



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 · Betriebsanweisung · 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

Automated Drain & Refill System

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

You can request the full installation guide 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

Automated Drain & Refill System

Automated Drain & Refill System

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

VALID IN CONJUNCTION WITH:

HUBER temperature control units
from the Unimotive® series
in conjunction with a
process control system (PCS)

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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.

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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






 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

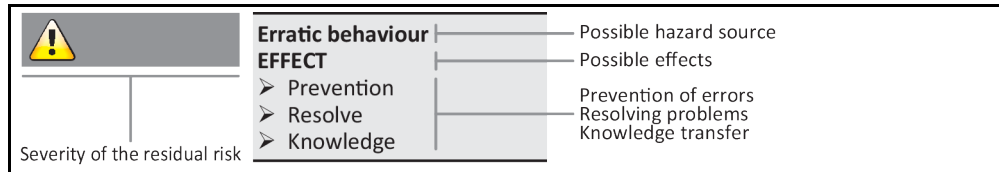
1.3 Safety

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 signs are used on the temperature control unit.

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 37, section »Contact data«. Keep this operation manual for future reference.

1.3.4 Extension of specified normal operation



The accessories are operated in a potentially explosive area
DEATH FROM EXPLOSION
 ➤ Do NOT install or start up the accessories within an ATEX zone.



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.

The accessory is intended for draining and filling an **externally closed application**. During draining, only the application is drained, not the temperature control unit. For this, the accessory must be properly installed on the temperature control unit. The accessory must be used only in combination with a Huber temperature control unit. The accessory can **not** be used without being connected to a temperature control unit. The temperature control unit and accessory **must** be controlled/monitored by a process control system. Otherwise the intended use applies as described in the operation manual of the temperature control unit. For the technical specification, refer to the datasheet. → From page 38, Section »Annex«. Install, set up and operate the accessory according to the instructions in this operation manual. Any failure to comply with the operation manual is considered as improper operation. The accessory was manufactured according to the state of the art and the recognized safety rules and regulations.

The accessory does not act as a stopcock for the unrestricted shutting off of the thermal fluid circuit to the application. When draining the application with a defective accessory, the entire thermal fluid can be drained from the system. 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 Operating company and operators

1.4.1 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 / thermal 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 na-

tional 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).

1.4.1.1 Proper disposal

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

Material	Description
Packaging material	Keep the packaging material for future use (e.g. transport).
Thermal fluid	Disposal see safety data sheet of thermal 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 thermal fluid: The aids used (such as cloths and cleaning rags) must be disposed of according to the thermal 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).

1.4.2 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.

1.4.3 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 General information

1.5.1 Description of workstation

The workstation is located in front of the control panel of the process control system. The workstation is determined by the peripherals connected by the customer. It is the responsible body's responsibility to design it safely. 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.

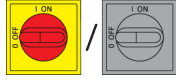
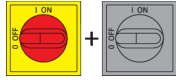
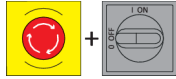
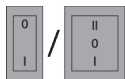
1.5.2 Further protective devices

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.

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 THERMAL FLUID

- Only transport empty temperature control unit and/or 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 the accessory from transport damage.
- Do not transport the accessory alone and not without aids.
- Check the load bearing capacity of the transportation route and the place of installation.
- The parking brakes at the casters (if present) must be activated and/or the leveling feet (if present) must be unscrewed/activated before the temperature control unit is put into operation.
→ Page 20, section »Activating the leveling feet«.

2.1.1 Lifting and transporting the accessories

2.1.1.1 Accessories with lifting eyes

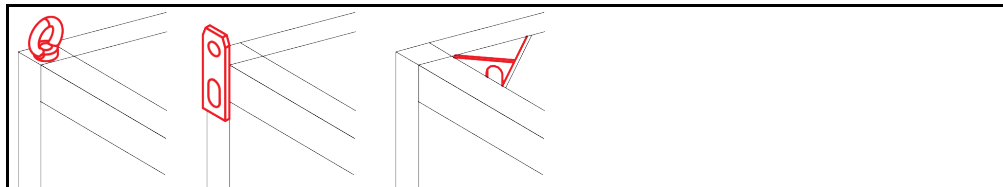
NOTE

The accessories are lifted at the lifting eyes without load handling equipment

DAMAGE TO THE ACCESSORY

- Use load handling equipment to lift and transport the accessory.
- The lifting eyes are only designed for a load **without** inclination (0°).
- The load handling attachment used must be adequately dimensioned. Take the dimensions and weight of the accessory into account.

