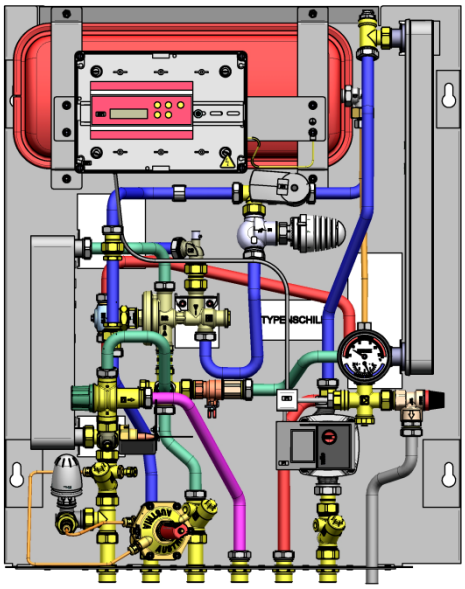
HERZ Heat Interface Unit
HIU STOCKHOLM

Instruction for operators and plumbers, Issue 0518



Description

The HERZ Stockholm Heat Interface Unit (HIU) provides domestic hot water and space heating to properties that are serviced from district heating or central boiler plants. The HIU comprises of two heat exchangers, one for the DHW providing instant hot water at a safe regulated temperature and the second for the space heating. The HIU is indirect so the primary heating circuit is hydraulically separated from the property space heating by the second plate heat exchanger.
Pipe connection to an HIU is realised by means of ball valves. Connection of the pipe work with the HIU is possible from the floor or from the top with a separate top entry bracket.

Main Features:

- Instantaneous hot water and space heating to properties
- Twin heat exchangers provide hydraulic separation
- Thermostatic hot water temperature control
- Tempering valve to prevent risk of scalding
- Pressure temperature control valve allows DHW heat exchanger to operate on demand only
- Hot water priority valve maximises primary flow to DHW heat exchanger by stopping the supply to the space heating heat exchanger when a hot tap is opened
- ”Summer bypass” valve maintains a minimum primary temperature when space heating is not in use
- Low primary return temperature maximises system efficiency
- Suitable for radiators heating
- Primary Return with Differential Pressure Control Valve
- 110mm Spool piece provided for water meter
- 18mm stainless steel pipe work
- Strainer with fine-mesh screen in primary flow
- Strainer with fine-mesh screen in return flow of space heating circuit
- Strainer with fine-mesh screen in cold water inlet

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Function

In the stand-by mode the heating water flows from the primary circuit (district heating main) via a summer bypass which is kept at operating temperature with a return temperature limiter. Thus heating water from the primary circuit is always and immediately available at the heat exchanger, even when the space heating is not in use. If a hot water tap is opened the pressure temperature control valve reacts to the difference in pressure and opens allowing the cold and primary heating water to flow through the heat exchanger. At the same time, a hot water priority valve closes the primary feed to the secondary heat exchanger, thus ensuring maximum temperature is available at the domestic heat exchanger. The cold water is heated up instantly and flows through to the domestic hot water tap. The temperature of the domestic hot water is controlled by a thermostat. Using an immersion sensor, this thermostat controls the temperature of the hot water that exits the heat exchanger and regulates the pressure / temperature controller. A thermostatic tempering valve is provided to ensure a stable hot water temperature and as a guard against scalding.

General

All union nuts must be tightened after installation and before filling to ensure no leaks have been caused through transportation vibrations and heat expansion

Warnings

- The unit must be installed and connected by professional plumbing and heating engineers only.
- Only use original HERZ spare parts when maintaining the HIU.
- Check all connections for leakages prior to starting up the heating system.
- The user must not make any technical changes to the HIU. Otherwise HERZ will not assume liability for any resulting damage.
- The unit must be filled with water containing the correct amount of inhibitor, failure to do so will invalidate the warranty.
- If the property is to be left unoccupied for a prolonged period, it is recommended that the HIU domestic pipe work is isolated and drained.

Risk of electrical shock

The actuating drive and pump are connected to mains electricity and any contact with live parts can result in serious injury or death. The following should be observed:

- Please ensure that the power supply is isolated before removing the cover and when working on any electrical components.
- Only qualified electricians should carry out work on electrical systems.
- Electrical components must not be touched with wet or damp parts of the body.
- Electrical cables must not be pulled or any force exerted.
- The Herz HIU must be connected to the electrical supply via a 3 amp fused switched spur so it can be isolated from the mains.

Surfaces of individual components, connections and leaking water can be very hot and cause severe burns and scalds. Before the start of any dismantling work the isolation valves must be closed and water drained out. Out flowing water is likely to be hot and under high pressure. Take appropriate precautions.

If a fault occurs, please contact the installer. Do not attempt to carry out repairs yourself.

System Balancing

Differential pressures higher than 55kPa could affect the performance of some components in the HIU. Excessive differential pressures can also cause noise and reduce the lifetime of components within the HIU. We would recommend the integral DPCV should be set to protect the components in the HIU from excessive differential pressures.

Installation Instructions

Pre-installation

Please ensure that drain cocks are fitted to the relevant pipe work prior to the HIU being fitted to facilitate any necessary filling and draining functions.

NOTE: High differential pressures could cause noise, affect the performance and reduce the lifetime of some components in the HIU, if it is likely that primary differential pressures could rise above 55kPa Differential Pressure Control Valves should be installed in the primary circuits to protect the HIU's. The DPCV (25 – 60 kPa setting range) are fitted as part of the HIU.

The cable entry position should be taken into consideration before installing the HIU, please refer to the template for the exact position.

Installation

Installing the HIU

- Ensure the seals are fitted to the ball valve connections on the ball valves.
- Drill the holes for the HIU with a suitable drill.
- Using fixings suitable for the type of wall.
- Lift the unit up to the wall and locate the HIU onto the screws.
- Loosely fit the wall fixings.
- Ensure the unit is leveled, fully secure the unit to the wall.
- Connect the safety valve vent pipe to a suitable drain using a tundish.

