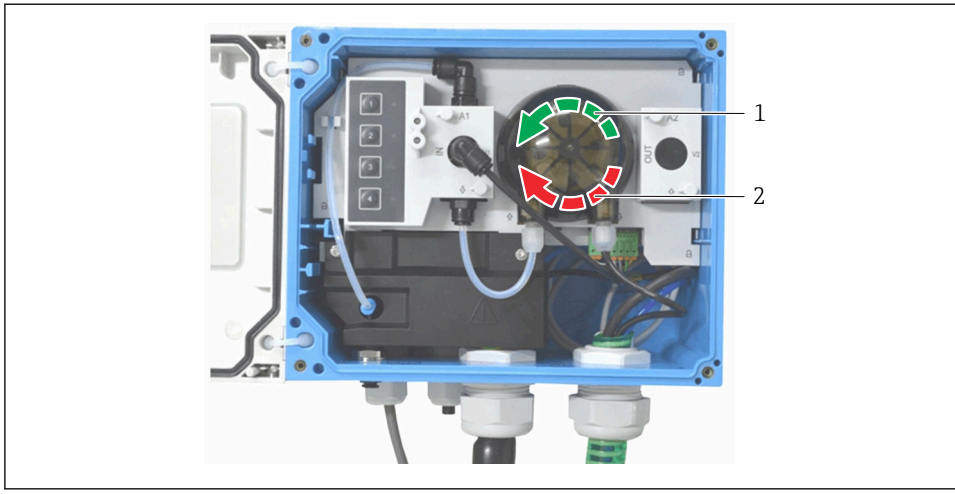
4. Use button (2) to pump toward the analyzer until the hose is empty.

NOTICE

If hose heaters are connected to the CAT820 or CAT860:

▶ Switch off the power connection (115/230 VAC) for the hose heaters using the system-side circuit breaker!

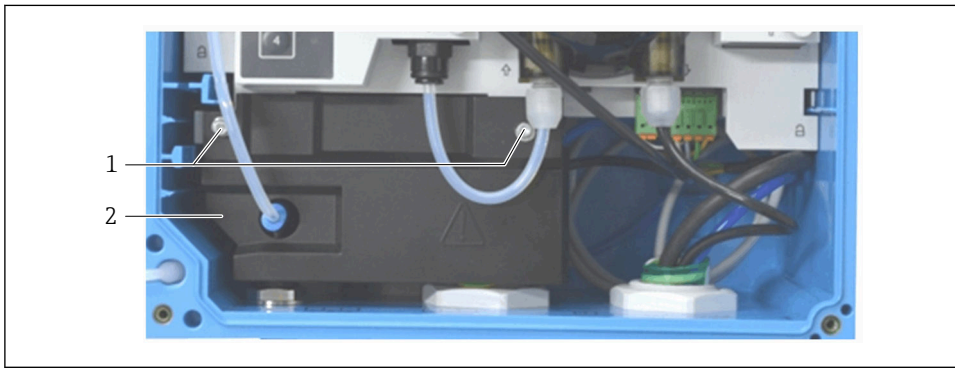
5. Loosen the hoses on the pump.
6. Remove all hoses. Have a paper towel ready for any residual liquid.
7. Remove the pump head. The pump head has a bayonet lock - turn the pump head counterclockwise→ 14, 15.
   ↳ The roller head and pump hose can now be replaced.



15 *Pump head removal*

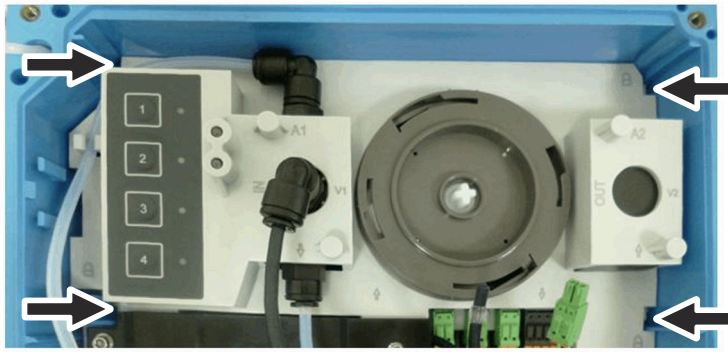
1 Remove head
2 Secure head

8. Remove screws (1) and touch guard cap (2) (Allen key 2.5 mm).→ 16, 15.



16 *Touch guard cap*

9. Remove all plug-in connectors.
10. Loosen the four locking mechanisms of the inner section → 17, 16 (screwdriver 2.5 ... 4 mm).