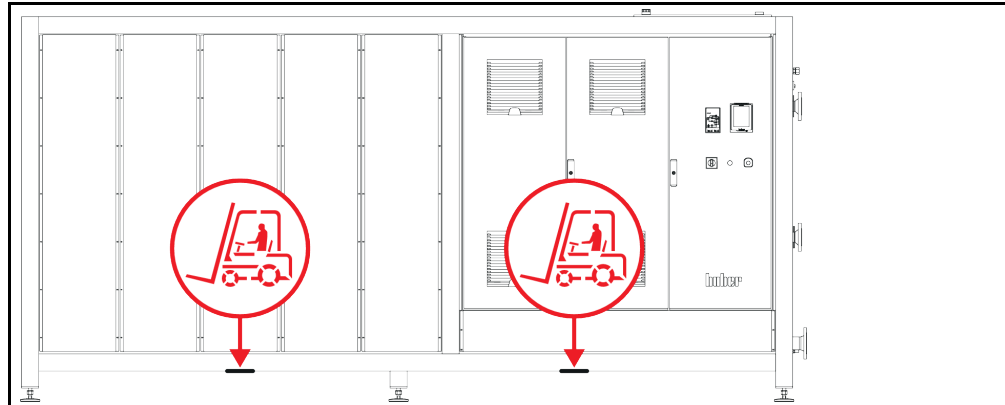
Example: lifting eyes
(round, angular, and
recessed (left to right))



- Never lift and transport the accessory on the lifting eyes on your own and without aids.
- Lift and transport the accessory on the lifting eyes only with a crane or an industrial truck.
- The lifting force of the crane or industrial truck must correspond at least to the weight of the accessory. You will find the weight of the accessory on the data sheet. → From page 38, Section »Annex«.

2.1.1.2 Accessories without lifting eyes

Example: Supporting points for forklift arms for free-standing models from a certain overall size. For the exact position please refer to the wiring diagram in the annex.



- 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

2.1.2.1 Accessories with casters

- Do **not** use the casters for transportation to the place of installation. → Page 15, section »Lifting and transporting the accessories«.
- Use the casters only for positioning at the place of installation.
- Only move the accessory on the casters when the surface is level, without gradient, non-slip and stable.
- Do not move the accessory on your own.
- **At least 2 persons** are required to move the accessory on the casters. **At least 5 persons** are required to move the accessory on the casters if the total weight of the accessory **exceeds 1.5 tons**.
- The parking brakes at the casters must be activated before the accessory is put into operation.

2.1.2.2 Accessories with casters including leveling feet

- Do **not** use the casters for transportation to the place of installation. → Page 15, section »Lifting and transporting the accessories«.
- Use the casters only for positioning at the place of installation.
- Only move the accessory on the casters when the surface is level, without gradient, non-slip and stable.
- Do not move the accessory on your own.
- **At least 2 persons** are required to move the accessory on the casters. **At least 5 persons** are required to move the accessory on the casters if the total weight of the accessory **exceeds 500 kg**.
- The accessory is equipped with casters without locking brakes. Prior to putting the accessory into operation, unscrew/activate the integrated leveling feet. → Page 20, section »Activating the leveling feet«.

2.1.2.3 Accessories without casters

- 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 37, 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 17, 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			
	Air cooling		Water cooling	
	Top	[A] 0 / -	[A1] 0 / -	[A] 0 / 20
Left	[B] 0 / 20	[B1] 0 / 20	[B] 0 / 10	[B1] 0 / 20
Right	[C] 0 / 20	[C1] 0 / 20	[C] 0 / 10	[C1] 0 / 20
Front	[D] 0 / 20	[D1] 0 / 20	[D] 0 / 10	[D1] 0 / 20
Rear	[E] 0 / 20	[E1] 0 / 20	[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 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 thermal fluid must be disposed of immediately and correctly. Observe the proper disposal of thermal fluid and aids. → Page 13, section »Proper disposal«.
- Observe the ambient conditions.

2.5 Recommended temperature control hoses



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.



Hot or cold thermal fluid and surfaces
BURNS TO LIMBS

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



Uncontrolled formation of ice at the connections and hoses of the thermal 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 thermal 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 thermal 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.

2.6 Wrench sizes and torques

Observe the proper wrench sizes for the pump connection at the accessory. The following table lists the pump connections and the resulting wrench sizes, as well as the torque values. Always perform a leak test afterwards and re-tighten the connections if required. The values of the maximum torque (see table) must **not** be exceeded.