Installing ball valves

- If the pipework is already installed, loose fit the ball valves to the relevant pipes before tightening to the HIU.
- Tighten the ball valve connections or fit the respective pipe work to the ball valves and tighten the compression connections.

Please ensure the ball valves are level before the HIU is fully securing to the wall.

Please note that the unit will be delivered with the cables are disconnected inside the terminal box, this is to prevent dry running of the pump. The pump should only be connected once the unit and the secondary heating system have been filled with water.

Electrical

CAUTION: Risk of electric shock

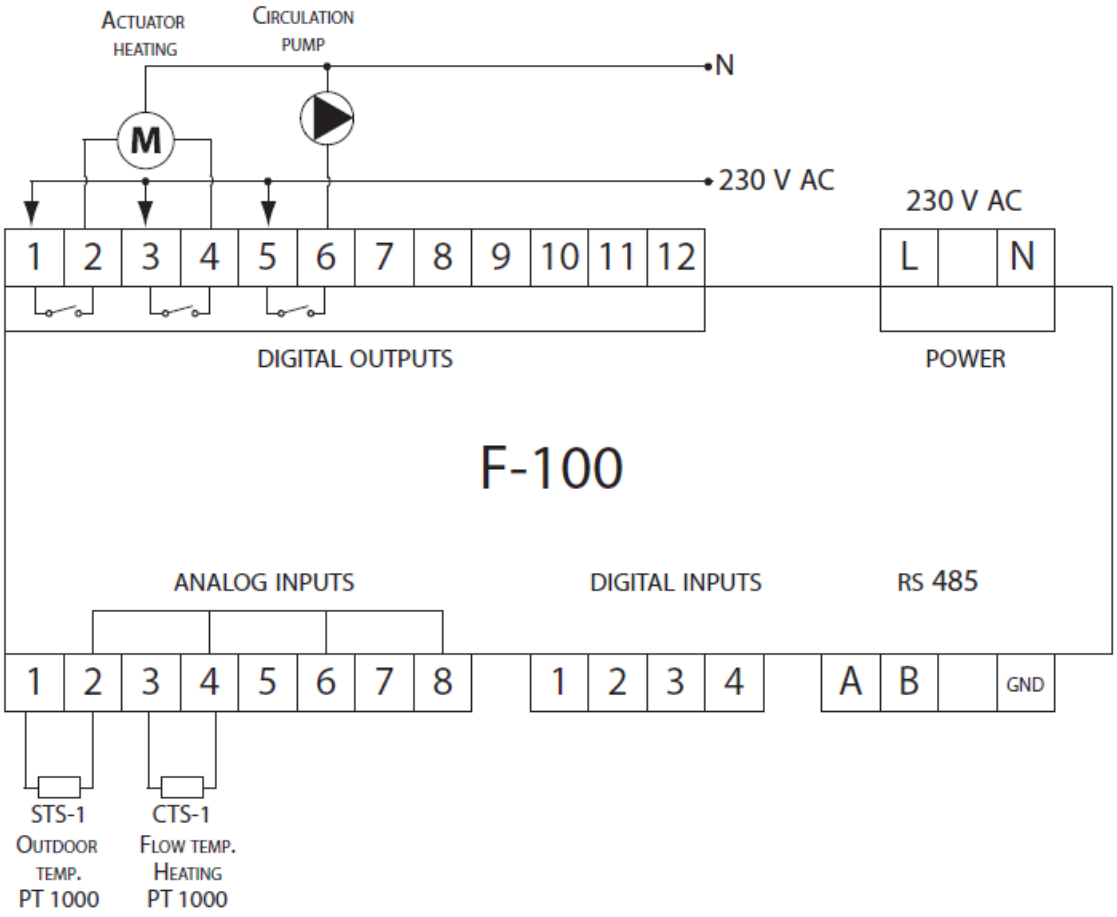
Isolate the mains electrical supply before starting any work and observe all relevant safety precautions.

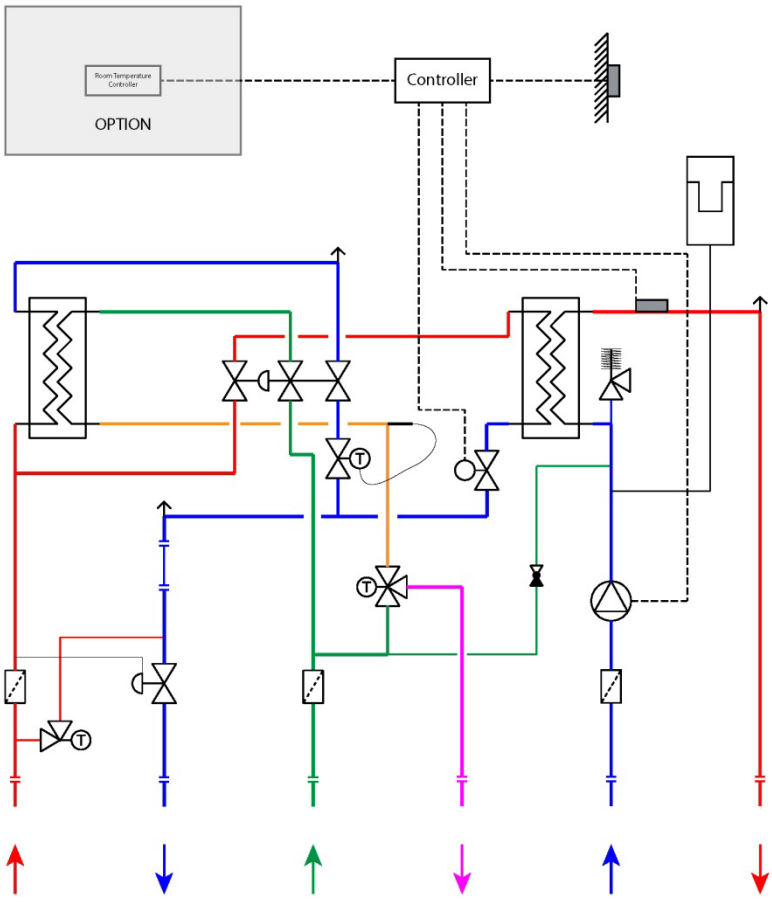
Cable entry

Care must be taken to ensure that cable entries to the HIU are installed in a safe and secure manner. Cables should not interfere with the top mounting for the HIU cover.

