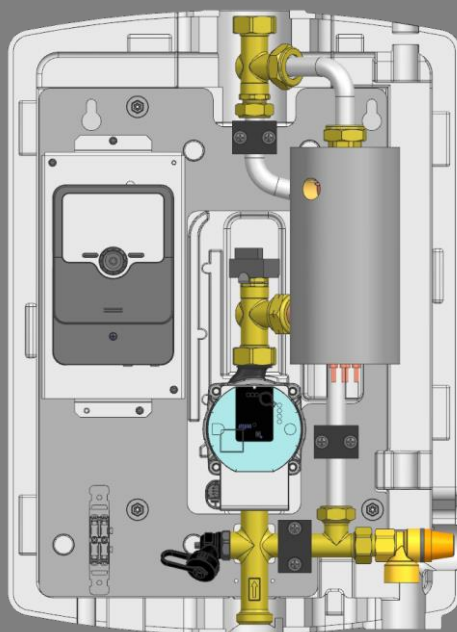




INSTALLATION AND OPERATING MANUAL

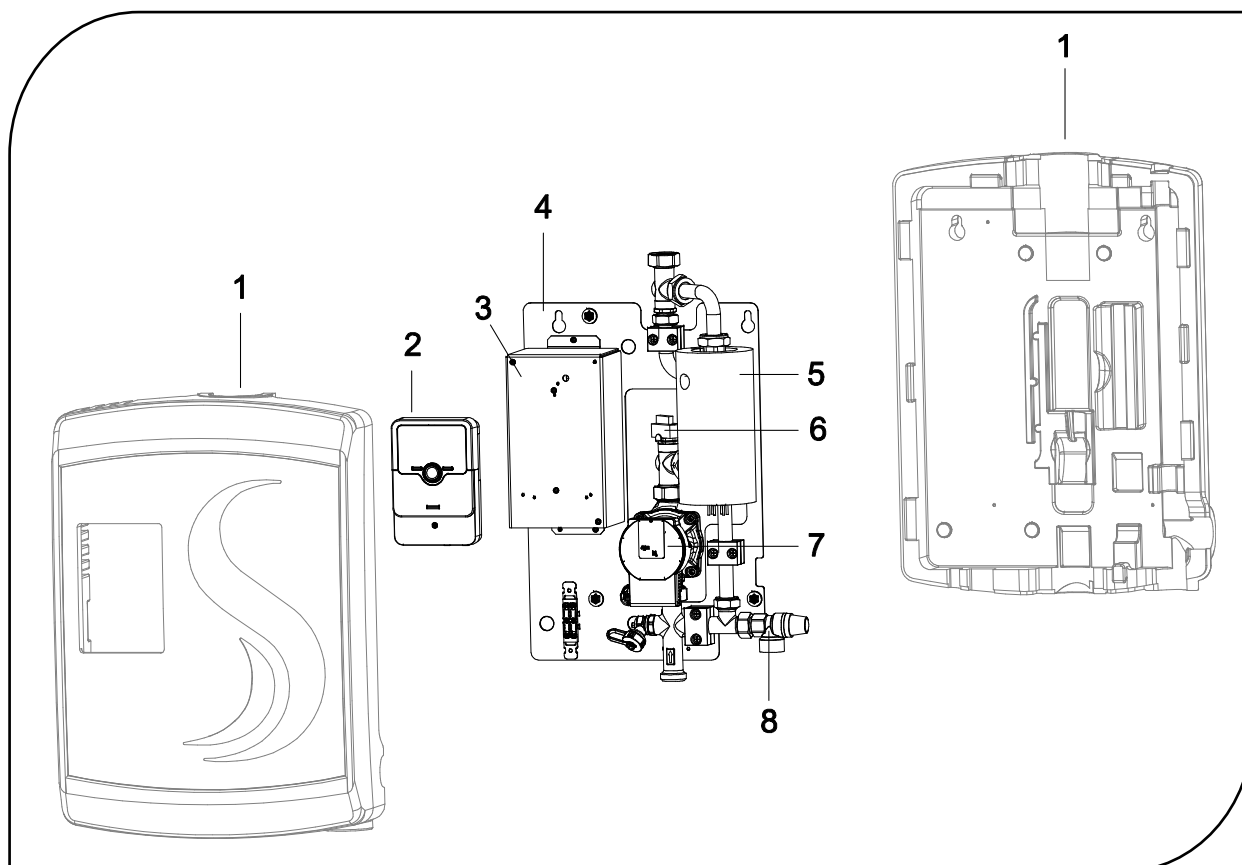
COSMO eXcess Pro



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1 Scope of delivery



Pos.	Designation
1	Insulation
2	Control unit
3	Power electronics
4	Base plate
5	Heating element + insulating shell
6	Pressure sensor
7	Pump
8	Cross piece with non-return valve and safety valve 3 bar

1.1 Delivery and transport

Check to make sure the product is complete and undamaged immediately after receipt. Any damage or complaints must be reported immediately.