Overview
wrench sizes 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

Connection	Sleeve nut wrench size	Connector wrench size	Recommended torques in Nm	Maximum torques in Nm
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. First hand-tighten the temperature control hose. When using adapter pieces, do not overtighten the G-thread on the pump connection when connecting a temperature control hose. When connecting a temperature control hose to the adapter piece, secure the G-thread against overtightening.			

2.7 Preparations for operation

2.7.1 Activating the leveling feet

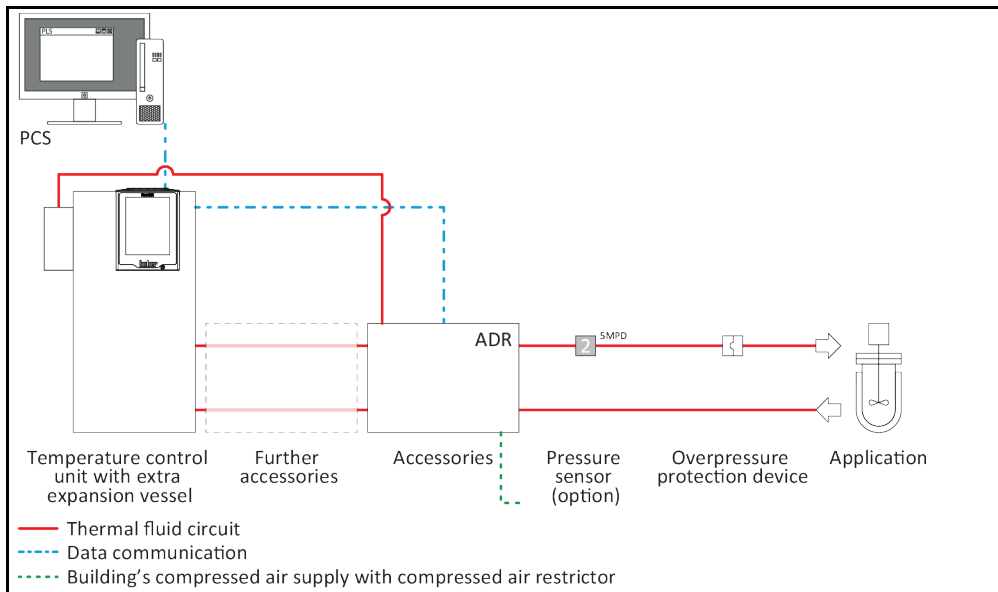
Ensure that the leveling feet are unscrewed/activated before you operate the accessories. Uneven floors can be compensated for by adjusting these leveling feet.

PROCEDURE

- Ensure that the locking brakes of the casters (if present) are activated.
- Turn the casters inwards so that you can easily reach the red setting wheels.
- Turn the red setting wheel on each caster clockwise. This extends the leveling feet. Rotate the red wheel counterclockwise to retract the leveling feet.
- Compensate uneven floors by adjusting the leveling feet, if necessary. Use a spirit level to level the accessory horizontally.

2.7.2 Installing the accessory

Example:
Single circuit control



INFORMATION

The temperature control unit and the accessory **must** be controlled by means of a process control system.

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 thermal 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.

PROCEDURE

- Make sure that the temperature control unit has not yet been filled with thermal fluid.
- Disconnect the temperature control unit from the power supply connection.
- Remove the protective caps from the connections on the accessory.
- **You must always connect the application directly on the accessory. Note the above illustration for this purpose.**
- Connect the >Circulation flow< [1] (temperature control unit) to the >Circulation return< [2] (accessory).
- Connect the >Circulation return< [2] (temperature control unit) to the >Circulation flow< [1] (accessory).
- Connect the >Circulation flow< [1] (accessory) with the external application. For further information, please refer to the operation manual of the temperature control unit. An overpressure protection device must be installed in the supply line (pressure side) to protect your external application. In the event of a fault, the installed overpressure protection device protects the external application against damage. Ensure that the emerging thermal fluid can be collected and disposed of. → Page 13, Section »Proper disposal«.
- In case you use external pressure sensors:
Install an external pressure sensor between each accessory and external application.
- Connect the >Circulation return< [2] (accessory) with the external application. For further information, please refer to the operation manual of the temperature control unit.

2.7.3 Connecting the >Return line< [132]

INFORMATION

The connection >Return line< [132] is connected to the >Extra expansion vessel< [19]. Ensure that the >Extra expansion vessel< [19] can accommodate the filling volume of the application incl. temperature control hoses. If you have any questions, please contact our Customer Support. → Page 37, Section »Contact data«.

PROCEDURE

- Connect the connections >Return line< [132] (accessory) and the thermal fluid connection of the >Extra expansion vessel< [19] (top) to close the thermal fluid circuit.
- Check the connections for leaks.