Please read the pump instruction manual before wiring and commissioning and ensure any safety, venting and operating instructions are followed.

Wiring


ACTUATOR HEATING
CIRCULATION PUMP
N
M
230 V AC
230 V AC
1 2 3 4 5 6 7 8 9 10 11 12
L N
DIGITAL OUTPUTS
POWER
F-100
ANALOG INPUTS
DIGITAL INPUTS
RS 485
1 2 3 4 5 6 7 8
1 2 3 4
A B GND
STS-1
OUTDOOR TEMP.
PT 1000
CTS-1
FLOW TEMP. HEATING
PT 1000


Room Temperature Controller
OPTION
Controller

Commissioning

All union nuts must be tightened after installation and before filling

Pre commissioning

Before the first commissioning of the substation it should be ensured that clean and standard tube materials (without scale, rust and burr inside), fittings and devices (boiler, radiators, convector, expansion tank inter alia) are used according to ÖNORM H5195-1. Furthermore, the ÖNORM H5195 prescribes a clean and skilled production (without welding beads, residues of sealing material or soldering aids, burrs, metal shavings, etc.) as well as a cleaning of all components of a heating system before its assembly. Otherwise, damage to the regulator could occur due to the deposits in the pipes. Besides there would be a risk of impurities getting into the drinking water. The installation of strainers is recommended. To prevent corrosion damage in the system, ÖNORM H5195-1 prescribes the following: The mounting and operation of a heating system must be carried out in such a manner that the admission of air is avoided as best as possible. During the first commissioning the heating system must be flushed with at least 2 times the amount of the system volume. Afterwards the heating system must be filled with clear and filtrated (pore width < 25 µm) filling water. The heating system must remain in operation for 24 hours, under operating conditions, in order to ensure a uniform mixing of the heating water with the inhibitors. Old systems must be cleaned chemically and then flushed with water before filling. The partial or complete draining of the heating system for a longer period without preservation is to be avoided as otherwise there will be increased corrosion in the system. To ensure an adequate frost protection at low temperatures in the system, the ÖNORM H5195-2 prescribes: Although the antifreeze is miscible with water in all proportions, approximately two thirds of the required water should be filled into the system when a circulating pump is integrated. Then add the antifreeze and fill the system with water. By commissioning a complete mixing of the circuit is achieved. However, thermo siphon units have to be filled with prepared, frost-protected heat transfer medium. If antifreeze agents must be filled in so far non-frost-protected heating systems, the following points must be observed:
1. It must be ensured that the appropriate sealing materials are used.
2. The system should be flushed carefully.
3. After filling the system with antifreeze, extra attention must be paid to the occurrence of leakages.

After the installation the system must be checked for its tightness. The tightness test of the system is only carried out with connected impulse line and opened impulse line ball valve. The pressure increase has to be carried out uniformly at all connections. Max. test pressure = 1.5 x operating pressure. Max. differential pressure = 2 bar for water.
For any other kind of medium the tightness test must be carried out with corrected values.
Non-observance can lead to damages to the system or to the controller and also automatically leads to a loss of warranty!

Filling and venting

Open the ball valves from left to right slowly taking care not to induce any water hammer.

- Slowly open the ball valve on the primary flow.
- Slowly open the ball valve on the primary return and release any air using the manual air vent.
- Slowly open the ball valve on the mains cold water inlet.
- Slowly open the ball valve on the domestic hot water outlet and open a hot tap for several minutes. Close tap and release any air using the manual air vent.
- Slowly open the secondary space heating flow ball valve
- Slowly open the secondary space heating return ball valve
- Open the ball valve at the filling loop between the incoming CWS and secondary heating and fill the secondary space heating system until the pressure reaches the required operating pressure. Then release any air using the manual air vent. Refill the space heating system as the pressure drops and check for leaks.
- Connect the electronic parts according to the wiring diagram. Please refer to pump literature for venting procedure and ensure pump is set to constant DP setting.
- Vent the radiators and the manual air vent again, check the pressure and top up the space heating system if required.
- Repeat this process until there is no more air in the system and the pressure remains stable at operating pressure.

Controlling the flow temperature of the domestic hot water

The temperature of the DHW is controlled by the tempering valve which is factory preset and will require no adjustment.

Controlling the temperature of the heating system

- The room heating temperature should be controlled by a programmable room thermostat and thermostatic radiator valves which should be set to achieve the desired room temperatures.
- To set the secondary flow temperature, please refer to controller literature for setting.

Testing

- Check that the electrics are connected to a room temperature controller of some type and set it to call for heat.
- Check that the actuating drive opens the zone valve by watching the top and observing the movement on the head.
- Action the safety valve by twisting the head anti-clockwise, don't overdo this as you may need to top up the secondary system.

Decommissioning, draining

If the HIU gets decommissioned for a longer period or dismantled because of certain reasons, the decommissioning is carried out by closing all ball valves. In non-frost-protected rooms the substation must get drained, before the cold season starts, if the substation does not get operated for several days. When draining the substation, a vessel with a capacity of 4-8 litres should be placed under the substation and the hot water, from the ball valves, should be tapped until the substation is completely emptied. If there is a risk of frost, it should be noted that not only the water in the transfer station and in the hot water pipes can freeze, but also in all cold water supply lines up to the fittings and to the unit itself. It is therefore advisable to drain all water-conducting fittings and pipes until to the frost-free part of the domestic water system.

Fitting the cover

When all the commissioning is completed fit the cover by locating the top of the cover over the lip at the top of the back plate and lower down into position.

