Inspired by
temperature

Betriebsanleitung · Operation manual · Manual de instrucciones · Manuel d'utilisation · Manuale de d'uso · 사용 설명서 · Manual de instruções · Инструкция по эксплуатации · Kullanım talimatı · 操作说明书 ·

VPC Bypass

This documentation does not contain a device-specific technical appendix.

You can request the full operating instructions from info@huber-online.com. Please give the model designation and serial number of your temperature control unit in your e-mail.

huber

OPERATION MANUAL

VPC Bypass

VPC Bypass

with connection set
or loose

(not mounted to the temperature control unit)

This operation manual is a translation of the original operation manual.

VALID IN CONJUNCTION WITH:

Huber temperature control units from the
Unistat® series
Unichiller® series

Table of contents

V2.2.0en/12.05.26

Foreword

Dear customer,

Thank you for choosing accessories from Peter Huber Kältemaschinenbau SE. You made a good choice. Thank you for your trust.

Please read this operation manual carefully before putting the unit into operation. Strictly follow all notes and safety instructions.

Follow the operation manual concerning transport, start-up, operation, maintenance, repair, storage and disposal.

We offer a full warranty for your accessory subject to proper operation.

In this operation manual, the component listed on page 5 is referred to as accessory, and Peter Huber Kältemaschinenbau SE as Huber company or Huber.

1 Introduction

1.1 Representation of textual emphases

The following emphases are used in the texts and illustrations.

Overview

Emphasis	Description
➢ Abc	Step-by-step explanation of the procedure.
→	Reference to information or procedures.
»Abc«	Reference to a paragraph in the document.
>Abc< [123]	Reference to the wiring diagram in the annex, specifying the designation and search string (number).
>Abc< [ABC]	Reference to a drawing in the same paragraph with specification of designation and search string (character).
▪	List, first level
–	List, second level

1.2 Information on the EU Declaration of Conformity

CE The temperature control unit complies with the basic safety and occupational health requirements of the European guidelines listed below:

- Machinery Directive
- Low Voltage Directive
- EMC Directive

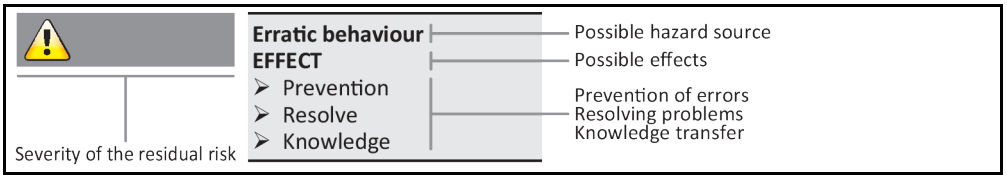
1.3 Safety

1.3.1 Symbols used for Safety Instructions

The documentation uses the following combinations of characters and signal word as safety information. The signal word describes the classification of the residual risk when the safety information is disregarded.

DANGER	**Denotes an immediate hazardous situation that will result in death or serious injuries.**
WARNING	**Denotes a general hazardous situation that may result in death or serious injuries.**
CAUTION	**Denotes a hazardous situation that can result in injury.**
NOTE	**Denotes a situation that can result in property material damage.**
INFORMATION	Denotes important notes and usable hints.

Explanation



The safety information is designed to protect the operating company, the operators and the equipment from damage. Before starting the respective activity, you must inform yourself about the residual risks involved with incorrect handling.

1.3.2 Representation of symbols on the accessory

The following characters are used.

Overview

Sign	Description
Mandatory sign	
	- Observe the instructions
Warning sign	
	- General warning sign - Observe the instructions
	- Warning of electrical voltage
	- Warning of hot surface
	- Warning of flammable substances
Miscellaneous	
	Follow the national and local instructions for the disposal of electrical appliances.

1.3.3 Safety during commissioning

The following chapters are relevant for accessories in connection with a Huber temperature control unit, and apply in addition to the operation manual of the temperature control unit used here. If you have any questions, please contact our Customer Support. → Page 36, section **»Contact data«**. Keep this operation manual for future reference.

1.3.4 Extension of specified normal operation

DANGER

The accessories are operated in a potentially explosive area

DEATH FROM EXPLOSION

➢ Do NOT install or start up the accessories within an ATEX zone.

WARNING

Improper use

SEVERE INJURIES AND MATERIAL DAMAGE

- Keep the operation manual easily accessible in the immediate vicinity of the temperature control unit and/or the accessories.
- Only adequately qualified operators may work with the temperature control unit and/or the accessories.
- Operators must be trained before handling the temperature control unit and/or its accessories.
- Check to ensure that the operators have read and understood the operation manual.
- Define precise responsibilities of the operators.
- Personal protective equipment must be provided to the operators.
- Be sure to follow the safety rules of the responsible body to protect life and limb and to limit damages!

NOTE

Modifications to the accessory by third-parties

DAMAGE TO THE ACCESSORY AND THE TEMPERATURE CONTROL UNIT

- Do not allow third parties to make technical modifications to the accessories.
- Any modification that is not approved by Huber invalidates all EU Declarations of Conformity for the accessories.
- Only specialists trained by Huber may carry out modifications, repairs or maintenance work.
- **It is imperative to observe:**
- Only use the accessories in a fault-free condition!
- Have the start-up and repairs carried out by specialists only!
- Do not ignore, bypass, dismantle or disconnect any safety devices!

NOTE

A pressure-sensitive external application is run with the accessory without an overpressure protection device being installed

MATERIAL DAMAGE TO THE EXTERNAL APPLICATION

- To protect a pressure-sensitive external application (such as a glass apparatus), use an overpressure protection device in the supply line.
- Do not use accessories as an isolating valve. The outputs cannot be completely closed due to the design.
- The external application can be damaged by excessive pressure if the return is locked.

When properly installed at the temperature control unit, the accessory is intended to permanently monitor and control the pressure of the **externally closed application**. The accessory itself can **not** be used without being connected to the temperature control unit. Otherwise the intended use applies as described in the temperature control unit's operation manual.

The accessory is not a safety device for the unrestricted protection of a pressure-sensitive external application (e.g. a glass apparatus). The maximum pump pressure may be applied to your external application if the accessory is defective. A sufficiently dimensioned overpressure protection device must be installed in the supply line (pressure side) to protect your external application. The installed overpressure protection device is destroyed in the event of a fault and thus protects the external application against damage. The approved temperature range is indicated on the nameplate of the accessory.

1.3.5 Reasonably foreseeable misuse

Use with medical devices (e.g. in Vitro diagnostic procedure) or for direct foodstuff temperature control is **NOT** permissible.

The temperature control unit / accessory **must not be used** for any purposes other than temperature control in accordance with the operation manuals.

The manufacturer accepts **NO** liability for damage caused by **technical modifications** to the temperature control unit / accessory **improper handling** or use of the temperature control unit / accessory if the operation manuals are **not observed**.

1.4 Obligations of the responsible body

Keep the operation manual easily accessible in the immediate vicinity of the accessories. Only adequately qualified operators (e.g. machine operators, chemists, chemical technical assistants, physicist etc.) are allowed to work with the accessories. Operators must be trained before handling the accessories. Check that the operators have read and understood the operation manual. Define precise responsibilities for the operators. Personal protective equipment must be provided to the operators.

- The responsible body must install a condensation water / heat transfer fluid drip tray below the temperature control unit (including accessories).
- The use of a drip tray may be prescribed by national legislation for the installation area of the temperature control unit (incl. accessory). The responsible body must check and apply the national regulations applicable for it accordingly.
- The temperature control unit (including accessory) complies with all applicable safety standards.
- Your system, which uses our temperature control unit (including accessory), must be equally safe.
- The responsible body must design the system to ensure it is safe.
- Huber is not responsible for the safety of your system. The responsible body is responsible for the safety of the system.
- Whilst the temperature control unit (including accessory) provided by Huber meets all the applicable safety standards, integration into a system may give rise to hazards that are characteristic of the other system's design and beyond the control of Huber.
- It is the responsibility of the system integrator to ensure that the overall system into which this temperature control unit (including accessory) is integrated is safe.
- The **>Mains isolator<** [36] on the temperature control unit/accessory can be locked in the off position to facilitate safe system installation and maintenance of the temperature control unit (including accessory). Accessories with own power supply must be **additionally** disconnected from the power grid connection! It is the responsibility of the responsible body to develop any lock-out/tag-out procedure for the energy source in accordance with local regulations (e.g. CFR 1910.147 for the US).