2.7.4 Connecting the compressed air

INFORMATION

The >Compressed air connection< [54] is used to drain the external application. During the draining process, the application is drained with the help of compressed air.

INFORMATION

The quality of the compressed air must correspond to grade 2 of the compressed air grades acc. to DIN ISO 8573-1 to ensure a trouble-free operation!

Compressed air grades acc. to DIN ISO 8573-1

Grade	Particles		Water		Oil
	Max. particle size in µm	Max. particle density in mg/m ³	Pressure condensation point in °C	Water content in mg/m ³	Residual oil content in mg/m ³
1	0.1	0.1	-70	3	0.01
2	1	1	-40	120	0.1
3	5	5	-20	880	1

PROCEDURE

- Connect the >Compressed air connection< [54] to the building's compressed air restrictor. Set the building's compressed air restrictor to the maximum permissible pressure of the external application.

2.7.5 Connecting the control cable

The accessory is connected with the temperature control unit via a control line. The temperature control unit must be controlled/monitored by a process control system. The process control system must ensure that the accessory cannot be switched on and off during an ongoing temperature control process. Various connections are available on the temperature control unit for this purpose.

- Ethernet (PB command, Modbus TCP, OPC UA)
- Analog RS interface (PB command)

PROCEDURE

- Connect the >Connection Huber Unit< [115] (accessory) with the >Service interface< [50] (temperature control unit).
- **Optional:** Connect the >Connection accessory< [116] (accessory) e.g. with a Flow Control Cube.
- Connect the temperature control unit to a process control system.

2.7.6 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«.

2.8 Connecting to the power supply

INFORMATION

Based on local circumstances, it may be that you need 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 accessory from the mains at any time. Have the mains cable only installed by a qualified electrician.

2.8.1 Connection using socket with protective earth (PE)

DANGER

Connecting to a power socket without protective earth (PE)
MORTAL DANGER FROM ELECTRIC SHOCK

- 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 supply cable/power supply connection replaced and inspected by an electrician.
- Do not use a power cable that is longer than **3 m**.

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

In case of uncertainties about an existing protective earth (PE), have the connection inspected by an electrician.

2.8.2 Connection via hard wiring

DANGER

Connection/adjustment to the power supply not carried out by an electrician
MORTAL DANGER FROM ELECTRIC SHOCK

- Have the connection/adjustment to the power supply carried out by an 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 supply cable/power supply connection replaced and inspected by an electrician.
- Do not use a power cable that is longer than **3 m**.

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.

3 Function description

3.1 Function description of the accessory

3.1.1 General functions

The accessory is intended for draining and filling an **externally closed application**. During draining, only the application is drained, not the temperature control unit. For this, the accessory must be properly installed on the temperature control unit.

Function overview

Function	Prerequisite	Description
0: Stand-by Temperature control or filling (venting) the application	A closed thermal fluid circuit between temperature control unit, accessory, application und extra expansion vessel.	These connections are opened : >Circulation flow< [1] >Circulation return< [2] >Circulation flow< [1'] >Circulation return< [2'] These connections are closed : >Compressed air valve< [54] >Return line< [132].
1: Draining the application Starting the draining process	The thermal fluid is at room temperature (20 °C). Temperature control or venting is not active. The overtemperature protection has not tripped.	These connections are closed : >Circulation flow< [1] >Circulation return< [2] >Circulation flow< [1'] >Circulation return< [2'] These connections are opened : >Compressed air valve< [54] >Return line< [132]. Once the external application is drained, this function must be stopped manually.
2: Hold Exchanging the application	Temperature control or venting is not active. The external application was drained.	These connections are closed : >Circulation flow< [1'] >Circulation return< [2']>Compressed air valve< [54] >Return line< [132].

3.2 Information on the thermal fluids



Non-compliance with the safety data sheet for the thermal fluid to be used
INJURIES

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the thermal 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 thermal fluid and aids. → Page 13, section »Proper disposal«.



The temperature range of the accessory is exceeded
BURNS OF LIMBS

- The temperature range of the employed temperature control unit is limited by the use of the accessory.
- Do not exceed the temperature range of the accessory (see data sheet). → From page 38, Section »Annex«.
- Select the upper temperature limit on the temperature control unit. Adapt the maximum set-point in the Pilot ONE for this.
- Wear your personal protective equipment (e.g. temperature-resistant safety gloves, safety goggles, safety footwear).