Operating requirements

In addition to the national regulations and standards, the connection requirements of the local water supply organisations must also be observed. The room in which the system is operating should be free of frost and the location of the installation should leave enough space for maintenance and repair works. The maximum flow temperature should be 100°C. In the primary circuit the maximum allowable static pressure is 16 bar and the maximum differential pressure is 55 kPa. Furthermore it has to be checked that the connection pipes can resist temperatures with a maximum of 120°C in case of damage.

Servicing

Draining down

CAUTION: Servicing should only be carried out by professionally trained servicing engineers.

CAUTION: The district heating side of the HIU can be operated with high pressure and temperature systems. Please apply extreme caution and wear the appropriate safety equipment (PPE) when working on suspected leaks.

CAUTION: Risk of electric shock
Isolate the mains electrical supply before starting any work and observe all relevant safety precautions.

Draining down the primary

- Close the primary flow and return ball valves and open the manual air vent to release the pressure.
- Open the impulse tube of the DPCV carefully and drain into a bucket.

Draining down the domestic hot water

- Close the mains cold water inlet ball valve and open a hot tap.
- Open the strainer cap on the mains cold water inlet carefully and drain into a bucket.

Draining down the secondary

- Close the secondary flow and return ball valves.
- Ensure the safety valve is venting into a suitable container and open the safety valve until the pressure drops to zero, this will be approximately 2.5 - 3 litres.
- Open the manual air vent
- Open the strainer cap on the secondary side carefully and drain into a bucket.

Do not partially or entirely drain the heating system leaving it without anti-corrosion treatment for a prolonged period of time, as this would make the system more susceptible to corrosion.

Component servicing

In hard water areas lime-scale can build up in the system. Depending on the hardness of the water, the unit should be de-scaled by a professional every one to two years. If lime-scale build up in the system is excessive some of the valves could be damaged, these should be replaced immediately to ensure reliable operation of the heating system.
Do not clean the unit with scouring or harsh cleaning agents. Wipe it down with a damp cloth which has been rinsed in water with a few drops of mild detergent.

Heat exchanger cleaning method

There is a self-cleaning effect in the heat exchanger due to the strong turbulence occurring naturally during service life. If the heat exchanger is subject to extremely hard water and /or high temperatures a coating can still form on the plates. Contaminants or sediments can affect the performance of the heat exchanger.
When mineral deposits are formed (lime scale) a suitable decalcification agent will be required to descale the plates. If this happens, please replace the heat exchanger.

Pressure temperature valve with priority circuit

Routine servicing – Check all connection seals, check central leakage hole which indicates the integrity of the O rings sealing the domestic side from the heating side.

Component replacement – Drain both the primary and domestic sides of the unit and undo all 6 connections then replace the valve, refit the connection nuts replacing the seals.

Thermostatic bypass valve

Routine servicing – Check all connection seals, remove the head, check the insert for leaks and action the insert drive pin.

Zone valve

Routine servicing – Check all connection seals, remove the actuating drive by depressing release button on the side of the actuator and lift clear, check the insert for leaks and action the insert drive pin and replace actuator which clicks into place.

Actuating drive

Routine servicing – Check action when electric signal sent (calling for heat)

Component replacement – Isolate electric power and disconnect actuator, remove from valve body by depressing release button on the side of the actuator and lift clear. Replace actuator which clicks into place and reconnect wiring.

Ball valves (if fitted)

Routine servicing – Operate valves regularly and check all connection seals.

Strainers

Routine servicing – Check all connection seals, drain the pipe work, remove strainer cap and check strainer basket.

Tempering Valve

Routine servicing – Check all connection seals, drain the domestic hot water. Undo the connection nuts and remove the valve, check the non-return valves and strainer gaskets, clean or replace if necessary.

Component replacement – Drain the domestic hot water and replace the valve and strainer gaskets.

Differential Pressure Control Valve

Routine servicing – Check all connection seals

Component replacement – Drain the primary, undo the capillary retaining nut and replace the valve, then reconnect the capillary.

Pressure gauge

Routine servicing – Check all connection seals, check operation of the needle down to zero and back up when the secondary is being drained and refilled.

Component replacement – Drain the secondary side of the unit, unscrew the gauge and replace

Thermostatic head with contact sensor

Routine servicing – not required

Component replacement – Drain the domestic hot water. Remove the screws from the bracket which secures the contact sensor and lift clear. Undo the connection nut and remove the sensor probe also removing the thermostatic head from the valve. Refit the head and smear the contact sensor with silicone grease before inserting back into position. Then refit the connection nut having replaced the seal. Reposition the bracket over the contact sensor and replace the screws.

Domestic water Heat exchanger

Routine servicing – Check all connection seals, the heat exchanger should be cleaned every 2 years.

Component replacement – Drain the primary and domestic sides of the unit. Undo all 4 connections and remove the heat exchanger. Replace the heat exchanger, refit the connection nuts replacing the seals.

Space heating Heat exchanger

Routine servicing – Check all connection seals, the heat exchanger should be removed and flushed through every 2 years and cleaned if necessary.

Component replacement – Drain both the primary and secondary sides of the unit, undo all 4 connections and remove the heat exchanger and replace, refit the connection nuts replacing the seals and refill the secondary system to get the pressure back up to operating pressure.

Heat meter (if fitted)

Routine servicing – Check all connection seals

Expansion vessel

Routine servicing - Check all connection seals, check pressure by closing the secondary ball valves and venting the safety valve for 3 seconds, if the pressure drops by a small amount, the expansion vessel is holding pressure and is ok. If the pressure drops by a large amount, the expansion vessel is not maintaining pressure and needs replacing.

Component replacement – Drain the secondary side of the unit and undo the capillary nut using two spanners, undo the connection nut and remove the expansion vessel by lifting up to clear the bracket and slide down and out to remove. Replace in the same way in reverse then refit the connection nut and capillary nut. Refill the secondary system to get the pressure back up to operating pressure.

Safety valve

Routine servicing – Check all connection seals, action the valve by turning the handle anti-clockwise and releasing.