1.4.1 Proper disposal

The operating company must check and apply the national and local regulations applicable for it accordingly.

Overview

Material	Description
Packaging material	Keep the packaging material for future use (e.g. transport).
Heat transfer fluid	Disposal see safety data sheet of heat transfer fluid. Use original containers to dispose of larger amounts.
Filling accessories	Clean filling accessories (such as beaker) for re-use. Auxiliary material and cleaning agents used must also be properly disposed of.
Aids	Absorption of heat transfer fluid: The aids used (such as cloths and cleaning rags) must be disposed of according to the heat transfer fluid used. Use of cleaning agents: The aids used (such as cloths and cleaning rags) must be disposed of according to the cleaning agent used.
Cleaning agent	Disposal see safety data sheet of cleaning agent. Use original containers to dispose of larger amounts.
Consumables	Disposal see data sheet of consumables (such as air filter mats, temperature control hoses).
Refrigerants	Work on the coolant circuit must be carried out by approved refrigeration/air-conditioning system contractors!

1.5 Obligations of the operators

Carefully read the operation manual before you handle the temperature control unit / accessories. Always observe the safety instructions. Wear appropriate personal protective equipment (e.g. safety goggles, protective gloves, non-slip shoes) when operating the temperature control unit / accessories.

1.5.1 Requirements for operators

Work on the temperature control unit / accessory is reserved for appropriately qualified specialists, who have been assigned and trained by the responsible body to do so. Operators must be at least 18 years old. Persons under the age of 18 years may operate the temperature control unit / accessory only under the supervision of a qualified specialist. The operators are responsible for third parties within the unit's working range.

1.6 Description of workstation

The workstation is located at the control panel in front of the temperature control unit. The workstation is determined by the customer's connected peripheries. Accordingly, it must be designed safe by the responsible body. The workstation design also depends on the applicable requirements of the German occupational health and safety regulations [BetrSichV] and the risk analysis for the workstation.

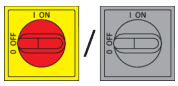
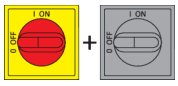
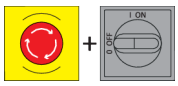
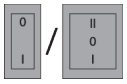
1.7 Further protective devices

INFORMATION

Emergency strategy – interrupt the power grid connection!

To determine the type of switch used or the switch combination installed, please refer to the connection sketch. → From page 38, section **»Annex«**.

Overview of switch types

Switch	Designation	Interrupting the power grid connection
	**>Mains isolator<** [36] (red-yellow) or **>Mains isolator<** [36] (grey)	Turn the **>Mains isolator<** [36] to the "0" position.
	**>Mains isolator<** [36] (red-yellow) and additional **>Appliance switch<** [37] (gray):	Turn the **>Mains isolator<** [36] to the "0" position, then the **>Appliance switch<** [37] to the "0" position.
	**>Emergency stop switch<** [70] (red-yellow) and **>Mains isolator<** [36] (gray):	Press the **>Emergency stop switch<** [70], then set the **>Mains isolator<** [36] to the "0" position.
	**>Power switch<** [37]	**Power connection via socket:** Pull the plug, then set the **>Power switch<** [37] to the "0" position. **Connection via hard wiring:** Use the building's circuit breaker, then set the **>Power switch<** [37] to the "0" position.
–	Without a switch or inside a protective housing	**Power connection via socket:** Pull the plug. **Power connection via hard wiring:** Use the building's circuit breaker.

2 Commissioning

2.1 In-plant transport

CAUTION

Accessories are not transported / moved in accordance with the specifications in these operation manual

INJURIES DUE TO CRUSHING

- Always transport / move accessories in accordance with the specifications in these operation manual.
- Wear personal protective equipment during transport.

CAUTION

The temperature control unit is transported / moved when the accessory is installed

INJURIES CAUSED BY TILTING THE TEMPERATURE CONTROL UNIT

- Remove the accessory before the temperature control unit is transported / moved.

NOTE

Accessories are transported in a horizontal position

PROPERTY DAMAGE

- Only transport accessories in an upright position.

NOTE

Transport of filled temperature control unit and/or accessory

MATERIAL DAMAGE DUE TO OVERFLOWING HEAT TRANSFER FLUID

- Only transport empty temperature control unit and/or accessory.

Accessories installed at the factory:

- Protect accessories from transport damage.
- Observe the specifications in the operation manual of the temperature control unit.

Independent accessory:

- If available, use the eyes on the top side of the accessory for transportation.
- Use an industrial truck for transportation.
- The casters (if present) on the accessory are not suitable for transportation. The casters are each symmetrically loaded with 25% of the total mass of the accessory.
- Remove the packing material (e.g. the palette) only at the place of installation.
- Protect accessory from transport damage.
- Do not transport the accessory alone and without aids.
- Check the load bearing capacity of the transportation route and the place of installation.
- The parking brakes must be activated at the casters before the accessory is put into operation.

2.1.1 Lifting and transporting the accessories

- Do not lift and transport the accessory on your own and without aids.
- Lift and transport the accessory only with an industrial truck.
- The industrial truck must have a lifting force equal to or greater than the weight of the accessory. You will find the weight of the accessory on the data sheet. → From page 38, section **»Annex«**.

2.1.2 Positioning the accessories

- An industrial truck must be used for positioning the accessory.
- Do not move the accessory on your own.
- **At least 2 persons** are required to move the accessory.
- The industrial truck must have a lifting force equal to or greater than the weight of the accessory. You will find the weight of the accessory on the data sheet. → From page 38, section **»Annex«**.

2.2 Unpacking

WARNING

Commissioning damaged accessories

DANGER TO LIFE FROM ELECTRIC SHOCK

- Do not start up damaged accessories.
- Please contact Customer Support. → Page 36, section **»Contact data«**.

PROCEDURE

- Check for damage to the packaging. Damage can indicate property damage to the accessory.
- Check for any transport damage when unpacking the accessory.
- Exclusively contact your forwarding agent regarding the settlement of claims.
- Observe the proper disposal of packaging material. → Page 13, section **»Proper disposal«**.

2.3 Ambient conditions

CAUTION

Unsuitable ambient conditions / unsuitable installation

SERIOUS INJURY DUE TO CRUSHING

- Comply with all requirements! → Page 16, section **»Ambient conditions«** and → Page 18, section **»Installation conditions«**.

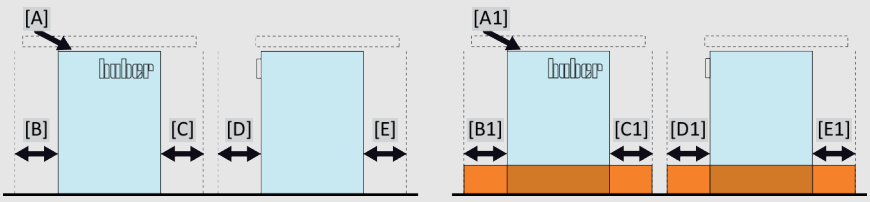
INFORMATION

Make sure there is adequate fresh air available at the site for the accessory. The warm exhaust air must be able to escape upwards unhindered.

Use of the accessory is permitted only under normal ambient conditions in accordance with the currently valid DIN EN 61010-1.

- Use only indoors. The illuminance must be at least 300 lx.
- Installation altitude up to 2,000 meters above sea level.
- Maintain wall and ceiling clearance for adequate air exchange (dissipation of waste heat, supply of fresh air for the accessory and work area). Ensure adequate floor clearance for air-cooled accessories. Do not operate the accessory from within the box or with an inadequately dimensioned bath as this inhibits the air exchange.
- Ambient temperature values are provided on the technical data sheet; to ensure trouble-free operation, compliance with the ambient conditions is mandatory.
- Relative humidity max 80% to 32 °C and 40 °C decreasing linearly to 50%.
- Short distance to supply connections.
- The accessory must not be installed so as to hinder or prevent access to the disconnecting device (to the power grid).
- For the magnitude of the mains voltage fluctuations, refer to the datasheet. → From page 38 in the section **»Annex«**.
- Transient surges, as would normally occur in the power supply system.
- Installation Class 3
- Applicable degree of soiling: 2.
- Surge category II.