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17 Locking mechanisms

11. Remove the entire inner section upwards → 18, 16. Caution! May be difficult to remove.

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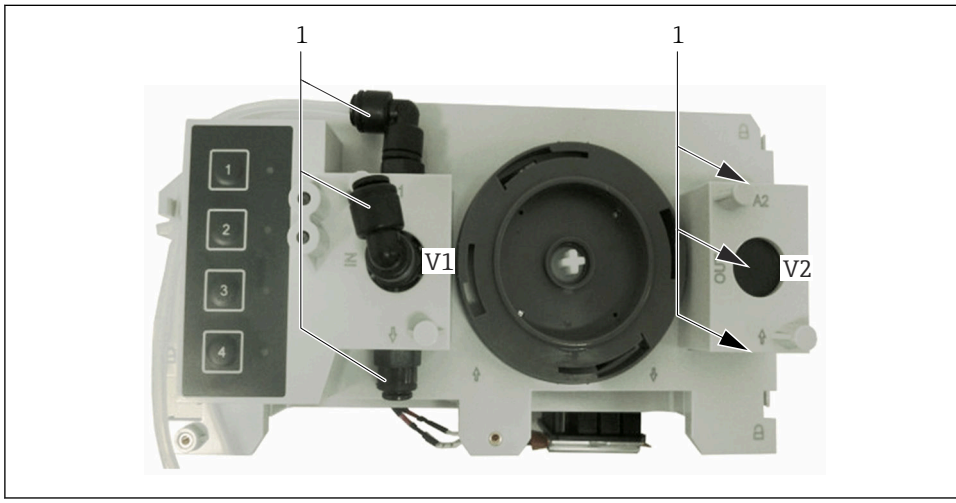
18 Inner section

7 Valve replacement

The valve configuration depends on the type and version of the → 4, 7sample conditioning system.