Component replacement – Drain the secondary side of the unit, undo the vent pipe connection nut and remove keeping the connection intact, undo the safety valve and replace, then refit the copper pipe connection nut. Refill the secondary system to get the pressure back up to operating pressure.

Space Heating Circulating Pump

Routine servicing – Check all connection seals

Component replacement – Isolate the power supply to the pump, drain the secondary side of the unit, disconnect the cable from the pump and undo 2 connection nuts. Remove the pump and replace then refit the connection nuts, replacing the seals and reconnect the electric cable and test. Refill the secondary system to get the pressure back up to operating pressure. Carry out pump venting procedure as per the pump manual.

Fault Location Table

Before attempting to locate faults on the Herz HIU please ensure the following:

- The primary flow temperature is correct
- The primary flow rate is correct
- There is sufficient primary pump pressure to allow circulation through the Heat Exchangers

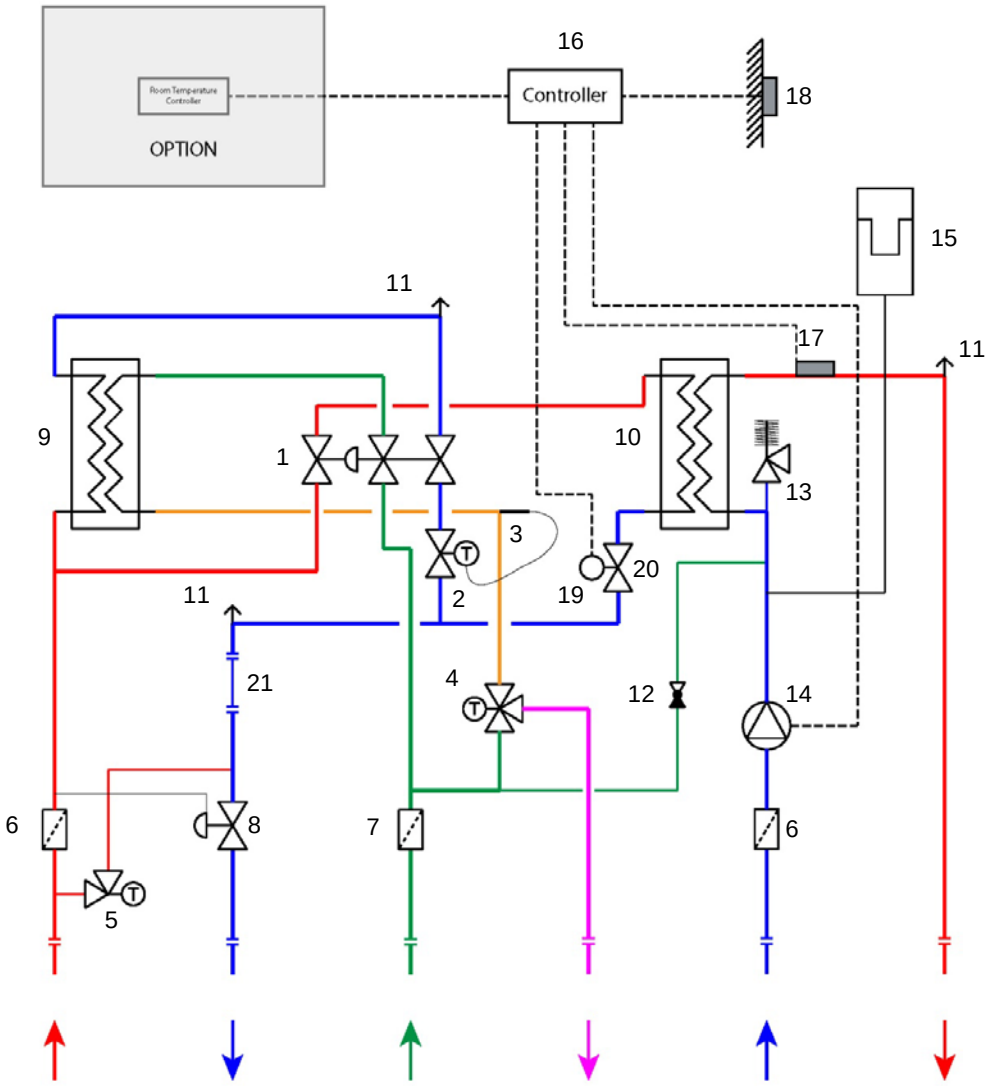
Problems with heating	Supply temperature is too low	• Increase the supply temperature on the heat source
	No flow or flow too low at the HIU	• Check the valves settings on the unit • Clean the strainer • Check the settings on the primary heat pump • Check the actuator on the zone valve • Check the isolation valves are open
	Air in the system	• Use the manual air vent • Remove the air from the respective sections of the apartment's heating circuit • Remove the air from the riser • Vent the radiators • Check the secondary heating pump, ensure no warning lights are illuminated, remove and clean out if necessary • Check system water content, recharge if necessary
	Secondary side	• Check the thermostatic head or the regulation valve • Check the pump settings • Clean the strainer on the secondary side of the HIU
Problems with hot water	Long wait for hot water at the tap	• Check the bypass circuit • Check the primary heating circuit
	Pressure temperature controller is leaking	• Replace the Pressure temperature controller
	Pressure temperature controller sticks	• Replace the Pressure temperature controller
	Temperature of the hot water is too low	• Increase the flow temperature on the heat source • Check the valves settings on the unit • Check/Clean the primary flow strainer • Check the settings on the primary heat pump • Check the heat exchanger and, if necessary, replace • Check the Pressure temperature controller and, if necessary replace • Check the Tempering valve non-return valves • Check the cold water supply as the Tempering valve will fail safe to cold

HIU Data

Heating capacity examples					
Output	Primary flow temperature	Primary return temperature	Secondary Temperature	Differential pressure	Flow rate primary / secondary
8 kW	65 °C	45,5 °C	45 °C / 55 °C	1 bar	361 l/h / 688 l/h
15 kW	100 °C	61,2 °C	60 °C / 80 °C	1 bar	340 l/h / 648 l/h