Wall clearances

Side	Minimum clearance in cm			
				
	Loose	**With connection set**	**Loose**	**With connection set**
Top	[A] 0 / –	See operator manual of temperature control unit + contour of accessory. → Page 18, section **»Contour of the accessory with connection set«**.	[A1] 0 / –	n/a
Left	[B] 0 / 20		[B1] 0 / 20	
Right	[C] 0 / 20		[C1] 0 / 20	
Front	[D] 0 / 20		[D1] 0 / 20	
Rear	[E] 0 / 20		[E1] 0 / 20	
a.) [A] - [E]: Operation without bath, [A1] - [E1]: Operation in a bath b.) Values in the table: without air outlet or connections / with air outlet or connections c.) Value "–" in the table: free standing				

2.3.1 EMC-specific notes

INFORMATION

Connecting cables in general
Prerequisites for a failure-free operation of the temperature control units/accessories incl. their connections with external applications: Installation and wiring must be carried out professionally. Related topics: "Electrical safety" and "EMC-compliant wiring".

Cable lengths
For flexible/fixed cable routing of more than 3 meters, the following must amongst other things be observed:
- Equipotential bonding, grounding (see also technical data sheet "Electromagnetic compatibility EMC")
- Compliance with "external" and/or "internal" lightning/overvoltage protection.
- Design protection measures, professional cable selection (UV resistance, steel pipe protection, etc.)

Attention:
The operating company is responsible for compliance with national/international directives and laws. This also includes the testing of the installation/wiring required by law or standards.

This device is suitable for operation in **"industrial electromagnetic environments"**. It meets the **"immunity requirements"** of the currently applicable **EN61326-1**, which are required for this environment.

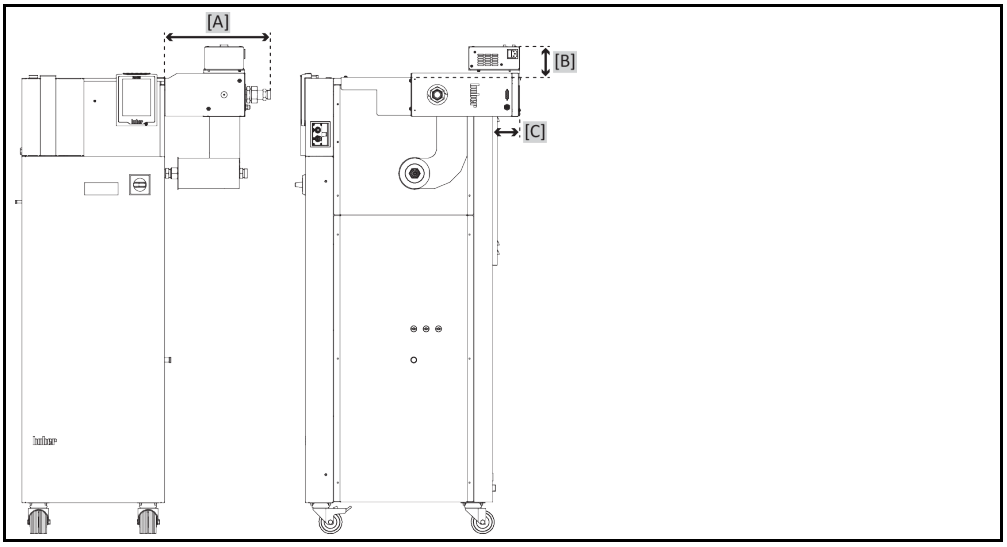
It also meets the **"interference emission requirements"** for this environment. It is a **Group 1** and **Class A** device according to the currently applicable **EN55011**.

When operating the temperature control unit in another environment, its electromagnetic compatibility can in rare cases not be ensured.

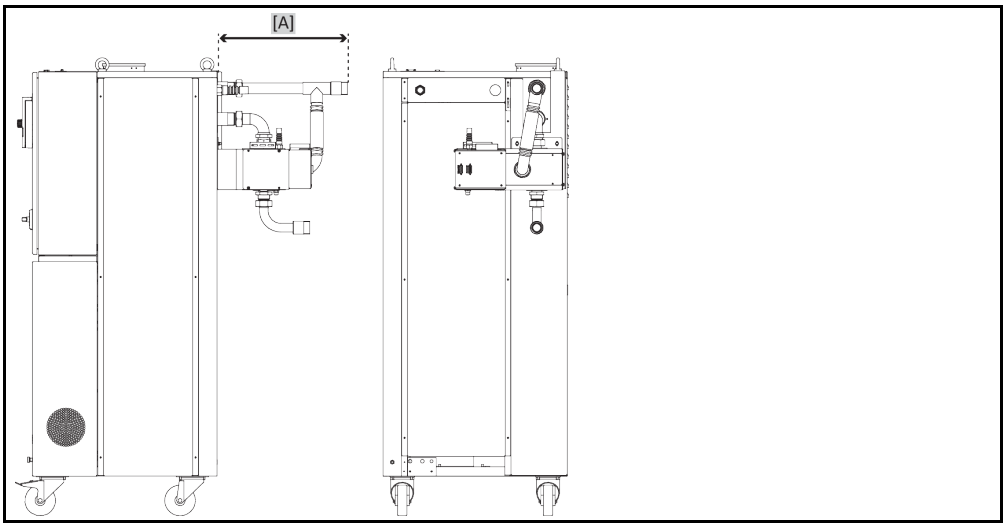
Group 1 specifies that high frequency (HF) is only used for the function of the device. **Class A** defines the interference emission limits to be observed.

2.4 Contour of the accessory with connection set

Exemplary representation: Unistat



Exemplary representation: Unichiller



Unistat: The dimensions increase by [A] 29.5 - 34.6; [B] 0 - 10.3; [C] 0 - 90.0.
Unichiller: The dimensions increase by [A] 33.6 - 43.3.
Dimensions in cm +/- 0.3 cm.

2.5 Installation conditions

WARNING

The accessory is put onto the power supply line

DEATH FROM ELECTRICAL SHOCK BY DAMAGE TO THE POWER CABLE.

➢ Do not put the accessory on power cables.

CAUTION

Operation of accessories with casters without activated brakes

CRUSHING LIMBS

➢ Activate brakes on the wheels.

- Allow the accessory to acclimate for about 2 hours when changing from a cold to a warm environment (or vice versa). Do not turn on the accessory beforehand!
- Install upright, stable and without tilt.
- Use a non-combustible, sealed foundation.
- Keep the environment clean: Prevent slip and trip hazards.

- Wheels, if installed, must be locked after installation!
- Spilled/leaked heat transfer fluid must be disposed of immediately and correctly. Observe the proper disposal of heat transfer fluid and aids. → Page 13, section **»Proper disposal«**.
- Observe the ambient conditions.

2.6 Recommended temperature control hoses

CAUTION

Use of unsuitable/defective hoses and/or hose connections

INJURIES

- ➢ Pay attention to the permissible pressure and temperature range when selecting temperature control hoses.
- ➢ Use appropriate hoses and/or hose connections.
- ➢ Check periodically for leaks and the quality of the hoses and hose connections and take suitable measures (replace) as required.
- ➢ Isolate and protect temperature control hoses against contact/mechanical load.

CAUTION

Hot or cold heat transfer fluid and surfaces

BURNS TO LIMBS

- ➢ Avoid direct contact with the heat transfer fluids or the surfaces.
- ➢ Wear your personnel protective equipment (e.g. temperature-resistant safety gloves, safety goggles, safety footwear).

CAUTION

Uncontrolled formation of ice at the connections and hoses of the heat transfer fluid circuit

RISK OF SLIPPING AND OVERTURNING

- ➢ If the temperature is controlled in the minus range, ice forms at the hoses and connections of the heat transfer fluid circuit. This occurs by condensing and freezing of atmospheric humidity.
- ➢ Check the thickness of the ice formation. Too much ice increases the risk of the accessories tipping over. Secure the accessories against tipping over if this is the case.
- ➢ Check the ground below the ice formation for condensation water. Collect the condensation water with a suitable container or thoroughly remove it at regular intervals. You thus prevent the danger of slipping caused by condensation.

To connect applications, use only temperature control hoses that are compatible with the heat transfer fluid used.

- We recommend you use only temperature-insulated temperature control hoses with your accessory. The user is responsible for the insulation of connection valves.

2.7 Wrench sizes and torques

Sizes of the connections vary depending on the model. Please refer to the table for the correct wrench sizes and torques. The maximum torque values must **not** be exceeded. To avoid twisting the connections during assembly, they must be secured by holding them in place. Carry out a leak test after connecting.