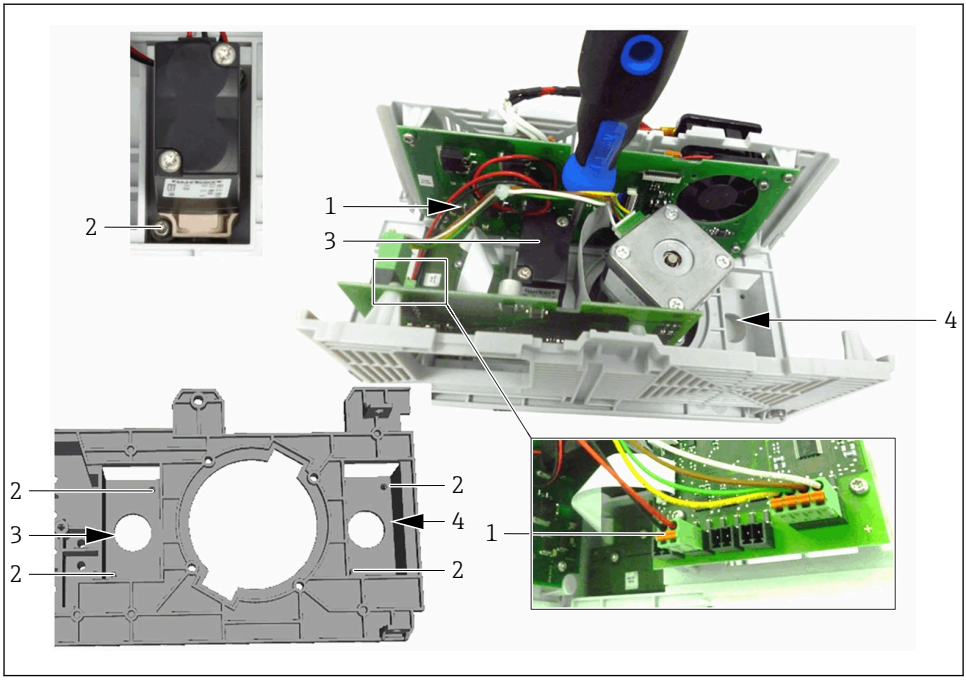
7.1 Replacing valve V1 and V2

1. Perform the preparation steps → 13.
2. Unscrew all hose connectors (1) of the defective valve V1 or V2 → 19, 17(14 mm wrench).



19 *Hose connector valves*

3. Place the entire inner section upside down to access the securing screws and the valve's connector.
4. Unplug the two-wire red/black valve cable (1) of valve V1 (3) or V2 (4) → 20, 18).
5. Release the securing screws (2) of valve V1 (3) or V2 (4) and remove the valve → 20, 18(Torx screwdriver T10).

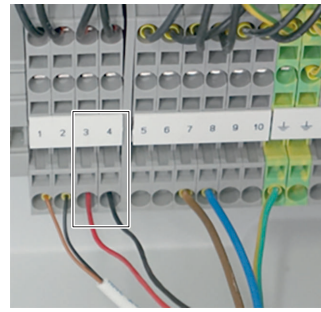


20 Valve removal

6. Install the new valve, plug in the connection cable and reattach the hose connectors.
7. Reassemble the device by performing the preparation steps in reverse order→ 13.
8. Put the device back into operation and check the functions.

7.2 Replacement of compressed air valve (CAT860)

1. Perform the preparation steps→ 13.
2. Loosen the hose connectors of the valve.
3. Disconnect the cables from the terminals 3 and 4 → 21, 19.



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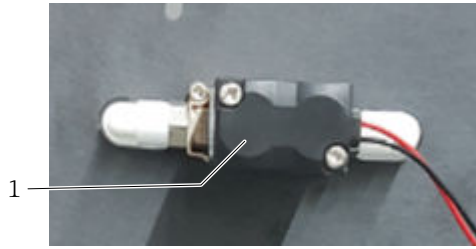
21 Cable terminals

4. Remove the screws from the carrier plate and replace the compressed air valve (1).



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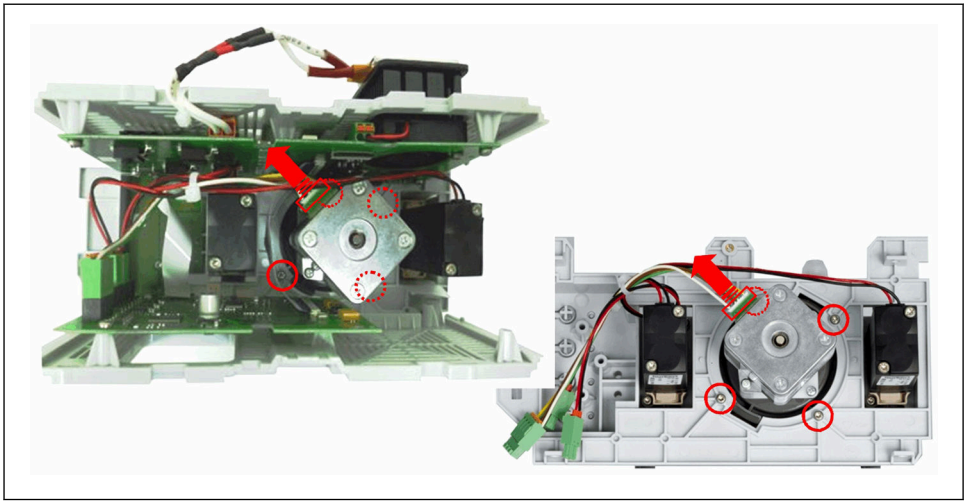
22 Compressed air valve

5. Connect the cables to terminals 3 and 4→ 21, 19.
6. Reconnect the hose connectors.

8 Replacing the pump

1. Perform the preparation steps→ 13.
2. Place the entire inner section upside down to access the securing screws and the pump motor's connector→ 23, 20.
3. Unplug the pump motor cable from the pump.