2 Standards and guidelines

Please observe the following standards, regulations and guidelines with regard to installation and operation:

- DIN EN 806-2 Technical rules for drinking water installations - Requirements for components, appliances and materials
- DVGW worksheet W 551 / worksheet W 553
- Local regulations
- DIN 1988 Technical rules for drinking water installations
- DIN 18 380 (Heating systems and central water heating systems)
- VDI 2035 (Prevention of damage in water heating installations)
- DIN 4753 (Water heaters and water heating installations for drinking water and service water)
- VDE 0100 (Installation of electrical equipment)
- TrinkwV (Drinking Water Ordinance)
- BGV (Accident prevention regulations of workers' compensation associations)
- Details on the type plate
- Technical specifications

3 Safety

3.1 Safety instructions

In addition to country-specific guidelines and local directives, the following technical regulations must also be taken into account:



Important - risk of burning!

- As the system can reach temperatures > 60 °C, there is a risk of scalding and burning through contact with the components.



Danger – Electric shock!

- Risk of fatal electric shock as a result of incorrect electrical connections.
- Electrical connections must exclusively be created by electricians approved by energy suppliers and as per the locally applicable regulations.
- Disconnect the supply voltage prior to conducting any work.

The respective personal protective equipment must be worn when conducting any work on the system/device; this includes ear protection, eye protection, safety shoes, hard hat, protective clothing and protective gloves. Information regarding the personal protective equipment can be found in the national directives of the respective country of operation.

4 General information regarding the installation and operating manual

This manual describes the installation process for the **COSMO eXcess Pro** electro-thermal station, as well as its operating and maintenance procedures.

This manual is intended for trained specialists with an adequate level of expertise in handling heating systems, water pipe installations and electrical installations. The installation and commissioning procedures should only be conducted by qualified, specialist personnel.

The station must only be installed and operated in dry areas that are protected from frost. Read this manual carefully before starting any installation work. Non-compliance will invalidate all claims under the guarantee and warranty.

Illustrations are symbolic and may differ from product to product. Subject to technical changes and errors.

This installation and operating manual must not be reproduced or made available to third parties without prior written consent (section 2 German Copyright Act, section 823 Civil Code).

4.1 Regulation

Observe the installation and operating instructions for the control unit used.

4.2 Backflow preventer

A backflow preventer (RFV) is integrated in the lower crosspiece (RL) to prevent incorrect circulation.

4.3 Settings

Set the hot water temperature and the circulation programme if necessary. Observe the installation and operating instructions for the control unit used.

5 Product description

5.1 Intended purpose

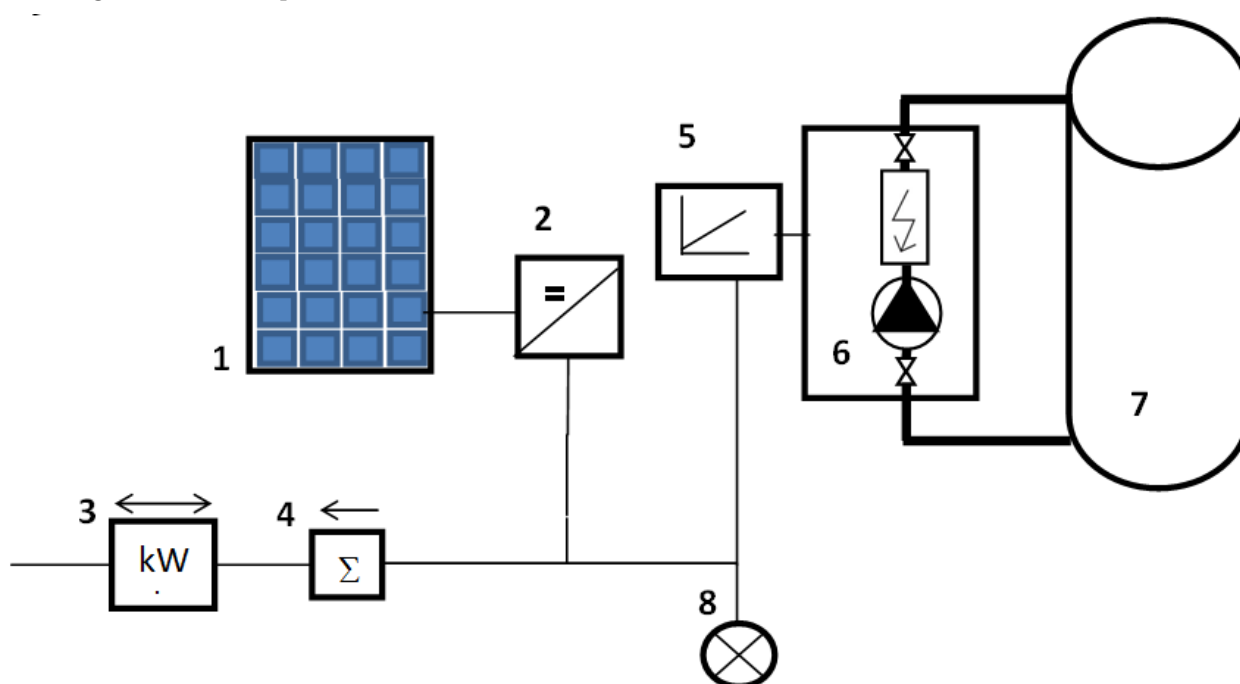
The COSMO eXcess Pro electro-thermal station is exclusively used to heat water with an electrical heating element in a through-flow circuit. Only heating water (HW) as per VDI 2035 may be heated.