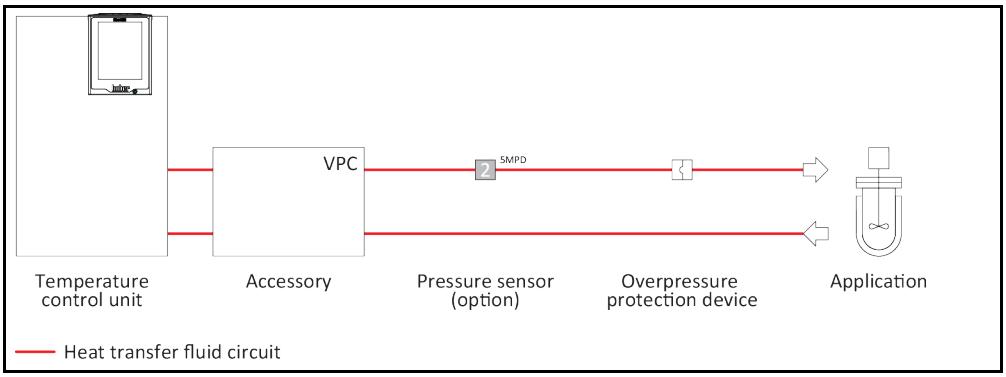
Overview Wrench size and torques

Connection	Sleeve nut wrench size	Connector wrench size	Recommended torques in Nm	Maximum torques in Nm
M16x1	19	17	30	35
M24x1.5	27	27	47	56
M30x1.5	36	32	79	93
	36	36	79	93
M38x1.5	46	41/46	130	153
M45x1.5	50	50	200	210
G-thread (flat-sealing)	Adapt the torque to the material of the flat seal used. Only hand-tighten the connection at first. When using adapter pieces, do not overtighten the G thread. To avoid twisting the adapter piece during installation, it must be secured by holding them in place.			

2.8 Preparations for operation

2.8.1 Connecting the accessory to the temperature control unit

Example: Schematic representation of installation



INFORMATION

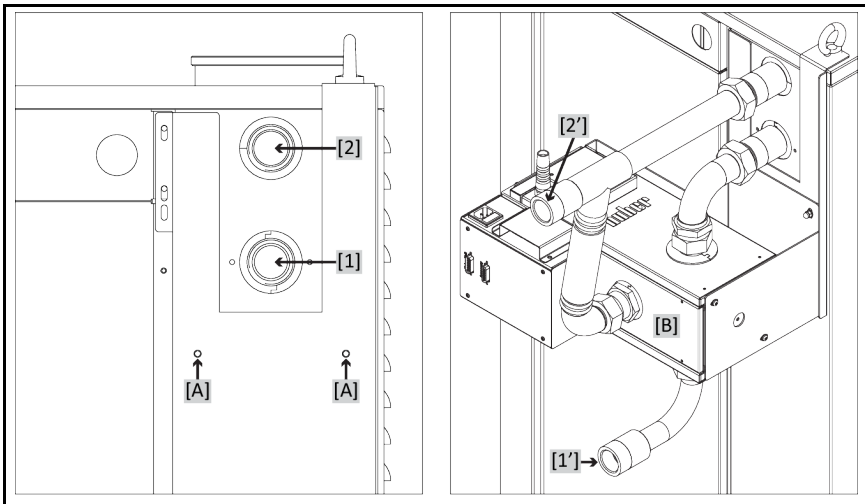
Follow the operation manual of the temperature control unit when connecting the device. Only use temperature control hoses that match the specifications of the heat transfer fluid used. Avoid bending / squeezing the temperature control hoses. Use suitable angle pieces and lay the hose connections with a large radius. Take the minimum bending radius from the data sheet of the temperature control hoses used. Make sure the temperature control hoses are attached to the respective unit connections such that they cannot slip off. Secure the temperature control hoses with hose clamps.

INFORMATION

Depending on the model: Connect an external pressure sensor to the **"external pressure sensor"** port of the accessory (otherwise the internal pressure sensor in the accessory takes control).

2.8.1.1 Applies to an accessory with connection set

Example: Connection with connection set



[1] Circulation flow
[2] Circulation return
[1'] Circulation flow (Bypass)
[2'] Circulation return (Bypass)
[A] Fitting for VPC Bypass
[B] VPC Bypass

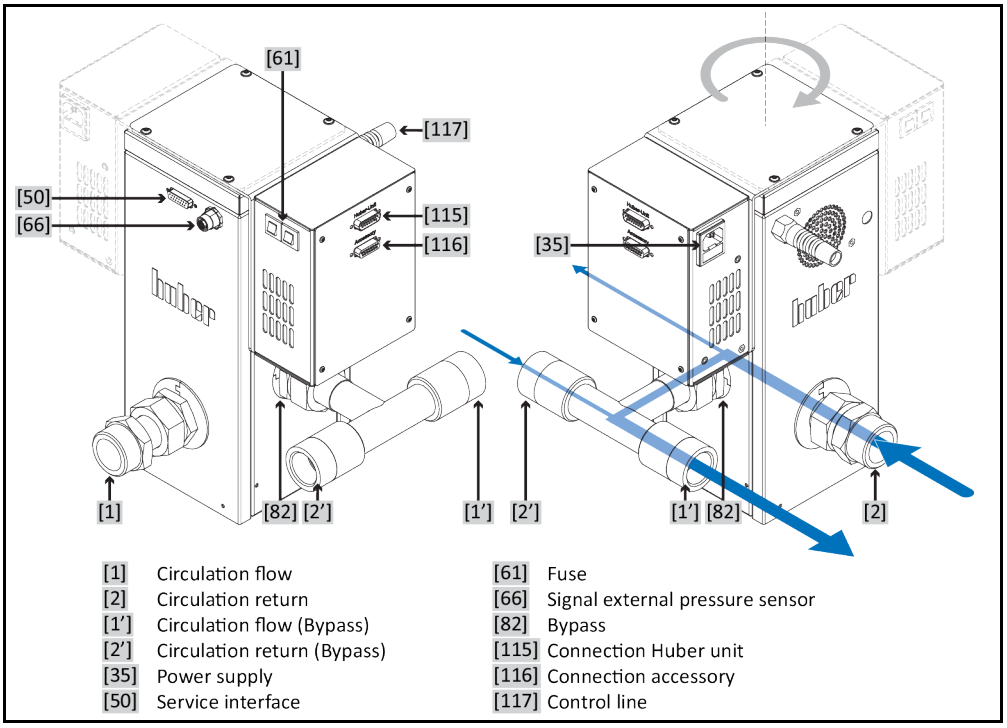
PROCEDURE

- Make sure that the temperature control unit has not yet been filled with heat transfer fluid.
- Disconnect the temperature control unit from the power supply connection.
- Remove the protective caps from the connections on the accessory.
- Mount the bracket to the **>VPC Bypass support<** [A].
- Mount the accessory to the support on the temperature control unit.
- Connect the **>Circulation flow<** [1] on the temperature control unit with the **>Circulation return<** [2] on the accessory.

- Connect the **>Circulation return<** [2] on the temperature control unit with the **>Bypass<** [82] on the accessory.
- Connect the **>Circulation flow (bypass)<** [1‘] on the accessory with the external application. For further information, please refer to the operation manual of the temperature control unit. There can be maximum pump pressure at your external application if the accessory is defective. A sufficiently dimensioned overpressure protection device must be installed in the supply line (pressure side) to protect your external application. The installed overpressure protection device is destroyed in the event of a fault and thus protects the external application against damage.
  In case you use an external pressure sensor:
  Install an external pressure sensor between accessory and external application.
- Connect the **>Circulation return (bypass)<** [2‘] on the accessory with the external application. For further information, please refer to the operation manual of the temperature control unit.
- Check the connections for leaks.
- Install the supplied switching-mode power supply to the accessory (if not pre-installed).
- Connect the **>Control line<** [117] on the accessory to the **>Connection accessory<** [116] on the switching-mode power supply.
- Connect the **>Connection Huber Unit<** [115] on the switching-mode power supply with the **>Service interface<** [50] on the temperature control unit. The length of the connecting cable must not exceed 3 meters.
- In case you use an external pressure sensor:
  Connect the external pressure sensor to the **>external pressure sensor connection<** [66] on the accessory.