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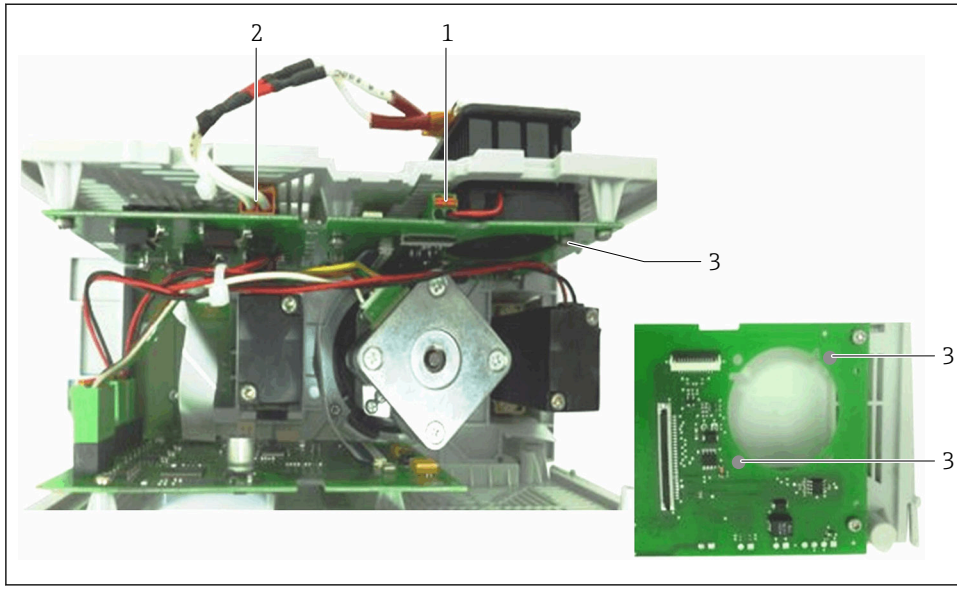
23 Screws and connector on pump motor

4. Loosen the securing screws of the pump motor and remove the motor.
5. Install the new pump motor.
6. Reconnect the cable.
7. Reassemble the device by performing the preparation steps in reverse order → 13.
8. Put the device back into operation and check the functions.

9 Replacing the CAT820 heater

1. Perform the preparation steps→ 13.
2. Loosen the screws of the side panel and fold out the side panel → 23, 20 (Torx screwdriver T20).
   ↳ If the two ribbon cables come loose in the process, they must be reconnected.
3. Disconnect the plug connectors for the fan (1) and heater (2).
4. Loosen the Torx screws (3) securing the fan to the module (Torx screwdriver T10).



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24 Heater with fan

5. Remove the fan with the heater.
6. Install the new fan with the heater and reconnect the plug-in connectors. The fan's label must face outward (toward the side panel).
7. Reattach the side panel to the central section of the mounting frame. Check the ribbon cables while doing so.
8. Reassemble the device by performing the preparation steps in reverse order → 13.
9. Put the device back into operation and check the functions.

10 Heater upgrade

1. Install the internal housing heater with fan (see the "Replacing the CAT820 heater" → 20section.
2. **For CAT820 in versions with Memosens technology (versions CAT820-AAxxxxxxx0xxxx and -AAxxxxxxx1xxxx):** Activate the CAT820 heater on the CA80: "Menu / Setup / Sample Preparation / Sample preparation 1/2 / Heatings / Cabinet" . Set the housing heater to "Available".
3. Check the heater: via "Menu / Diagnostics / System Test / Sample Preparation 1/2 / Cabinet heating" - the housing temperature of the CAT820 is shown on the CA80 display.