NOTE

Non-compliance with the compatibility between the thermal fluid and your temperature control unit

MATERIAL DAMAGE

- Observe the classification of your temperature control unit according to DIN 12876.
- Ensure the following materials are resistant to the thermal fluid: Stainless steel 1.4301 / 1.4401 (V2A), brass, copper, ferrite, carbon and silver solder.
- It is obligatory to use corrosion protection!

NOTE

Mixing different thermofluids in a thermal fluid circuit

PROPERTY DAMAGE

- Do **not** mix different types of thermofluid (such as mineral oil, silicone oil, synthetic oil, water, etc.) in a thermofluid circuit.
- The thermal fluid circuit **must** be rinsed when changing from one type of thermal fluid to another. No residues of the previous type of thermal fluid may remain in the thermal fluid circuit.

INFORMATION

The only approved thermal fluid is a water-ethylene glycol mixture with corrosion protection. We recommend the ethylene glycols listed in the Huber catalogue in the specified mixing ratio.

Thermal fluid: Water

Designation	Specification
Calcium carbonate per liter	≤ 1.5 mmol/l; corresponds to a water hardness of: ≤ 8.4 °dH (soft)
pH value	between 6.0 and 8.5
Ultrapure water, distillates	Add 0.1 g of sodium carbonate (Na ₂ CO ₃) per liter
Non-approved water	Distilled, deionized, demineralized, chloric, ferruginous, ammoniacal, contaminated or untreated river water or sea water
Thermal fluid: Water without ethylene glycol	
Use	excluded
Thermal fluid: Water-ethylene glycol mixture without corrosion protection	
Use	excluded
Thermal fluid: Water-ethylene glycol mixture with corrosion protection (for example Glysantin®)	
Use	-45 °C to +95 °C (35 to 60 percent by volume of ethylene glycol) "XT" models: -45 °C to +150 °C (60 percent by volume of ethylene glycol)
Thermal fluid composition	Freezing point: ≤ -20 °C and min. 10 K below the permissible minimum temperature. For the permissible temperature range, refer to the datasheet. → From page 38, Section »Annex«. Normal boiling point: Min. 10 K above the set max. setpoint limit. The setpoint limits must be adjusted to the thermal fluid used. → Page 28, Section »Setting the setpoint thresholds«. "XT" models: Set the pressure application so that the associated boiling point lies sufficiently above the maximum working temperature (15 K).

3.3 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, thermal fluid viscosity, volume flow, and flow speed.

- Make sure 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 thermal fluid circuit must be avoided.
- In order to prevent the risk of overpressure in the system, the thermal fluid must always be adjusted 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 thermal 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 thermal 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 able to withstand the thermal fluid, the working temperatures and the admissible maximum pressure.
- Check the hoses at regular intervals for any material fatigue (e.g. cracks, leaks).
- Vapors or mists can be generated during draining. These must be evacuated.

4 Setup mode

4.1 Setup mode

CAUTION

Moving the accessory during operation

SERIOUS BURNS/FREEZING DUE TO HOUSING PARTS/ESCAPING THERMAL FLUID

- Do not move the accessory when in operation.

NOTE

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

MATERIAL DAMAGE TO THE ACCESSORY

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

NOTE

The accessory is switched on or off while temperature control is ongoing

MATERIAL DAMAGE TO THE EXTERNAL APPLICATION

- A system test is run when the accessory is switched on. If temperature control was active, this would cause the uncontrolled pressure to be applied to the external application. This must be avoided at all cost!
- Do not switch the accessory on or off while a temperature control process is active at the temperature control unit.
- The accessory may only be switched on or off if **no** temperature control is active at the temperature control unit.

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.

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 accessory with the building power supply connection.
- Switch on the temperature control unit.
The accessory is automatically recognized by the temperature control unit and switched on.
- Adjust the temperature control unit as described in its operation manual.