5.2 Applicable documents

Also observe the installation and operating instructions for the various components used, such as the control unit.

6 Functional description

6.1 System setup in installation



- 1 Photovoltaic system
- 2 Inverter
- 3 Electricity meter (draw, infeed)
- 4 COSMO eXcess Pro sensor (infeed power measurement)
- 5 COSMO eXcess Pro power (power modulation)
- 6 COSMO eXcess Pro with COSMO eXcess Pro controller
- 7 Thermal accumulator
- 8 Domestic consumers (light, standby, ...)

6.2 Functional description

The **COSMO eXcess Pro** is an electro-thermal station for converting photovoltaic electricity into heat and storing this heat in buffer accumulators.

Thanks to the continuous power control of the **COSMO eXcess Pro**, excess electricity can be optimally used. The speed-controlled charging pump charges the accumulator to an immediately usable temperature level. When the maximum storage tank temperature is reached, loading is terminated.

The advantages are:

- Optimum adjustment thanks to continuously modulating output up to 3 000 W
- Stratified accumulator charging also when retrofitting on existing accumulators
- Target temperature configurable
- Immediately usable heat, even with low solar radiation
- Can be retrofitted on any buffer storage tank
- Independent of the PV inverter, energy manager and electricity meter

The control unit consists of the controller (6), the power section (5) and the measuring section (4). The supplied measuring section measures the current flow directly upstream of the electricity meter (3). If a sufficiently high output is detected, this photovoltaic current can be used for electric water heating. The controller uses the power unit to regulate the power levels in the electrothermal station for heating the cylinder. Thanks to the instantaneous water heater principle with pump speed control, the **COSMO eXcess Pro** supplies heat at a high temperature level to the storage tank even at low heat output, e.g. on cloudy days. This allows the buffer tank to be loaded in layers.