4. **For CAT820 without Memosens technology (versions CAT820-AAxxxxxxx2xxxx and CAT820-AAxxxxxxx3xxxx):** No activation required.

11 Replacing the fan

For procedure, see the "Replacing the CAT820 heater" section → 20.

12 Replacing the CPU module

Check the module type before installation:

- 71218553: CPU module for CAT820
- 71247280: CPU module for CAT820, time-controlled
- 71218557: CPU module for CAT860

1. Perform the preparation steps→ 13.
2. Loosen the two side Torx screws of the side panel holding the CPU module (Torx screwdriver T20).

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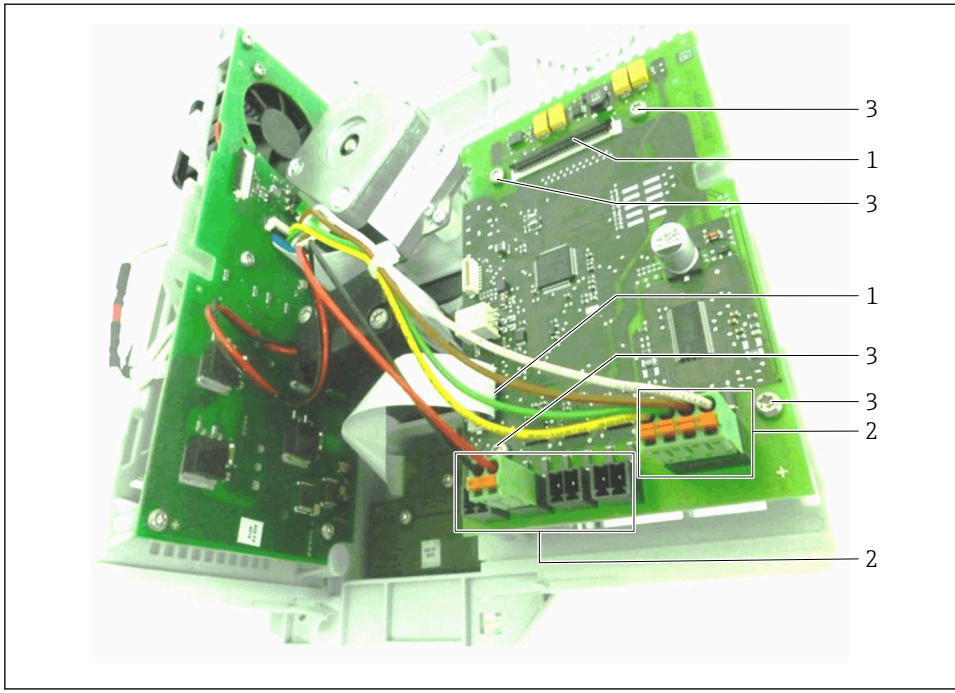
25 Loosening the side panel

3. Label or number the two-pole connectors to avoid confusion.
4. Disconnect all plug-in connectors (2) on CPU module (number depends on variant, → 26, 23).
5. Release the clamp connections (1) of the two ribbon cables.
6. Release the 4 Torx screws (3) holding the module on the side panel (Torx screwdriver T10).