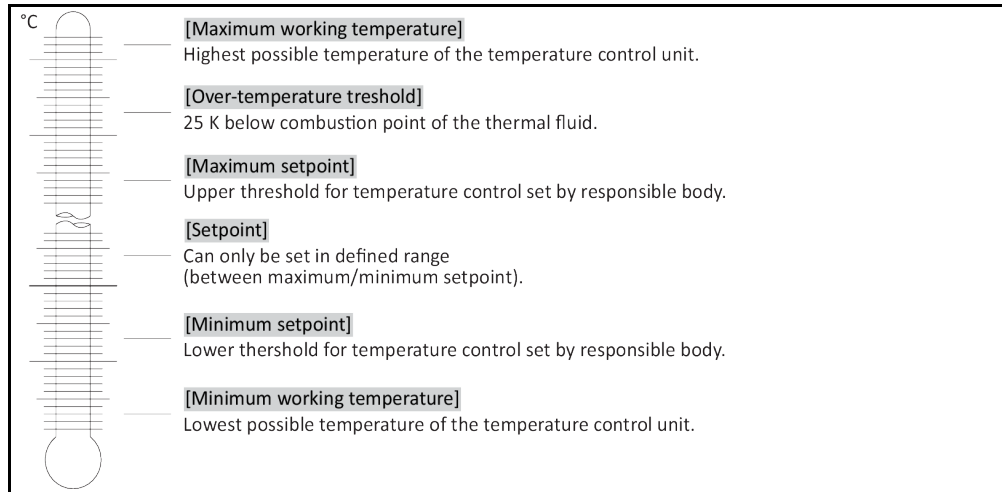
4.1.2 Switching off the accessories

PROCEDURE

- Heat the thermal 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 Setting the setpoint thresholds

Overview of the temperature thresholds



The limits for the minimum and maximum setpoint serve the safety of your system. They **must** be set for the application range of the thermal fluid before starting the first temperature control and when changing the thermal fluid. The maximum setpoint limit limits the setpoint setting for the bath or flow temperature. The minimum setpoint protects against high viscosity or freezing at low temperatures. The adjustable setpoint is then only available in the temperature range between the minimum and maximum setpoint limit.

PROCEDURE

- Go to the “Categories Menu”.
- Tap on the category “Protection Options”.
- Tap on the category “Setpoint Limits”.
- Tap on the sub-category “Minimum Setpoint”.
- Enter the new value, using the numeric keypad that appears.
- Confirm your entry by tapping on “OK”.
- In the display that follows, confirm your entry again by tapping on “OK”.
The correct selection will be displayed graphically and the “Min. setpoint” will be changed promptly. If tapping on “OK” is not correct, it will be displayed graphically for 2 seconds. The display will then return to the category “Setpoint Limits”. Try changing the “Min. Setpoint” again.
- Tap on the sub-category “Maximum Setpoint”.
- Enter the new value, using the numeric keypad that appears.
- Confirm your entry by tapping on “OK”.
- In the display that follows, confirm your entry again by tapping on “OK”.
The correct selection will be displayed graphically and the “Max. Setpoint” will be changed promptly. If tapping on “OK” is not correct, it will be displayed graphically for 2 seconds. The display will then return to the category “Setpoint Limits”. Try changing the “Max. Setpoint” again.

INFORMATION

Check the set values for the minimum and maximum setpoint at any system change, especially when changing the thermal fluid.

4.3 Filling, venting and draining the thermal fluid circuit

CAUTION

**Extremely hot or cold surfaces, connections and thermal fluids
BURNS OR FREEZING OF LIMBS**

- Surfaces, connections and the tempered thermal 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 thermal fluid to be used****INJURIES**

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the thermal 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 thermal fluid and aids. → Page 13, section »Proper disposal«.

NOTE**During an active circulation, the thermal 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 thermal fluid circuit during an active circulation by means of shut-off valves.
- Warm the thermal fluid to room temperature before stopping the circulation.

4.3.1 Filling and venting the thermal fluid circuit

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 all the steps were implemented. → Page 20, Section »Preparations for operation«.
- For filling, venting and degassing the thermal fluid circuit, proceed as described in the operation manual of the temperature control unit.

4.3.2 Draining the thermal fluid circuit

CAUTION**Hot or very cold thermal fluid****SERIOUS BURNS/FREEZING OF LIMBS**

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

PROCEDURE

- For draining the temperature control unit, proceed as described in its operation manual. The accessory is drained via the temperature control unit. Follow the instructions for the proper disposal of thermal fluid. → Page 13, Section »Proper disposal«.
- Wait until the temperature control unit, the extra expansion vessel, the accessory and the application have been drained.
- Remove the temperature control hose at the >Circulation flow< [1] from the accessory.
- Remove the temperature control hose at the >Circulation return< [2] from the accessory.
- Remove the temperature control hose at the >Circulation flow< [1'] from the accessory.
- Remove the temperature control hose at the >Circulation return< [2'] from the accessory.
- Leave the accessory, the application and the temperature control unit open for a while to allow them to dry out and the residue to drain.
- Reconnect the accessory to the temperature control unit and the application. → Page 20, Section »Installing the accessory«
- The thermal fluid circuit is now drained.

5 Normal operation

CAUTION

Extremely hot or cold surfaces, connections and thermal fluids

BURNS OR FREEZING OF LIMBS

- Surfaces, connections and the tempered thermal 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 thermal 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 thermal fluid circuit during an active circulation by means of shut-off valves.
- Warm the thermal fluid to room temperature before stopping the circulation.