7 Technical specifications

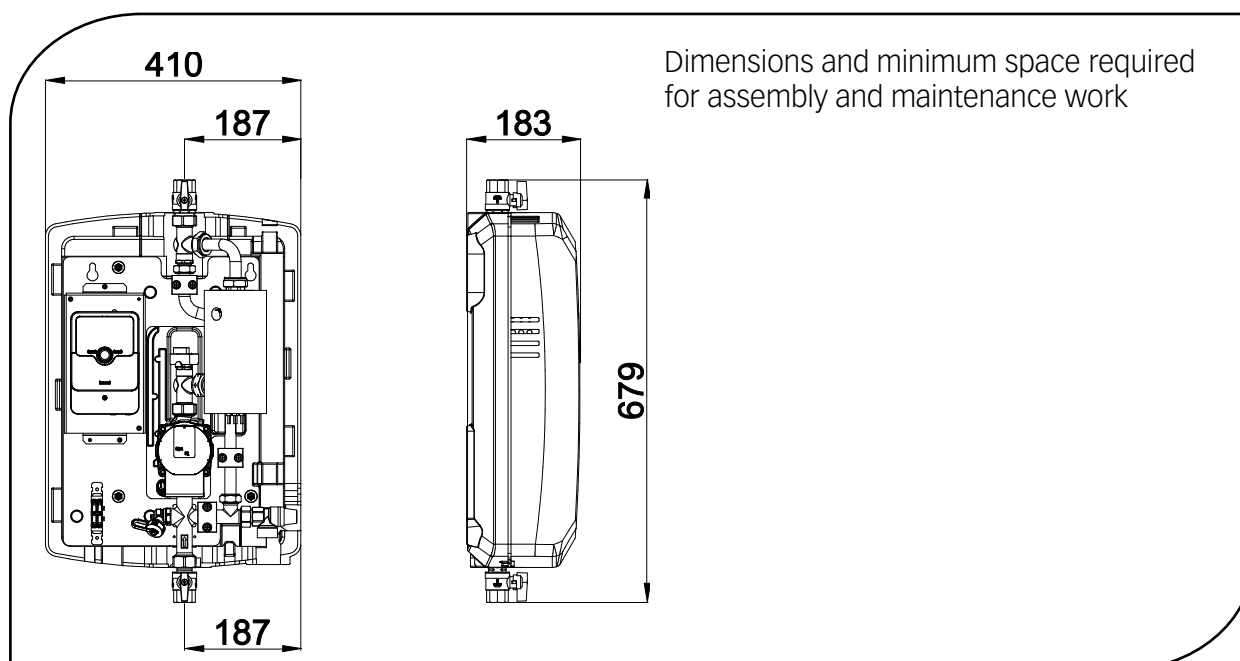
7.1 General instructions

Designation/type	COSMO eXcess Pro
Nominal output/current	0-3 kW (13 A)
Electrical connection	1/PE 230 V AC/ 50-60 Hz
Required Cable cross-section	2,5 mm ²
Rated capacity	0,2 l
Heating element	0,8 kW / 0,8 kW / 1,4 kW
Flow rate	2 l/h – 300 l/h
Pressure loss	0,6 bar bei 300 l/h
Temperature adjustment range	30 °C – 80 °C
Water connection	Rp 3/4" IG
Weight (with water fill)	14 kg
Cosmo eXcess Pro protection	IP 22

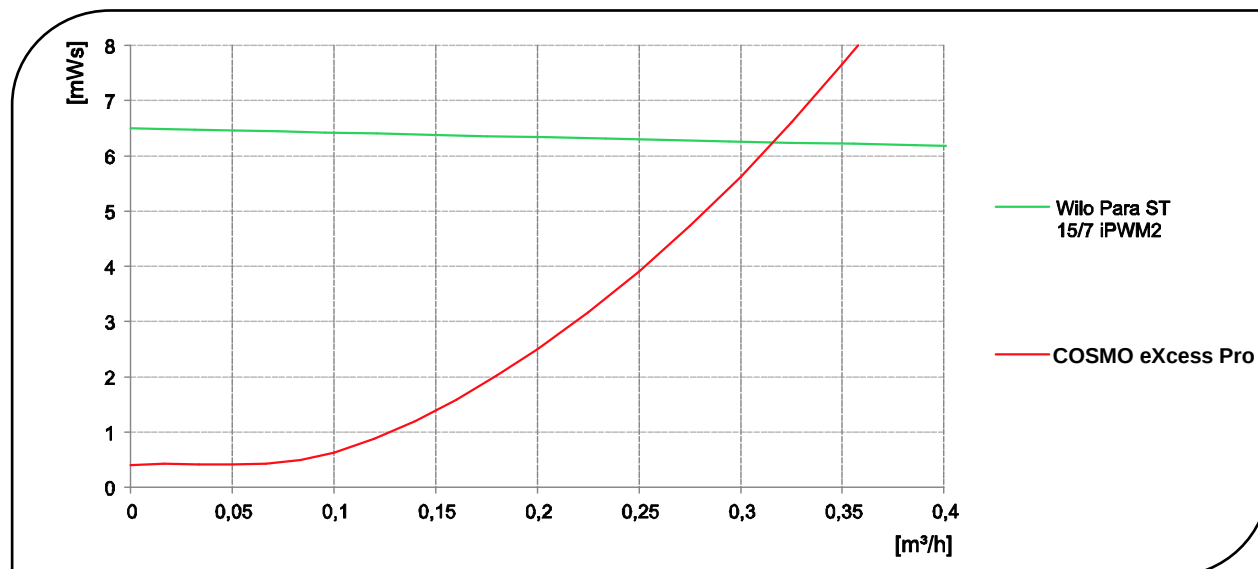
Designation/type	COSMO eXcess Pro
Version	Heating water
Nominal output	0-3 kW
Max. operating pressure	3 bar
Min. operating pressure	1,2 bar
Max. operating temperature	95 °C
Circulation pump	Wilo Para ST 15/7 iPWM2 Power consumption: 3-45W

Materials	
Housing/connecting components	CW617N (2.0402)
Heating element	Cu-Ausführung
Seals	EPDM
insulation	EPP foam 0,038 W/mK