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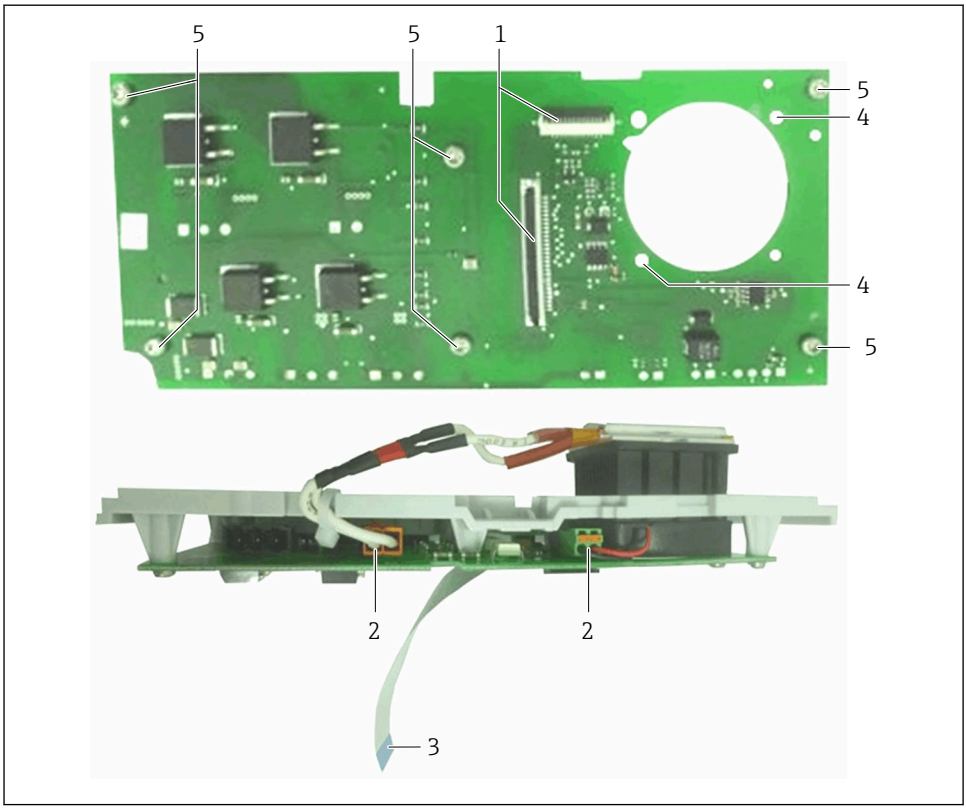
26 Removing the CPU module

7. Replace the CPU module.
8. Attach the new module to the side panel and reconnect the plug-in and clamp connections.
9. Reattach the side panel to the central section.
10. Reassemble the device by performing the preparation steps in reverse order → 13.
11. Put the device back into operation and check the functions.

13 Replacing the control module

1. Perform the preparation steps→ 🖹 13.
2. Loosen the two side Torx screws of the side panel holding the CPU module (Torx screwdriver T20)→ 🖼 25, 🖹 22.
3. Disconnect all plug-in connectors (2) on the control module (number depends on variant → 🖼 27, 🖹 24.
4. Release the clamp connections (1) of the two ribbon cables.
5. Loosen the six Torx screws (5) securing the module to the side panel (Torx screwdriver T10).
6. Remove the control module.
7. **In modules with heater:** Disconnect the cables for the heater and fan (→ 🖼 27, 🖹 24, bottom) and remove the heater together with the fan.