INFORMATION

In normal mode, the temperature control unit **must** be controlled/monitored by means of a process control system.

5.1 Draining and refilling the application

PROCEDURE

- **Prerequisite:** The thermal fluid circuit is filled.
- Control the temperature of the thermal fluid to room temperature (20 °C).
- Stop the temperature control process.
- Via the process control system, activate the function "1: Drain application".
This function drains the thermal fluid from the external application into the extra expansion vessel.
- Wait until the external application has been drained.
- Via the process control system, activate the function "2: Hold".
This function disconnects the thermal fluid circuit between the temperature control unit and the external application. The temperature control unit, extra expansion vessel und accessory remain filled.
- Disconnect the external application from the connection >Circulation flow< [1'] (accessory).
- Disconnect the external application from the connection >Circulation return< [2'] (accessory).
- Connect the external application with the connection >Circulation flow< [1'] (accessory).
- Connect the external application with the connection >Circulation return< [2'] (accessory).
- Via the process control system, activate the function "0: Stand-by".
This function allows the filling and venting of the newly connected external application. Please note: The maximum filling volume of the newly connected application can deviate from the previously connected application.
- Activate the function "Venting" on the temperature control unit. The external application is now filled and simultaneously vented.

6 Interfaces

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

The interfaces used must meet the specifications of the generally accepted standards. For the exact position of the interfaces, please refer to the wiring diagram. → From page 38, section »Annex«.

INFORMATION

The use of PB commands is described in our manual "Data communication". You can download this manual at www.huber-online.com.

INFORMATION

Information on the interfaces can be found in our manual "Interfaces". You can download this manual at www.huber-online.com.

6.1 Interfaces on the accessory

6.1.1 Connection Huber Unit [115]

The accessory is connected with the temperature control unit via a control line.

6.1.2 Connection accessory [116]

Further accessories (e.g. Flow Control Cube) can be connected with the accessory via a control line.

6.2 Data communication

6.2.1 PB commands

Example: If several accessories are controlled/monitored by means of a process control system.

Cyclically query the accessory status (vStatus2, Bit6).

Start the temperature control of the temperature control unit as soon as the system test of each accessory has been completed (vTmpActive).

Query the status of the temperature control unit (vStatus1, Bit 4).

When the pump in the temperature control unit is running, the accessories can be started (e.g. with vTmpActive).

A "Locking" must be implemented in the operator control.

Available read commands

Variable	Description
vBIDwn (Status ADR / Blow-down)	Control and status feedback. For more information, please refer to the data in the Data Communication Manual.

7 Maintenance

7.1 Maintenance



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 thermal fluid to room temperature after switching off.
- Disconnect the temperature control unit from the power supply.
- Also disconnect the accessories from the current supply.



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.

7.1.1 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 electrician (BGV A3)
A/W	Thermal fluid inspection	As required	–	Operating company and / or operators
A/W	Inspect the accessory for damage and stability	Every 12 months or after a change of location	–	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 37, Section »Contact data«.	Operating company

*A = Air cooling; W = Water cooling

7.1.2 Replacing temperature control hoses

Replace defective temperature control hoses **before** you switch on the temperature control unit / accessories.

PROCEDURE

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

7.2 Thermal 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 thermofluid inspection and changing and cleaning the thermofluid circuit.

7.3 Cleaning the surfaces

CAUTION

Extremely hot or cold surfaces, connections and thermal fluids

BURNS OR FREEZING OF LIMBS

- Surfaces, connections and the tempered thermal 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«.

7.4 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.

7.5 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 an 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 an 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 supply cable/power supply connection replaced and inspected by an electrician.
- Do not use a power cable that is longer than **3 m**.



WARNING

Risk of tipping due to unstable accessory

SEVERE INJURIES AND MATERIAL DAMAGE

- Avoid risk of tipping due to unstable accessory.



CAUTION

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

INJURIES

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the thermal 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 thermal fluid and aids. → Page 13, section »Proper disposal«.



CAUTION

Hot or very cold thermal fluid

SERIOUS BURNS/FREEZING OF LIMBS

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

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 thermal fluid circuit

PROCEDURE

- Drain the thermal fluid circuit. →From page 28, Section »Filling, venting and draining the thermal fluid circuit«.

8.4 Dismantling the control line

PROCEDURE

- Ensure the following:
Temperature control unit, accessory and application have been drained, switched off and disconnected from the power supply connection.
- Disconnect the temperature control unit from the process control system.
- Disconnect the >Connection Huber Unit< [115] (accessory) from the >Service interface< [50] (temperature control unit).
- **Optional:** Disconnect the >Connection accessory [116] (accessory) e.g. from the Flow Control Cube.