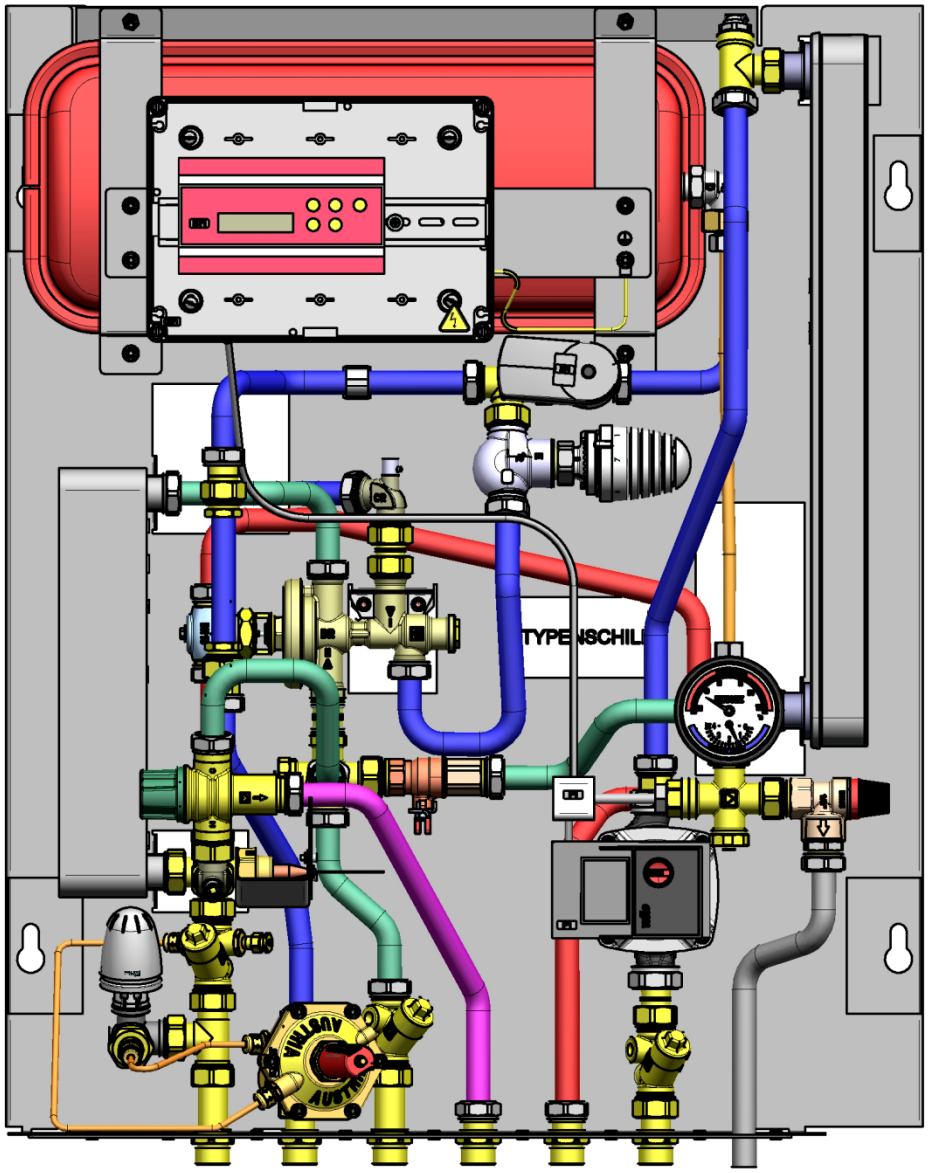
Domestic hot water capacity examples					
Output	Primary flow temperature	Primary return temperature	Cold water / Warm water Temperature	Differential pressure	Flow rate primary / secondary
33 kW	65 °C	24,1 °C	10 °C / 50 °C	1 bar	732 l/h / 720 l/h
38 kW	100 °C	33,5 °C	10 °C / 50 °C	1 bar	508 l/h / 720 l/h

Functional scheme



Position	Description
1	Pressure temperature control with hot water priority valve
2	Control valve
3	Thermostatic head with contact sensor
4	Tempering valve
5	Summer bypass (Return temperature limiter and control valve)
6	Strainer for heating
7	Strainer for domestic water
8	Differential pressure control valve
9	Heat exchanger (domestic water)
10	Heat exchanger (heating)
11	Manual air vent
12	Ball valve with non return function
13	Safety valve
14	Pump
15	Expansion vessel
16	Controller
17	Contact sensor
18	Outdoor sensor
19	Actuating drive
20	Control valve
21	Spacing piece for heat meter (110mm; G3/4 flat sealing) Sensor can be fitted at primary strainer (pos. 6) Adapter for the sensor has to be ordered separate

Connection of the pipes to the HIU



1	primary supply
2	primary return
3	cold water inlet
4	warm water outlet
5	secondary supply
6	secondary return

Maintenance and service

The HERZ-HIU requires very little maintenance, because of its construction. However, in hard water, the plant can become calcified. Decalcification should be carried out by a specialist, depending on the hardness level of the water, every one or two years. If the calcification affects the valves too much, they should be exchanged immediately to ensure a flawless function.
Do not use abrasive or aggressive cleaning agents to clean the units. It is recommended to clean with a damp cloth, in addition with a few drops of a liquid household cleaner.
Furthermore, the quality of the water in the heat exchanger must be taken into account in order to ensure a proper operation. The appropriate thresholds can be taken from the table below.