2.8.1.2 Applies to an accessory without a connection set (loose)

Example: Connection without a connection set



PROCEDURE

- Make sure that the temperature control unit has not yet been filled with heat transfer fluid.
- Disconnect the temperature control unit from the power grid connection.
- Remove the protective caps from the connections on the accessory.
- Glue the supplied rubber feet under the stand of the accessory. This improves stability.
- Place the accessory next to your temperature control unit. Pay attention to the stability of the accessory. Also consider possible vibrations during operation. When installing the accessory, make sure the temperature control hoses will not be under tension during operation.
- Connect the **>Circulation flow<** [1] on the temperature control unit with the **>Circulation return<** [2] on the accessory.
- Connect the **>Circulation return<** [2] on the temperature control unit with the **>Circulation flow (bypass)<** [1‘] on the accessory.

- Connect the **>Circulation flow<** [1] on the accessory with the external application. For further information, please refer to the operation manual of the temperature control unit. There can be maximum pump pressure at your external application if the accessory is defective. A sufficiently dimensioned overpressure protection device must be installed in the supply line (pressure side) to protect your external application. The installed overpressure protection device is destroyed in the event of a fault and thus protects the external application against damage.
  In case you use an external pressure sensor:
  Install an external pressure sensor between accessory and external application.
- Connect the **>Circulation return (bypass)<** [2'] on the accessory with the external application. For further information, please refer to the operation manual of the temperature control unit.
- Check the connections for leaks.
- Install the supplied switching-mode power supply to the accessory (if not pre-installed).
- Connect the **>Control line<** [117] on the accessory to the **>Connection accessory<** [116] on the switching-mode power supply.
- Connect the **>Connection Huber Unit<** [115] on the switching-mode power supply with the **>Service interface<** [50] on the temperature control unit. The length of the connecting cable must not exceed 3 meters.
- In case you use an external pressure sensor:
  Connect the external pressure sensor to the **>external pressure sensor connection<** [66] on the accessory.

2.8.2 Connecting the functional ground

PROCEDURE

- If required, connect the **>functional ground terminal<** [87] on the accessory with the building grounding point. Use a ground strap for this purpose. For the exact position and thread size please refer to the wiring diagram. → From page 38, section **»Annex«**.

2.9 Connecting to the power supply

DANGER

Connecting to a power socket without protective earth (PE)

RISK OF DEATH FROM ELECTRIC SHOCK

- Always connect the accessory to safety sockets (PE).
- In case of uncertainties about an existing protective earth (PE), have the connection inspected by a qualified (certified) electrician.
- Do not use a power cable that is longer than **3 m**.

DANGER

Connection/adjustment through hardwiring is not carried out by a qualified (certified) electrician

RISK OF DEATH FROM ELECTRIC SHOCK

- Have the connection/adjustment through hardwiring carried out by a qualified (certified) electrician.

DANGER

Damaged power cable/power cable connection

MORTAL DANGER FROM ELECTRIC SHOCK

- Do not start up the accessory.
- Isolate the accessory from the power supply.
- Have the power cable/power cable connection replaced and inspected by a qualified (certified) electrician.

NOTE

Incorrect power supply connection

DAMAGE TO THE ACCESSORY

- Your building's existing power supply voltage and frequency must match the data provided on the rating plate of the accessory.

INFORMATION

Based on local circumstances, you may have to use an alternative power cable instead of the supplied original power cable. Do not use a power cable that is longer than **3 m** to be able to disconnect the temperature control unit/accessory from the mains at any time. Have the power cable only replaced by a qualified (certified) electrician. Temperature control units/accessories with multiple mains connections must not be put into operation until all mains connections have been properly connected to a fused mains supply.

3 Function description

3.1 Function description of the accessory

3.1.1 General functions

The **VPC bypass** was developed for temperature control units that do **not** have an internal pressure sensor for regulating the pressure in the heat transfer fluid circuit. The VPC bypass allows sensitive external applications (e.g.: glass reactors) to be operated at a lower pressure during normal operation. The VPC bypass ensures a soft start. It regulates and limits the pressure that acts on the external application.

To avoid power losses, evaporator and heater are sufficiently circulated by the primary circuit (temperature control unit – VPC bypass). The secondary circuit supplies the external application.

The VPC Bypass can detect pressure in two ways:
– Internal pressure sensor: Measuring point in the VPC bypass (standard).
– External pressure sensor: Measuring point is external, e.g. directly at the external application. This requires an additional pressure sensor.

Optional:
The flow rate can be controlled in combination with a flow rate meter. There is **no protection** against excessive pressure.

3.2 To be noted when planning the test

INFORMATION Please also note: → Page 11, section **»Extension of specified normal operation«**.

The focus is on your application. Bear in mind that system performance is influenced by heat transfer, temperature, heat transfer fluid viscosity, volume flow, and flow speed.

- Make sure that the electrical connection is adequately dimensioned.
- The place of installation of the accessory should be selected so as to ensure adequate fresh air.
- A cross-section reduction or shut-off in the heat transfer fluid circulation must be avoided.
- To prevent the danger of over-pressure in the system, the heat transfer fluid must always be brought to room temperature before switching off. This will prevent damage to the temperature control device, accessory, or the application. Any isolating valves must remain open (pressure equalization).
- Select the heat transfer fluid to be used in such a way that it not only permits the minimum and maximum working temperature but is also suitable with regard to fire point, boiling point, and viscosity. In addition, the heat transfer fluid must be compatible with all the materials in your system.
- Avoid bending the temperature control and cooling water hoses (if required). Use suitable angle pieces and lay the hose connections with a large radius. Take the minimum bending radius from the data sheet of the temperature control hoses used.
- The selected hose connections must be resistant to the heat transfer fluid, the working temperatures and the permitted maximum pressure.
- Check the hoses at regular intervals for any material fatigue (e.g. cracks, leaks).

3.3 Function examples

3.3.1 Settings via “Category menu”

INFORMATION

If the accessory is not equipped with a “Pilot ONE®”, all settings are made on the temperature control unit. Otherwise, the settings are made directly on the accessory. **The functions described below depend on the model used.**
Accessory with multi-circuit control (> 2 heat transfer fluid connections): Settings are made separately for each subsystem. Simply select the desired subsystem.

PROCEDURE

- Go to the “Categories menu”.
- Tap on the category “System settings”.
- Tap on the category “* settings”. * = VPC, FCC or M-FCC.
- Tap on the category “Subsystem”. Only available with multi-circuit control. ···

3.3.1.1 Setting the “Control mode”

PROCEDURE

- ··· Tap the sub-category “Control mode”.
- Select the desired control mode. The following are available: “Disable control“, “Pressure control”, “Flow control” and “Flow control (pressure limit)”.
- Tap “OK” to confirm your selection.

3.3.1.2 Setting the “Pressure setpoint”

PROCEDURE

- ··· Tap the sub-category “Pressure setpoint”.
- Enter the new value (bar).
- Tap “OK” to confirm your entry.

3.3.1.3 Setting the “Flow setpoint”

PROCEDURE

- ··· Tap the sub-category “Flow setpoint”.
- Enter the new value (l/min).
- Tap “OK” to confirm your entry.

3.3.1.4 Setting the “Pressure control parameter”

PROCEDURE

- ··· Tap the sub-category “Pressure control parameter”.
- Enter the new values for “KP”, “KI” and “KD” here one after the other.
- Tap “OK” to confirm your entry.

3.3.1.5 Setting the “Flow control parameter”

PROCEDURE

- ··· Tap the sub-category “Flow control parameter”.
- Enter the new values for “KP”, “KI” and “KD” here one after the other.
- Tap “OK” to confirm your entry.

3.3.1.6 Displaying the settings

PROCEDURE

- ··· Tap the sub-category “Display”. The overview shows all the settings. “n/v“ stands for “Control disabled“, “p“ for “Pressure control“, “V'” for “Flow control“ and “V',pMax“ for “Flow control (pressure limit)“. A multi-circuit control displays the various subsystems.
- Tap on “OK” after you have read/checked the settings.

3.3.1.7 Resetting control parameters

PROCEDURE

- ··· Tap the sub-category “Reset control parameter”.
- Read the information. To cancel, tap either “No” or “ESC”.
- Tap “OK”. All control parameters will be reset to their factory settings. With multi-circuit control, only the parameters of the selected subsystem will be reset.

3.3.2 Settings via “Home screen“

INFORMATION If the accessory is not equipped with a “Pilot ONE®”, all settings are made on the temperature control unit. Otherwise, the settings are made directly on the accessory.