8.5 Dismantling the >Compressed air connection< [54]

PROCEDURE

- Ensure the following:
Temperature control unit, accessory and application have been drained, switched off and disconnected from the power supply connection.
- Disconnect the >Compressed air connection< [54] (accessory) from the building's compressed air restrictor.

8.6 Dismantling the >Return line< [132]

PROCEDURE

- Ensure the following:
Temperature control unit, accessory and application have been drained, switched off and disconnected from the power supply connection.
- Disconnect the connection >Return line< [132] (accessory) from the thermal fluid connection on the >Extra expansion vessel< [19] (top).

8.7 Separating the accessory from the temperature control unit

PROCEDURE

- Ensure the following:
Temperature control unit, accessory and application have been drained, switched off and disconnected from the power supply connection.
- Disconnect the >Circulation return< [2'] (accessory) from the external application.
- Disconnect the >Circulation flow< [1'] (accessory) from the external application. Remove the overpressure protection device that is installed in the thermal fluid circuit (if installed).
In case you use an external pressure sensor:
Remove the external pressure sensor from the thermal fluid circuit.
- Disconnect the >Circulation return< [2] (temperature control unit) from the connection >Circulation flow< [1] (accessory).
- Disconnect the >Circulation flow< [1] (temperature control unit) from the >Circulation return< [2] (accessory).
- Install the protective caps on the connections on the accessory.

8.8 Deactivating the leveling feet

Ensure that the leveling feet are screwed in/deactivated before you pack the accessories.

PROCEDURE

- Turn the red setting wheel on each caster counterclockwise. This retracts the leveling feet and activates the casters.
- Ensure that the locking brakes of the casters (if installed) are deactivated.

8.9 Packing

Always use the original packaging! → Page 17, section »Unpacking«.

8.10 Shipping

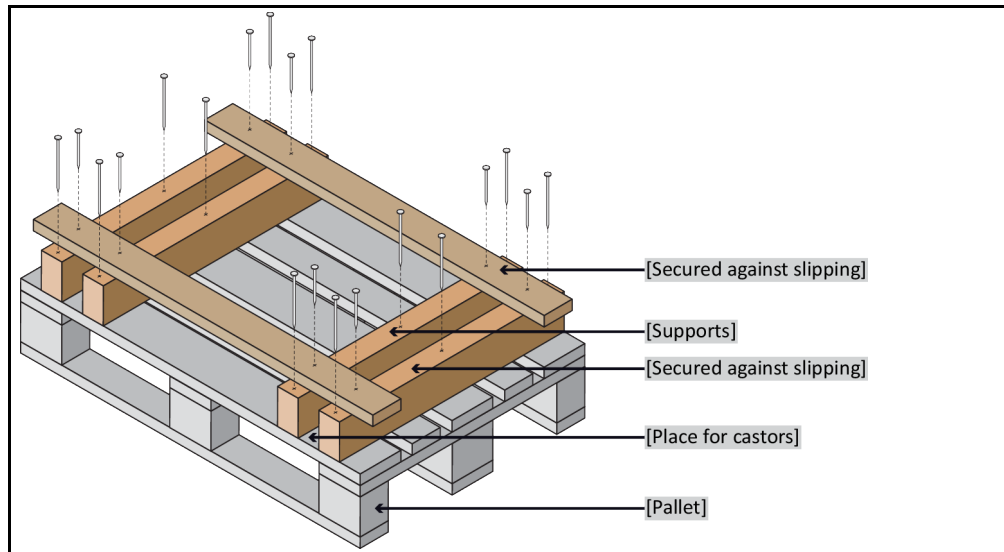
NOTE

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.

Pallet with squared timber for free-standing units



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.

8.11 Disposal

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

NOTE

Improper disposal

ENVIRONMENTAL DAMAGE

- Immediately properly dispose of spilled or leaked thermal fluid. → Page 13, Section »**Proper disposal**«.
- Environmental damage must be avoided.
- Only commission approved specialized companies in the field of refrigeration 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 CO₂ emissions during the manufacture of these materials.

8.12 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.

8.12.1 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

8.12.2 Telephone number: Sales

Telephone: +49-781-9603-123

8.12.3 Email address: Customer Support

Email: support@huber-online.com

8.13 Clearance certificate

This certificate must be enclosed with the temperature control unit. → Page 33, section »**Decontamination before shipping**«.

9 Annex

Inspired by **temperature** designed for you

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