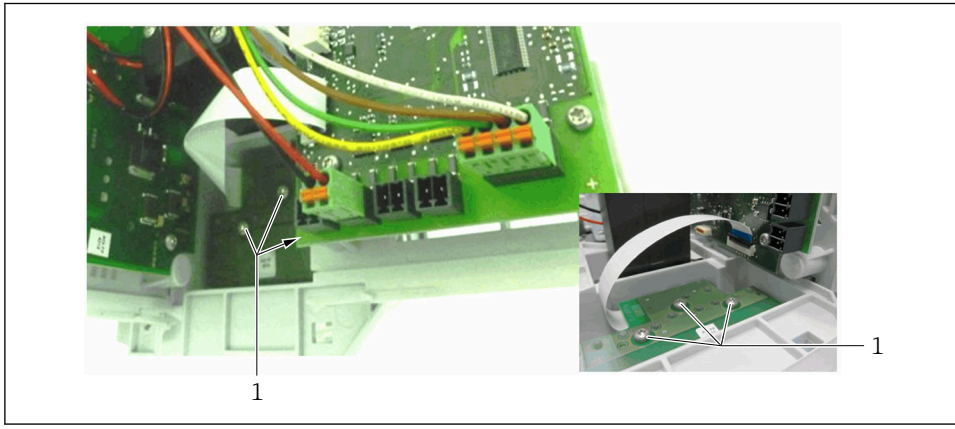


🖼 27 *Removing the control module*

8. Replace the control module.
9. Attach the new module to the side panel.
10. If necessary, mount the existing heater onto the new module.
11. Reconnect all plug-in connections and the two clamp connections.
12. Attach the side panel to the central section.
13. Reassemble the device by performing the preparation steps in reverse order → 13.
14. Put the device back into operation and check the functions.

14 Replacing the keypad electronics

1. Perform the preparation steps→ 13.
2. Loosen the two Torx screws of the side panel holding the CPU module (Torx screwdriver T20) → 25, 22.
3. Fold the CPU module to the side.
4. Release the three securing screws (1) of the keypad electronics → 28, 25(Torx screwdriver T10).
5. Remove the keypad electronics from the central section of the mounting frame (pay attention to the ribbon cable!).



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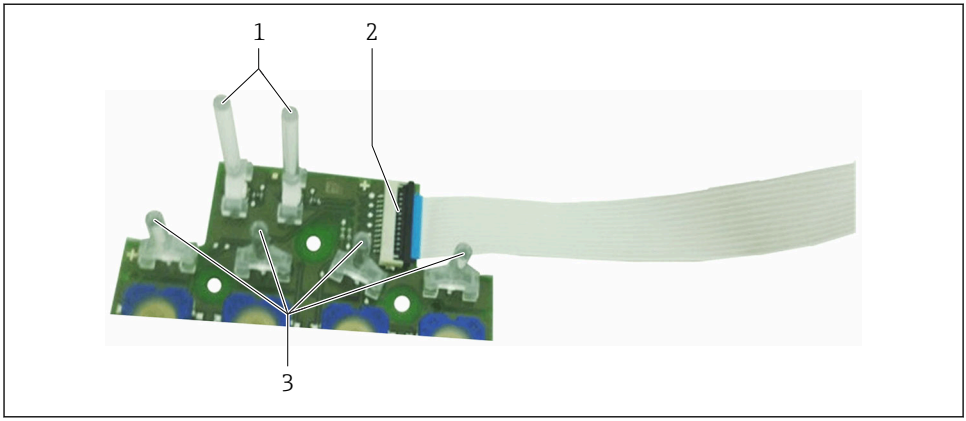
28 *Removing the keypad electronics*

6. Turn the keypad electronics so the ribbon cable connector becomes accessible.
7. Unlock the clamp connector (2) of the ribbon cable and unplug the cable → 29, 26.