3.3.2.1 Changing the “Control mode”

PROCEDURE

Single circuit control

- Tap the “Mode“ icon.
- Select the desired control mode. The following are available: “Pressure control”, “Flow control” and “Flow control (pressure limit)”.
- Tap “OK” to confirm your selection.

Multi-circuit control

- Tap the number of the subsystem. The number of subsystems depends on the model.
- Select the desired control mode for the subsystem. The following are available: “Disable control“, “Pressure control”, “Flow control” and “Flow control (pressure limit)”. This selection applies only to this subsystem.
- Tap “OK” to confirm your selection.

3.3.2.2 Changing the “Pressure setpoint” or “Flow setpoint”

PROCEDURE

Single circuit control

- Tap the “3 way valve” icon. It is located above the “Mode” icon. Depending on the selected control mode, a new setpoint is entered for “Flow control” (l/min) or for “Pressure control” (bar).
- Enter the new value (l/min or bar).
- Tap “OK” to confirm your entry.

Multi-circuit control

- Tap the value of the subsystem. The displayed values vary depending on the selected control mode. “l/min“ stands for “Flow control”, “bar“ for “Pressure control”. “n/v“ stands for “Control disabled“, “p“ for “Pressure control“, “V'” for “Flow control“ and “V',pMax“ for “Flow control (pressure limit)“. A multi-circuit control displays the various subsystems.
- Enter the new value (l/min or bar).
- Tap “OK” to confirm your entry.

4 Setup mode

4.1 Setup mode

CAUTION

Moving the accessory during operation

SERIOUS BURNS/FREEZING DUE TO HOUSING PARTS/ESCAPING HEAT TRANSFER FLUID

- Do not move the accessory when in operation.

NOTE

When the accessory is switched off, the heat transfer fluid temperature is higher/lower than the room temperature

MATERIAL DAMAGE TO THE ACCESSORY

- Use the temperature control unit to temper the heat transfer fluid in the accessory to room temperature (20 °C).
- Do not close the isolating valves in the heat transfer fluid circuit.

NOTE

A pressure-sensitive external application is run with the accessory without an overpressure protection device being installed

MATERIAL DAMAGE TO THE EXTERNAL APPLICATION

- To protect a pressure-sensitive external application (such as a glass apparatus), use an overpressure protection device in the supply line.
- Do not use accessories as an isolating valve. The outputs cannot be completely closed due to the design.
- The external application can be damaged by excessive pressure if the return is locked.

4.1.1 Turning on the accessory

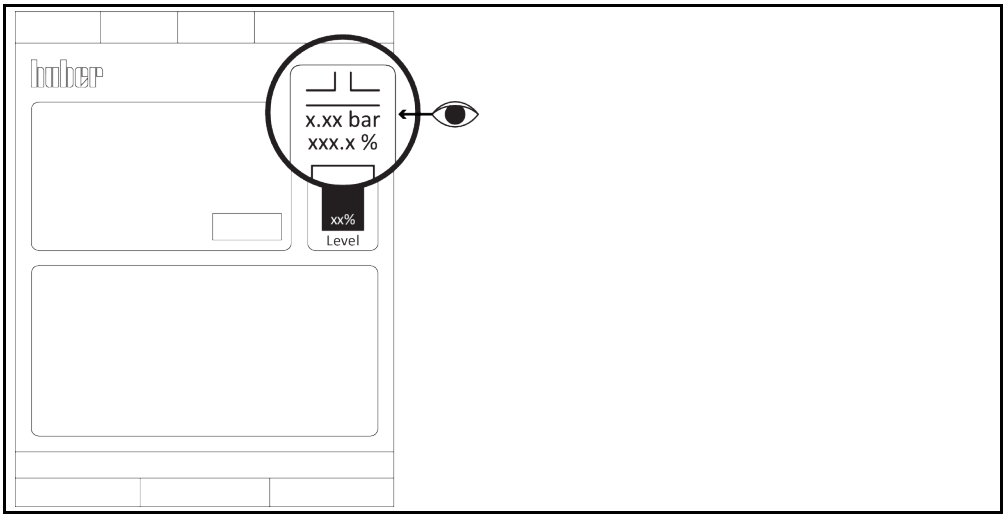
NOTE

The accessory is turned on before filling

DAMAGE TO THE ACCESSORY

- Dry running can damage the accessory if the temperature control unit and the accessory are not filled.
- Turn on the accessory only **after** filling it.

Accessories were recognized



PROCEDURE

- Check whether all steps to prepare operation have been taken. → Page 20, section **»Preparations for operation«**.
- Connect the temperature control unit with the building power supply connection.
- Connect the switching-mode power supply on the accessory with the building's power grid connection.

- Turn on the temperature control unit.
  The accessory is automatically recognized by the temperature control unit and switched on. If accessories are detected, a stylized two-way valve appears on the right edge of the display (see figure). The indicated pressure is the actual pressure at the connected pressure sensor (internal or external).
- Adjust the temperature control unit as described in its operation manual.
- Set the desired control mode.
- Set the required setpoints.

4.1.2 Switching off the accessories

PROCEDURE

- Heat the heat transfer fluid up to room temperature.
- Stop temperature control at the temperature control unit.
- Switch off the temperature control unit.
- Disconnect the accessories from the power supply connection.

4.2 Filling and draining the accessory

CAUTION

Extremely hot or cold surfaces, connections and heat transfer fluids

BURNS OR FREEZING OF LIMBS

- Surfaces, connections and the tempered heat transfer fluid can be extremely hot or cold depending on the operating mode.
- Avoid direct contact!
- Wear personnel protective equipment. For example heat-resistant protective gloves and safety goggles.

CAUTION

Non-compliance with the safety data sheet for the heat transfer fluid to be used

INJURIES

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the heat transfer fluid to be used must be read prior to using it and its content must be respected.
- Observe the local regulations/work instructions.
- Wear your personal protective equipment (e.g. temperature-resistant safety gloves, safety goggles, safety footwear).
- Danger of slipping because floor and work area are contaminated. Clean the workplace; observe the proper disposal of heat transfer fluid and aids. → Page 13, section **»Proper disposal«**.

NOTE

During an active circulation, the heat transfer fluid circuit is shut off by shut-off valves

MATERIAL DAMAGE TO THE CIRCULATING PUMPS INSTALLED IN THE TEMPERATURE CONTROL UNIT

- Do not close the heat transfer fluid circuit during an active circulation by means of shut-off valves.
- Warm the heat transfer fluid to room temperature before stopping the circulation.

4.2.1 Filling the accessory

NOTE

The accessory is turned on before filling

DAMAGE TO THE ACCESSORY

- Dry running can damage the accessory if the temperature control unit and the accessory are not filled.
- Turn on the accessory only **after** filling it.

PROCEDURE

- Check whether the steps were implemented. → Page 20, section **»Preparations for operation«**.
- For filling, venting and degassing of the temperature control unit, proceed as described in its operation manual.

4.2.2 Draining the accessory

CAUTION

Hot or very cold heat transfer fluid

SERIOUS BURNS/FREEZING OF LIMBS

- Before draining, ensure that the heat transfer fluid has room temperature (20 °C).
- If, at this temperature, the heat transfer fluid is too viscous to be drained: Control the temperature of the heat transfer fluid for a few minutes until the viscosity will allow drainage.
- Danger of burns when draining heat transfer fluid at temperatures above 20 °C.
- Wear your personal protective equipment when carrying out the drainage operation.

4.2.2.1 Applies to an accessory with connection set

PROCEDURE

- Do not disconnect the accessory from the temperature control unit.
- Proceed as described in the operation manual of the temperature control unit when draining it. The accessory is emptied via the temperature control unit. Follow the instructions for the proper disposal of heat transfer fluid. → Page 13, section **»Proper disposal«**.
- Wait until the temperature control unit, the application and the accessory have emptied.
- Remove the temperature control hose from the **>Circulation flow<** [1‘].
- Remove the temperature control hose from the **>Circulation return<** [2‘].
- Leave the accessory open for a while to allow it to dry out and the residue to drain.
- Re-connect the temperature control hose to the **>Circulation flow<** [1‘].
- Re-connect the temperature control hose to the **>Circulation return<** [2‘].