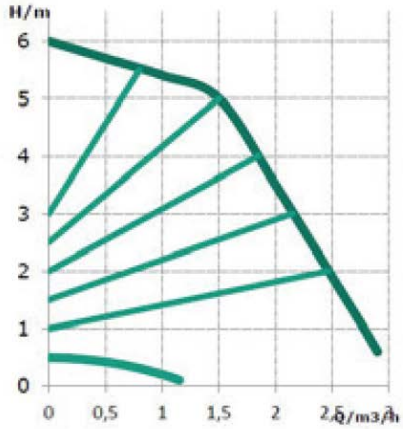
Explanation:

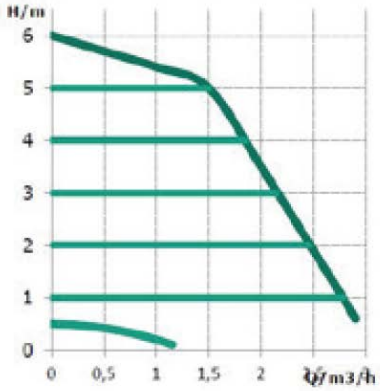
+ Good resistance under normal conditions
0 Corrosion can occur, especially when other factors are rated with 0
- Use not recommended

			plate material	solder material
water content	concentration (mg/l or ppm)	time limits Analysis before	AISI 316	copper
Alkalinity ($HCO3^-$)	< 70 70-300 > 300	within 24 hours	+ + +	0 + 0/+
Sulphate[1] (SO_4^{2-})	< 70 70-300 > 300	no limit	+ + +	+ 0/- -
HCO_3^- / SO_4^{2-}	> 1.0 < 1.0	no limit	+ +	+ 0/-
Electrical conductivity	<10 µS/cm 10-500 µS/cm > 500 µS/cm	no limit	+ + +	0 + 0
pH[2]	< 6.0 6.0-7.5 7.5-9.0 > 9.0	within 24 hours	0 + + +	0 0 + 0
Ammonium (NH_4^+)	< 2 2-20 > 20	within 24 hours	+ + +	+ 0 -
Chlorides (Cl^-)	< 100 100-200 200-300 > 300	no limit	+ + + -	+ + + 0/+
Free chlorine (Cl_2)	< 1 1-5 > 5	within 5 hours	+ - -	+ 0 0/-
hydrogen sulphide (H_2S)	< 0.05 > 0.05	no limit	+ +	+ 0/-
free (aggressive) carbon dioxide (CO_2)	< 5 5-20 > 20	no limit	+ + +	+ 0 -
total hardness (**°dH)**	4.0-8.5	no limit	+	+
Nitrate[1] (NO_3^-)	< 100 > 100	no limit	+ +	+ 0
Iron[3] (Fe)	< 0.2 > 0.2	no limit	+ +	+ 0
Aluminium (Al)	< 0.2 > 0.2	no limit	+ +	+ 0
Manganese[3] (Mn)	< 0.1 > 0.1	no limit	+ +	+ 0

[1] Sulphates und nitrates act as inhibitors for pitting corrosion caused by chlorides in pH-neutral environments
[2] Generally, a low pH value (below 6) increases the risk of corrosion and a high pH value (above 7.5) reduces the risk of corrosion
[3] Fe3 + and Mn4 + are strong oxidizing agents and can increase the risk of local corrosion in stainless steels SiO2 over 150 ppm increase the calcification risk

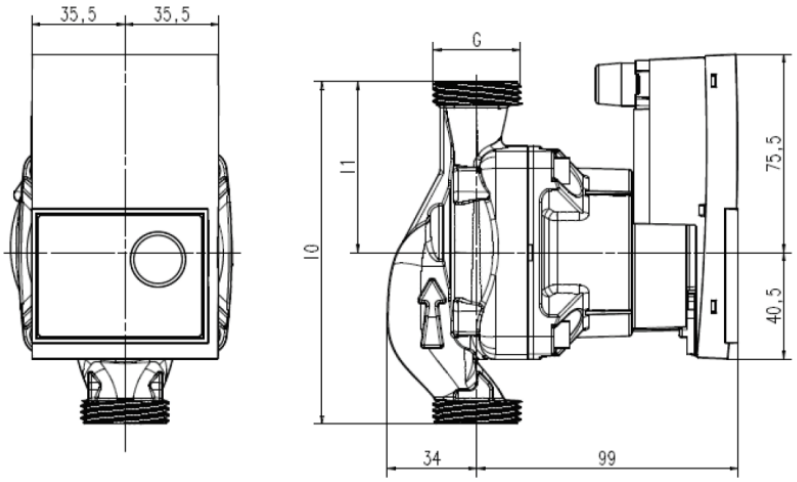
Circulating pump with set point control
Type: Wilo Yonos PARA RS 15/6 - 130
Hmax: 6,2m
Qmax: 3,3m³/h
Power supply: 1~230 V +10%/-15%, 50/60 Hz (gem. IEC 60038)
Minimum feed height at the suction port to avoid
cavitation at conveyance temperature of the water:
Minimum feed height at 50/95/110°C – 0.5 / 4.5 / 11 m





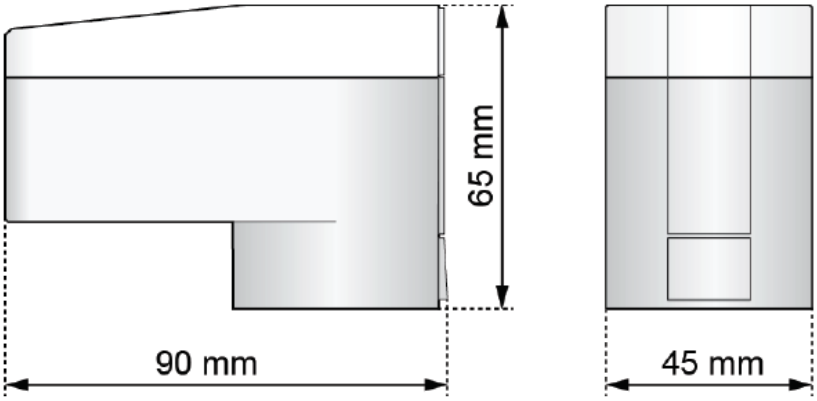
Variable differential pressure (Δp-v):
The set point of the differential pressure H is increased linearly between ½H and H over the permissible volume flow range. The differential pressure generated by the pump is controlled at the respective differential pressure set point. This type of control is particularly suitable for heating systems with radiators, since the flow noise at the thermostatic valves is reduced.