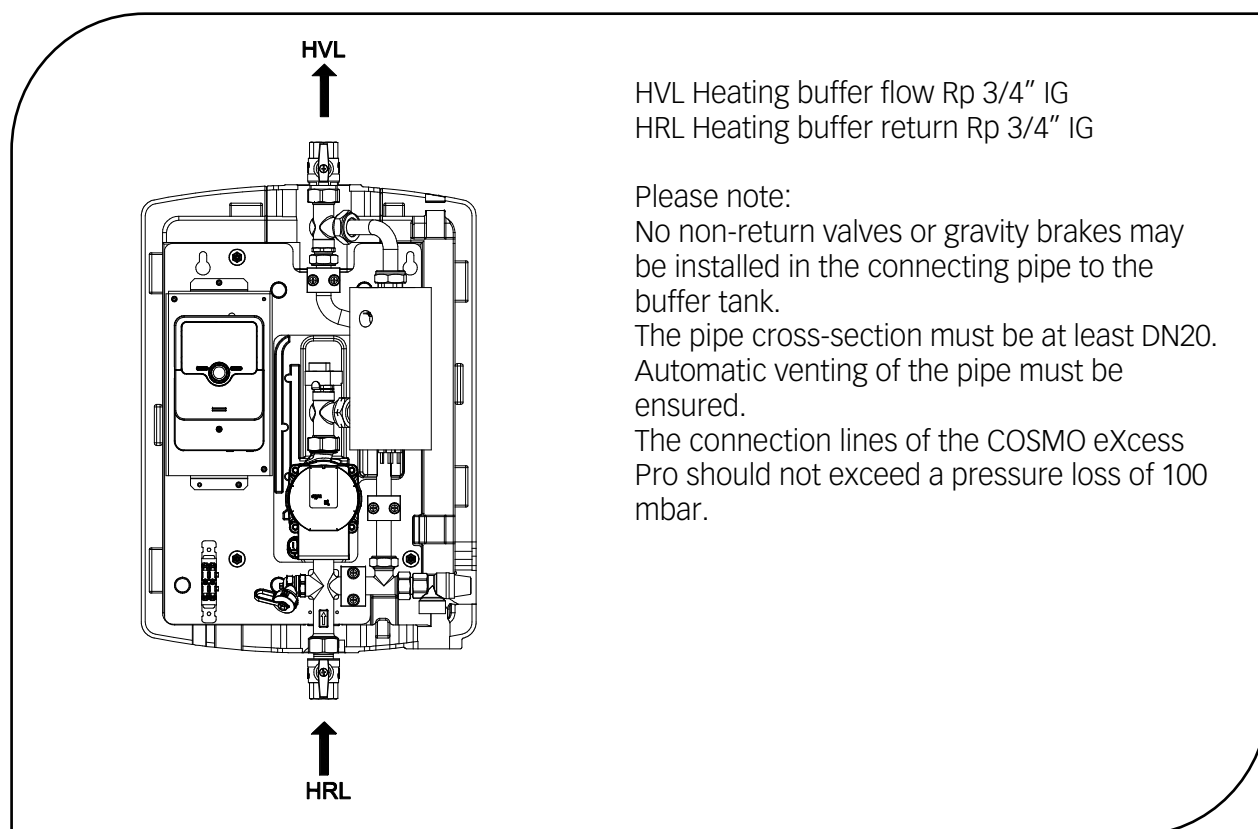
7.2 Dimensions / required space



7.3 Pressure loss / pump characteristic curve

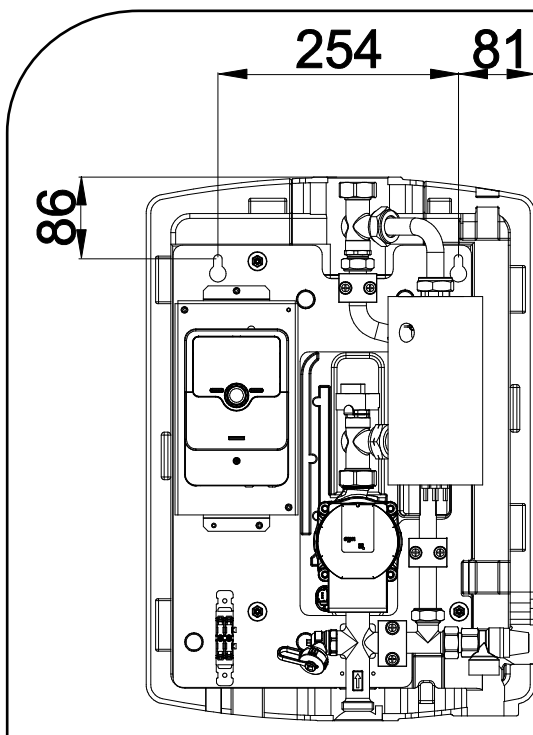


7.4 Connections



8 Assembly and installation

8.1 Wall-mounted assembly



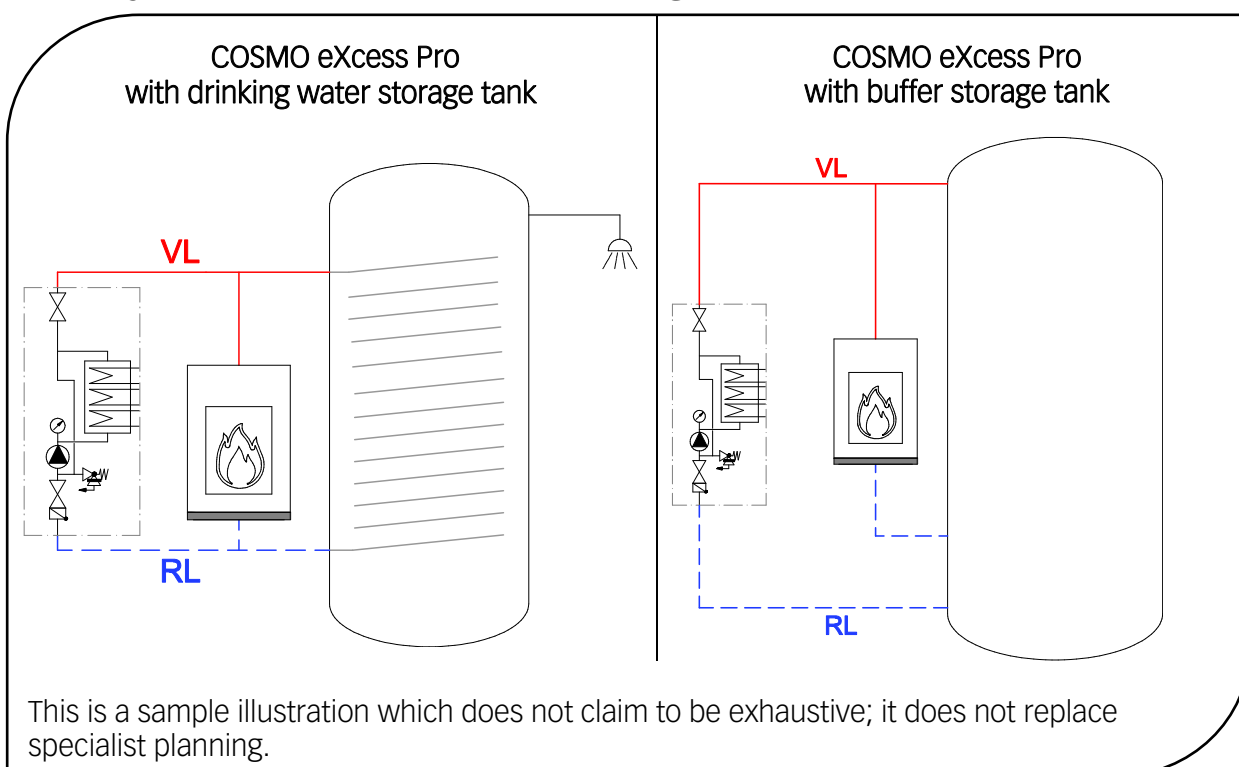
Mark and drill two $\varnothing$ 10mm holes as per the adjacent illustration and insert expansion anchors.

Locate the top screw and washer and tighten until the screw head protrudes approx. 1cm from the wall.

Suspend the station, align with a spirit level and screw securely in place using a second screw and washer.

Evenly tighten both screws.