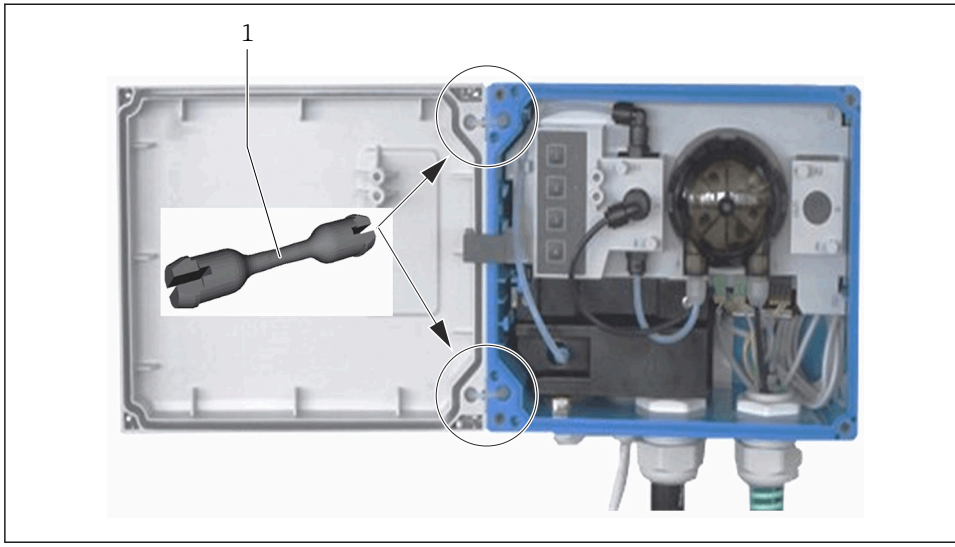
29 Removing the keypad electronics

8. Connect the new keypad electronics to the ribbon cable.
9. Insert the two long (1) and four short (3) light conductors into the corresponding holes on the top side of the module → 29, 26.
10. Rotate the inner section in such a way that the keypad electronics can be installed from below.
11. Insert the light conductors together into the corresponding holes of the central section of the mounting frame, and secure the keypad electronics with the 3 securing screws.
12. Reattach the side panel with the CPU module to the central section of the mounting frame.
13. Reassemble the device by performing the preparation steps in reverse order → 13.
14. Put the device back into operation and check the functions, especially the keypad function and operation of the LEDs.

15 Replacing the housing cover

The preparation steps → 13 are not necessary to replace the cover.

1. Open the cover using the four knurled screws.
2. Open the cover.
3. Detach the hinges on the housing side. The hinges are only inserted on both sides and can simply be pulled out. If necessary, use a combination pliers (1).
4. The new cover is supplied including hinges. Insert the hinges, close the cover and hand-tighten the knurled screws.



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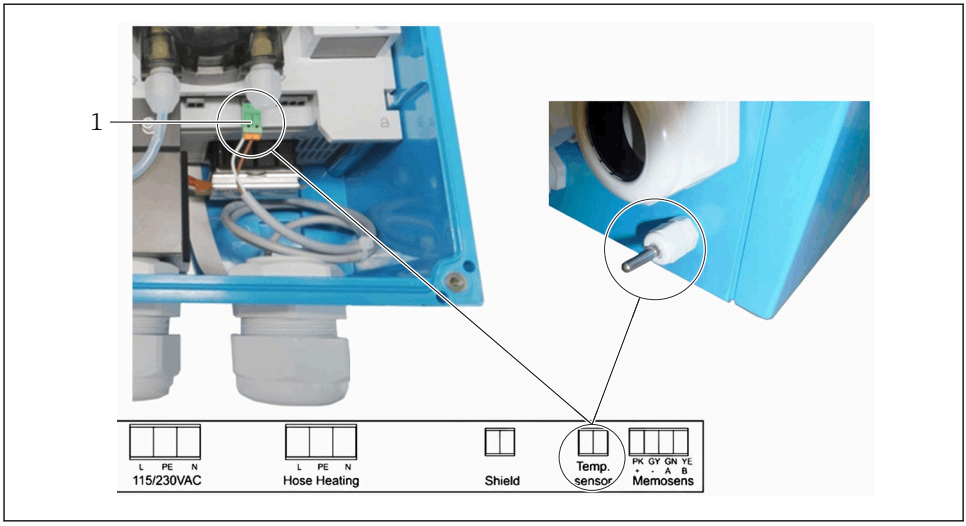
30 Cover hinges

16 Replacing the temperature sensor

The preparation steps → 13 are not necessary to replace the cover.

1. Open the cover using the four knurled screws.
2. Open the cover.
3. Unplug the temperature sensor connector (1) and remove the sensor.
4. Wind up the temperature sensor cable and secure it with a tie.
5. Secure the new temperature sensor in the small cable gland (→ 31, 28, right) and reconnect the connector.



31 Kit CAT820/860 temperature sensor

17 Additional documentation

Detailed information on the device can be found in the Operating Instructions for the transmitter and in the other documentation available via:

- www.endress.com/device-viewer
- Smartphone/tablet: Endress+Hauser Operations app

18 Disposal

If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product is marked with the depicted symbol in order to minimize the disposal of WEEE as unsorted municipal waste. Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

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