4.2.2.2 Applies to an accessory without a connection set (loose)

PROCEDURE

- Proceed as described in the operation manual of the temperature control unit when draining it. The accessory is emptied via the temperature control unit. Follow the instructions for the proper disposal of heat transfer fluid. → Page 13, section **»Proper disposal«**.
- Wait until the temperature control unit, the application and the accessory have emptied.
- Remove the temperature control hose from the accessory’s **>Circulation flow<** [1].
- Remove the temperature control hose from the accessory’s **>Circulation return<** [2].
- Remove the temperature control hose from the accessory’s **>Circulation flow<** [1‘].
- Remove the temperature control hose from the accessory’s **>Circulation return<** [2‘].
- Leave the accessory open for a while to allow it to dry out and the residue to drain.
- Re-connect the temperature control hose to the accessory’s **>Circulation flow<** [1].
- Re-connect the temperature control hose to the accessory’s **>Circulation return<** [2].
- Re-connect the temperature control hose to the accessory’s **>Circulation flow<** [1‘].
- Re-connect the temperature control hose to the accessory’s **>Circulation return<** [2‘].

5 Normal operation

5.1 Automatic operation

CAUTION

Extremely hot or cold surfaces, connections and heat transfer fluids

BURNS OR FREEZING OF LIMBS

- Surfaces, connections and the tempered heat transfer fluid can be extremely hot or cold depending on the operating mode.
- Avoid direct contact!
- Wear personnel protective equipment. For example heat-resistant protective gloves and safety goggles.

NOTE

During an active circulation, the heat transfer fluid circuit is shut off by shut-off valves

MATERIAL DAMAGE TO THE CIRCULATING PUMPS INSTALLED IN THE TEMPERATURE CONTROL UNIT

- Do not close the heat transfer fluid circuit during an active circulation by means of shut-off valves.
- Warm the heat transfer fluid to room temperature before stopping the circulation.

5.1.1 Temperature control

5.1.1.1 Starting the temperature control process

The temperature control is started via the connected temperature control unit. Prerequisite: The temperature control unit and the accessory, including application, are filled and vented. The temperature control unit and the accessory are connected via the switching-mode power supply and each is connected to a power grid connection.

PROCEDURE

- Start the temperature control process as described in the operation manual of the temperature control unit.

5.1.1.2 Ending the temperature control process

NOTE

When the accessory is switched off, the heat transfer fluid temperature is higher/lower than the room temperature

MATERIAL DAMAGE TO THE ACCESSORY

- Use the temperature control unit to temper the heat transfer fluid in the accessory to room temperature (20 °C).
- Do not close the isolating valves in the heat transfer fluid circuit.

The accessories are switched off by the temperature control unit.

PROCEDURE

- Stop the temperature control process as described in the operation manual of the temperature control unit.

6 Interfaces and software update

NOTE

Connections with the interfaces are established during operation

DAMAGE TO THE INTERFACES

- Interfaces may get damaged if devices are connected with the interfaces during operation.
- Before connecting, ensure the device to be connected is turned off.

NOTE

Failure to observe the specifications of the interface used

MATERIAL DAMAGE

- Only connect components that meet the interface requirements.

INFORMATION

Please note the specifications of the generally applicable standards when using the interfaces. For the exact position of the interfaces, please refer to the wiring diagram.

6.1 Interfaces on the accessory

6.1.1 Service interface [50]

This interface is exclusively used by Huber service engineers.

6.1.2 Connection jack for external pressure sensor

This interface is used to connect an optional external pressure sensor.

6.1.3 Control line

This interface is used to connect the accessory with the switching-mode power supply.

6.2 Switching-mode power supply interfaces

If the temperature control unit does not provide sufficient power to the accessory, a switching-mode power supply is used. The temperature control unit and the accessory communicate via the switching-mode power supply. At the same time, the switching-mode power supply ensures that the accessory is powered.

6.2.1 Connection Huber Unit

This interface is used to connect the temperature control unit with the switching-mode power supply.

6.2.2 Connection Accessory

The accessory is connected to this jack. The switching-mode power supply supplies the accessory with power and receives control signals from the temperature control unit at the same time.

Pin assignment (front view)

Pin assignment

Pin	Signal	Description
2	RxD	Receive Data
3	TxD	Transmit Data
5	GND	Signal GND

7 Maintenance

7.1 Electrical fuse

For entry **>Fuse<** [61] in the wiring diagram: The thermal overcurrent circuit breakers have been installed to provide all-pole disconnection (L and N). If there is no function after switching on, please check the overcurrent circuit breakers. If the circuit breakers trip again after being reset, disconnect the power plug and contact our Customer Support.

7.2 Maintenance

DANGER

Cleaning/maintenance while the temperature control unit/ accessory is operating

DANGER TO LIFE FROM ELECTRIC SHOCK

- Stop an ongoing temperature control process.
- Adjust the temperature of the heat transfer fluid to room temperature after switching off.
- Disconnect the temperature control unit from the power supply.
- Also disconnect the accessories from the current supply.

NOTE

Maintenance work that is not described is carried out

MATERIAL DAMAGE

- For maintenance work that is not described, please contact the Huber company.
- Maintenance work that is not described is reserved for qualified specialists trained by the Huber company.
- Safety-relevant components may only be replaced by equivalent components. The specified safety values for the respective component must be observed.

7.2.1 Function check and visual inspection

Control intervals

Cooling*	Description	Maintenance interval	Comment	Person responsible
A/W	Visually inspect hoses and hose connections	Prior to switching on the temperature control unit / accessory	Replace leaking hoses and hose connections before you switch on the temperature control unit / accessory. → Page 32, section **»Replacing temperature control hoses«**.	Operating company and/ or operators
A/W	Check the power cable	Prior to switching on the temperature control unit / accessory or when you change the installation location	Do not start up the temperature control unit / accessory if the power cable is damaged.	Qualified (certified) electrician
A/W	Heat transfer fluid inspection	As required	–	Operating company and/ or operators
A/W	Inspect the accessory for damage and stability	Every 12 months or after relocation	–	Operating company and/ or operators
A/W	Exchange safety-relevant electric and electromechanical components	20 years	Have the exchange only carried out by certified personnel (such as Huber service engineers). Please contact Customer Support. → Page 36, section **»Contact data«**.	Operating company
*A = Air cooling; W = Water cooling				

7.2.2 Replacing temperature control hoses

Replace defective temperature control hoses **before** turning on the temperature control unit.

PROCEDURE

➢ Exchange the temperature control hoses as described in the operation manual of the temperature control unit.

7.3 Heat transfer fluid inspection, replacement and circuit cleaning

PROCEDURE

➢ Do not disconnect the accessory.
➢ Proceed as described in the operation manual of the temperature control unit when performing the heat transfer fluid inspection and changing and cleaning the heat transfer fluid circuit.

7.4 Cleaning the surfaces

⚠ CAUTION

Extremely hot or cold surfaces, connections and heat transfer fluids
BURNS OR FREEZING OF LIMBS

➢ Surfaces, connections and the tempered heat transfer fluid can be extremely hot or cold depending on the operating mode.
➢ Avoid direct contact!
➢ Wear personnel protective equipment. For example heat-resistant protective gloves and safety goggles.

NOTE

Open plug contacts
DAMAGE CAUSED BY FLUID INGRESS

➢ Protect plug contacts that are not required with the protective caps supplied.
➢ Clean surfaces only with a damp cloth.

A standard stainless steel cleaning agent is suitable for cleaning the stainless steel surfaces. Carefully clean painted surfaces (damp only) using a solution of sensitive-fabrics detergent. Observe the proper disposal of cleaning agents and aids. → Page 13, section **»Proper disposal«**.

7.5 Plug contacts

NOTE

Open plug contacts
DAMAGE CAUSED BY FLUID INGRESS

➢ Protect plug contacts that are not required with the protective caps supplied.
➢ Clean surfaces only with a damp cloth.

All plug contacts are provided with protective caps. Plug contacts that are not required must be protected with the protective caps.

7.6 Decontamination before shipping

⚠ CAUTION

Shipping temperature control units or accessories that are not decontaminated
PERSONAL INJURIES AND DAMAGE DUE TO RESIDUES OF HAZARDOUS SUBSTANCES

➢ Carry out suitable decontamination.
➢ The scope of decontamination depends on the type and amount of the substances used.
➢ The corresponding safety data sheet must be observed.
➢ You will find a prepared return receipt at www.huber-online.com.

The operating company is responsible for carrying out a decontamination. Decontamination must be carried out **before** the temperature control unit or accessory is shipped. For example for repair or inspection. It must be ensured that third-party personnel do **not** come into contact with a contaminated temperature control unit or accessory. A written note pointing out that decontamination has been carried out must be attached clearly visible on the temperature control unit or accessory.