8.2 Hydraulic connection buffer storage tank



Designation	Description
VL	Supply
RL	Return side

8.3 Electrical connections

8.3.1 General instructions



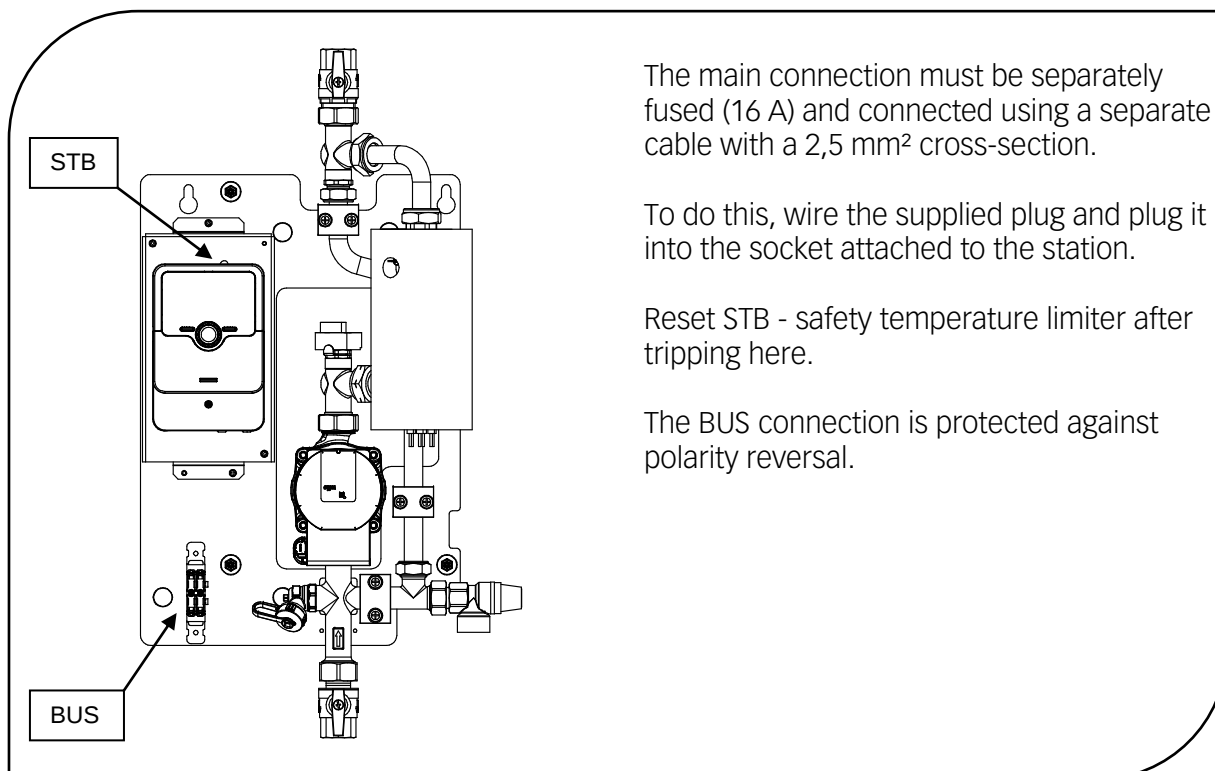
Only authorised, specialist personnel are permitted to open electrical housings and work on the electrical system after de-energising the equipment. When establishing connections, make sure the terminal assignments and polarity are correct. Protect the control unit and electrical components against excess voltage.



Risk of fatal electric shock as a result of incorrect electrical connections.

- Electrical connections must exclusively be created by electricians approved by energy suppliers and as per the locally applicable regulations.
- Disconnect the supply voltage prior to conducting any work.

The station is pre-installed and wired ex works. Connect the power cable and the bus connection to the controller on initial start-up.

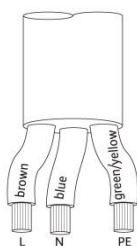


For further details, please refer to the separate control instructions.

Install the **COSMO eXcess Pro** Sensor measuring unit in the domestic control cabinet upstream of the infeed meter and connect to the **COSMO eXcess Pro** Controller via the V-BUS.

8.3.2 Circulation pump

Electrical pump connection



L = brown
N = blue
PE = green/yellow

PWM connection



+ = brown
- = blue

9 Commissioning, functional test, Decommissioning

Complete installation of all hydraulic and electrical components is a precondition for commissioning.

9.1 Start-up

9.1.1 Leak testing and filling the system

Check all system components, including all pre-fabricated elements and stations, to ensure they are leak-tight; seal any detected leaks accordingly. When doing so, adapt the test pressure and test duration to match the respective piping system and the respective operating pressure.

Only fill the heating system with filtered, possibly treated water as per VDI 2035 and completely bleed the system.

9.1.2 Initial commissioning process and functional test

Please observe the corresponding instructions for the control unit.



Note:

The system must be filled with water and ventilate before initial electrical start-up.

Task	Procedure	OK
Preparation and inspection	- Visual inspection of the installation. - Are all of the sensors installed and connected at the correct locations? - Are all outputs connected?	☐ ☐ ☐
Switch on the control unit	Supply power to the control unit	☐
Set up the control unit	Please follow the control instructions. - Select target temperature - Select maximum cylinder temperature - Start commissioning routine	

9.2 Troubleshooting

A red LED on the controller indicates a controller error. The error is described under Status/Messages. Please refer to the corresponding instructions for the controller.

Malfunction	Possible cause	Remedy
Volume flow rate too low (Δt too high)	Electric heating element dirty / calcified	Clean, decalcify or replace if necessary
	Pump faulty	Replace pump
	Regellogik der Pumpe nicht in Ordnung	Check sensor positions and function, replace if necessary
Target temperature not reached	Sensor faulty	Check sensors, replace if necessary
Heating element not heating up	Maximum storage tank temperature reached	Monitor system, wait for restart
	Pressure sensor triggered	Increase operating pressure to > 1.2 bar
	STB triggered	Reset
	Sensor S1 faulty --> Replace sensor S1	If the STB is triggered, the cause must be determined by a specialist technician. A complete commissioning with a check of all functions is then required.
	Heating element faulty	Check heating element, replace if necessary
Boiling noises of the heating element	No heating of the heating element -> fuse has tripped	Check electrical system, switch fuse back on.
	Heating element calcified	Decalcify the heating element
	Air in the system	Install automatic air vent
	Pressure loss to the buffer tank too high	Remove unnecessary fittings or increase pipe dimensions

Error message of the Wilo Para 15/7 iPWM2 circulation pump

LED	Meaning	Operating state	Cause	Elimination
Lit green	Pump operational	Pump running as configured	Normal operation	
Flashing red/green	Pump is ready for operation, but not running	Pump will automatically restart once the fault has been eliminated	1. Undervoltage $V < 160 \text{ V}$ Overvoltage $V > 253 \text{ V}$	1. Check voltage supply $195 \text{ V} < V < 253 \text{ V}$
			2. Module overtemperature: Motor temperature too high	2. Check media and ambient temperature
Flashing red	Pump not working	Pump stopped (blocked)	Pump will not automatically restart	Replace pump
LED off	No voltage supply	Electronics without voltage	1. Controller to pump connection interrupted	1. Check cable connection
			2. LED is defective	2. Check whether the pump is running
			3. Electronics are defective	3. Replace the pump

If the malfunction cannot be rectified, please contact a specialist or Wilo factory service.

9.3 Decommissioning

Temporary

If the **COSMO eXcess Pro** electro-thermal station is decommissioned for a prolonged period and kept in an area that is prone to frost, the power supply must be disconnected and the system drained completely. To do this, loosen the lower screw connection on the heating element and the lower pump screw connection in order to drain them completely.

Final

If the **COSMO eXcess Pro** electro-thermal station is being decommissioned once and for all, the power supply for all of the corresponding system components must be disconnected and all of the relevant lines and components drained completely. To do this, loosen the lower screw connection on the heating element and the lower pump screw connection in order to drain them completely.

The decommissioning, dismantling and disposal processes should only be conducted by qualified, specialist personnel. Components and materials must be disposed of in accordance with the current applicable regulations.

10 Maintenance

The manufacturer recommends maintenance in the form of a functional and visual inspection by authorized specialist personnel. Depending on the water quality and the age of the system, the maintenance interval should be between 1 and 3 years.

In manual mode, the **COSMO eXcess Pro** must be operated with different heating outputs and the function must be checked.

Components	Review
Electric heating element	At maximum heating power, heating should take place without boiling noises, otherwise clean the electric heating element and descale if necessary.

11 Replacement parts / accessories

Cosmo ET Nummer	Designation	
YCO9512229	Sensor for power measurement	951.22.29.00.18
YCO9512228	Controller	951.22.28.00.18
YCO9512227	Power electronics	951.22.27.00.18
YCO9501529	Electric heating element + insulating shell	950.15.29.00.18
YCO9510024	Pressure sensor	951.00.24.00.18
YCO1301669	Pump	130.16.69.00.18
YCO9510007	Cross piece with RFV and safety valve 3bar	951.00.07.00.18

12 COSMO- Hotline

Technical hotline:

For questions about our products

Telephone number: +49 (0)4080030 – 430

Monday to Thursday 8:00 – 12:00 and 14:30 – 16:00

Friday 8:00 – 12:00

13 EU Declaration of Conformity

For the following product:

Device:

Electro-thermal station

Type:

COSMO eXcess Pro

We hereby declare that the design and construction of the products designated below, as well as the version we have introduced, comply with the relevant basic health and safety requirements of the EU Directive – in particular 4004/108/EC, 2006/95/EC, 2014/30/EU, 2014/35/EU, 2011/65/EU and 2009/125/EC. This declaration shall become void should any alterations be made to the products without our express approval.

Manufacturer COSMO GMBH Brandstücken 31 22549 Hamburg	
	Hermann – Josef Lüken
	Managing Director

14 Warranty, availability guarantee, imprint



1st edition may 2024

Subject to errors and alterations.

All specifications relating to images, products, dimensions and designs are correct at the time of printing.

Subject to technical changes and changes to the colour or shape of the illustrated products.

Deviations in terms of colour cannot be ruled out due to technical reasons in the printing process.

Claims relating to the model and product cannot be asserted.

Within the framework of the current legal provisions of the Purchase Contract Law (BGB [Civil Code] with respect to warranty claims), COSMO has a limitation period of 5 years from the date of delivery.



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