To simplify the process, we have prepared a form for you. This is available for download at www.huber-online.com.

8 Shutting down

8.1 Safety instructions and basic principles

DANGER

Connection/adjustment to the power supply not carried out by a qualified (certified) electrician and/or connection to a power socket without protective earth (PE)

MORTAL DANGER FROM ELECTRIC SHOCK

- Have the connection/adjustment to the power supply carried out by a qualified (certified) electrician.
- Always connect the accessory to safety sockets (PE).

DANGER

Damaged power cable/power cable connection

MORTAL DANGER FROM ELECTRIC SHOCK

- Do not start up the accessory.
- Isolate the accessory from the power supply.
- Have the power cable/power cable connection replaced and inspected by a qualified (certified) electrician.

WARNING

Risk of tipping due to unstable accessory

SEVERE INJURIES AND MATERIAL DAMAGE

- Avoid risk of tipping due to unstable accessory.

CAUTION

The temperature control unit is transported / moved when the accessory is installed

INJURIES CAUSED BY TILTING THE TEMPERATURE CONTROL UNIT

- Remove the accessory before the temperature control unit is transported / moved.

CAUTION

Non-compliance with the safety data sheet for the heat transfer fluid to be used

INJURIES

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the heat transfer fluid to be used must be read prior to using it and its content must be respected.
- Observe the local regulations/work instructions.
- Wear your personal protective equipment (e.g. temperature-resistant safety gloves, safety goggles, safety footwear).
- Danger of slipping because floor and work area are contaminated. Clean the workplace; observe the proper disposal of heat transfer fluid and aids. → Page 13, section **»Proper disposal«**.

CAUTION

Hot or very cold heat transfer fluid

SEVERE BURNS/FROSTBITE OF LIMBS

- Before draining, ensure that the heat transfer fluid has room temperature (20 °C).
- If, at this temperature, the heat transfer fluid is too viscous to be drained: Control the temperature of the heat transfer fluid for a few minutes until the viscosity will allow drainage. Never control the temperature of the heat transfer fluid when the drain is open.
- Danger of burns when draining heat transfer fluids at temperatures above 20 °C.
- Wear your Personal Protective Equipment for draining.
- Only drain using suitable drainage hose and collecting container. These must be compatible with the heat transfer fluid and its temperature.

INFORMATION

All safety instructions are important and must be followed accordingly during working operations!

8.2 Switch-off

PROCEDURE

- Switch off the temperature control unit. Please refer to the operation manual of the temperature control unit
- Disconnect the temperature control unit from the current supply. Please refer to the operation manual of the temperature control unit
- Disconnect the accessory from the power supply.

8.3 Draining the accessory

PROCEDURE

- Drain the temperature control unit and the accessory as described in the operation manual of the temperature control unit.

8.4 Separating the accessory from the temperature control unit

8.4.1 Applies to an accessory with connection set

PROCEDURE

- Drain the temperature control unit **before** you disconnect the accessory.
- Disconnect both the temperature control unit and the accessory from the power grid connection.
- In case you use an external pressure sensor:
  Disconnect the external pressure sensor to the **>external pressure sensor connection<** [66] on the accessory.
- Disconnect the **>Connection Huber Unit<** [115] on the switching-mode power supply from the **>Service interface<** [50] on the temperature control unit.
- Disconnect the **>Control line<** [117] on the accessory from the **>Connection accessory<** [116] on the switching-mode power supply.
- Remove the supplied switching-mode power supply from the accessory (if necessary).
- Disconnect the **>Circulation return (bypass)<** [2'] on the accessory from the external application.
- Disconnect the **>Circulation flow (bypass)<** [1'] on the accessory from the external application. Remove the overpressure protection device that is installed in the heat transfer fluid circuit (if installed).
  In case you use an external pressure sensor:
  Remove the external pressure sensor from the heat transfer fluid circuit.
- Disconnect the **>Circulation return<** [2] on the temperature control unit from the **>Bypass<** [82] on the accessory.
- Disconnect the **>Circulation flow<** [1] on the temperature control unit from the **>Circulation return<** [2] on the accessory.
- Remove the accessory from the support on the temperature control unit.
- Remove the bracket from the **>VPC Bypass support<** [A].
- Install the protective caps on the connections on your accessory.

8.4.2 Applies to an accessory without a connection set (loose)

PROCEDURE

- Drain the temperature control unit **before** you disconnect the accessory.
- Disconnect both the temperature control unit and the accessory from the power grid connection.
- In case you use an external pressure sensor:
  Disconnect the external pressure sensor to the **>external pressure sensor connection<** [66] on the accessory.
- Disconnect the **>Connection Huber Unit<** [115] on the switching-mode power supply from the **>Service interface<** [50] on the temperature control unit.
- Disconnect the **>Control line<** [117] on the accessory from the **>Connection accessory<** [116] on the switching-mode power supply.
- Remove the supplied switching-mode power supply from the accessory (if necessary).
- Disconnect the **>Circulation return (bypass)<** [2'] on the accessory from the external application.
- Disconnect the **>Circulation flow (bypass)<** [1] on the accessory from the external application. Remove the overpressure protection device that is installed in the heat transfer fluid circuit (if installed).
  In case you use an external pressure sensor:
  Remove the external pressure sensor from the heat transfer fluid circuit.
- Disconnect the **>Circulation return<** [2] on the temperature control unit from the **>Circulation flow (bypass)<** [1'] on the accessory.
- Disconnect the **>Circulation flow<** [1] on the temperature control unit from the **>Circulation return<** [2] on the accessory.
- Install the protective caps on the connections of the accessory.

8.5 Packing

Always use the original packaging! → Page 16, section **»Unpacking«**.

8.6 Shipping

NOTE

Improper transportation of the accessory

MATERIAL DAMAGE

- ➢ Do not transport the unit in a truck when the unit rests on its casters or leveling feet.
- ➢ Comply with all requirements in this section to avoid damage to the accessory.

If fitted, use the lugs located on the top of the accessory for transportation. Do not transport the accessory alone and without aids.

- Always use the original packaging for transportation.
- Indicate the upright transport position with arrows on the packaging.
- Always transport the accessories upright on a pallet!
- Protect attachments from damage during transportation!
- During transportation, place the accessories on squared timber to protect the casters/feet.
- Secure with tensioning belts/lashing straps that are suitable for the weight.
- Additionally secure (depending on model) with plastic film, cardboard and straps.

8.7 Disposal

The operating company must observe the national and local regulations for the disposal

NOTE

Improper disposal

ENVIRONMENTAL DAMAGE

- ➢ Immediately dispose of spilled or leaked heat transfer fluid in a professional manner. → Page 13, Section **»Proper disposal«**.
- ➢ Environmental damage must be avoided.
- ➢ Only commission approved specialized companies in the field of cooling and air-conditioning to carry out the disposal.

Huber temperature control units and Huber accessories are manufactured from high quality, recyclable materials. For example: Stainless steel 1.4301 / 1.4401 (V2A), copper, nickel, FKM, Perbunan, NBR, ceramic, carbon, Al-Oxid, red brass, brass, nickel-plated brass and silver solder. With proper recycling you actively contribute to the reduction of the CO_2 emissions during the manufacture of these materials.

8.8 Contact data

INFORMATION

Please contact your supplier and/or local dealer **before** you return your accessories. The contact information can be found "Contact" on our home page www.huber-online.com. Please have the serial number of the accessories ready. The serial number can be found on the rating plate of the accessories.

8.8.1 Telephone number: Customer Support

If your country is not mentioned in the list below: The responsible service partner can be found on our homepage www.huber-online.com under the heading „Contact“.

- Huber Deutschland: +49 781 9603 244
- Huber China: +86 (20) 89001381
- Huber India: +91 80 2364 7966
- Huber Ireland: +44 1773 82 3369
- Huber Italia: +39 0331 181493
- Huber Swiss: +41 (0) 41 854 10 10
- Huber UK: +44 1773 82 3369
- Huber USA: +1 800 726 4877 | +1 919 674 4266

8.8.2 Telephone number: Sales

Telephone: +49-781-9603-123

8.8.3 Email address: Customer Support

Email: support@huber-online.com

8.9 Clearance certificate

This certificate must be enclosed with the temperature control unit. → Page 32, section **»Decontamination before shipping«**.

9 Annex

Inspired by **temperature** designed for you

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