Invariable differential pressure (Δp-c):
The set point of the differential pressure H is kept constant at the set differential pressure set point above the permissible volume flow range up to the maximum characteristic curve. Wilo recommends this type of control for underfloor heating circuits or older heating systems with large-dimensioned pipes, as well as for all applications which do not have a variable system characteristic curve.



Actuating drive

The HERZ Motor Valve Drive is an electromotive actuator for valves used in heating and cooling systems. The actuating drive is controlled via the controller F-100. The actuator is equipped with a fixed connection line, a LED for function display as well as with a manual stroke setting which can be used e. g. for maintenance or for dismantling purposes.



HERZ Motor Valve Drive, 3-point, M28 x 1.5, 230 V, 50 Hz normally closed, actuating force 200 N, operating voltage 230 V ~, threaded connection M28 x 1.5, blue adapter 1 7708 85 is included, max. stroke 8,5 mm

- **Operation**

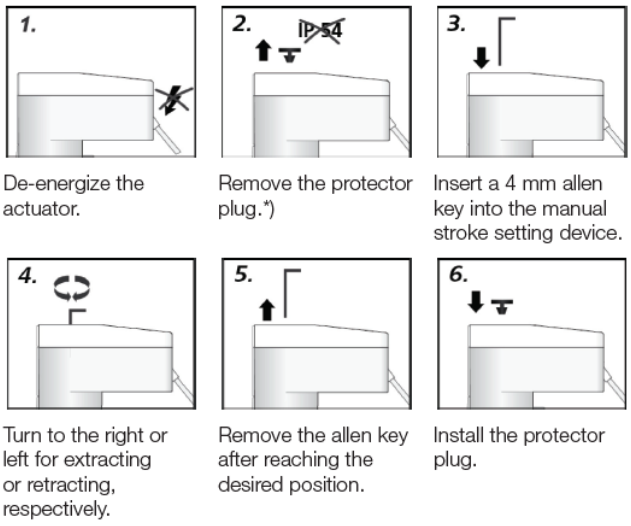
  The motor-driven actuator HERZ Motor Valve Drive is controlled via two electric connections L1-1 (open) and L1-2 (close), realizing the desired movement direction of the motor. This moves the valve pressure plate in the desired direction for opening or closing. If the control signal L1-1 (open) is applied, the valve opens. The control signal L1-2 (close) closes the valve. After reaching the final stop resp. the closing position, the motor switches off. This also applies in case of overload. If the voltage is switched off, the valve remains in its current position.

- **LED-function**

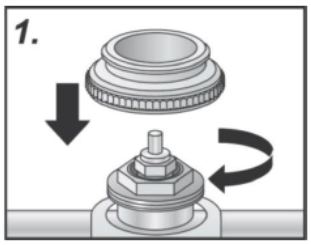
LED	Function
Green and red (orange) LED	Valve is closing
Green LED only	Valve is opening

- **Manual stroke setting**

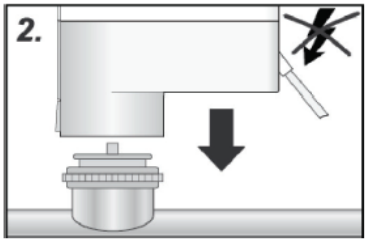
  The manual stroke setting allows to bring the valve pressure plate to the desired position in de-energized state. This facilitates maintenance and dismantling.



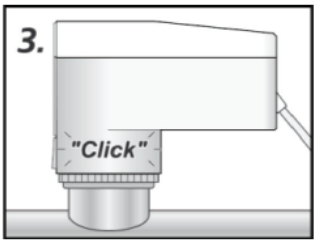
- **Installation**
  The wide selection of valve adapters guarantees a perfect match of the HERZ Motor Valve Drive to almost any valve bottom or manifold available on the market. Simply snap-on the HERZ Motor Valve Drive to the manually pre-installed valve adapter.



Screw the valve adapter manually onto the valve.



Position the actuator in de-energized state manually in vertical position to the valve adapter.



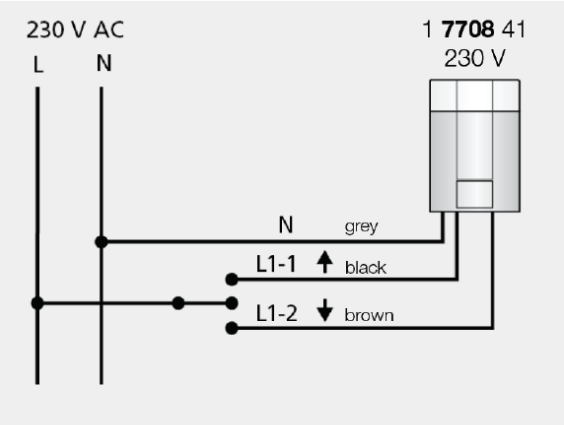
Simply latch the actuator to the valve adapter manually by applying vertical pressure; a clicking sound can be heard. Switch on the power suppy in the connection.

- **Technical data**

Operating voltage	230 V AC, -10% ... +10%, 50 Hz
Operating power	3,5 W
Max. power consumption	< 20 mA
Standby power consumption	< 5 mA
Stroke	max. 8,5 mm (minus 0,5 mm over-elevation)
Actuating force	200 N +10%
Actuating time	30 s/mm
Fluid temperature	0 °C to +100 °C [1)]
Storage temperature	-20 °C to +70 °C
Ambient temperature	0 °C to +50 °C
Degree of protection / Protection class	IP 54 [2)] / II
CE conformity	according to EN 60730
Housing material/colour	Polyamide / white
Housing cover material/colour	Polycarbonate / transparent
Connection cable/colour	3 x 0,75 mm² PVC / light grey (RAL 7035)
Cable length	1 m
Weight with connection cable (1 m)	155 g
Surge strength according to EN 60730-7	min. 2,5 kV

1) in dependence of the adapter even higher - 2) in all installation positions

- **Electric connection**
  We recommend the following cables for installing a 230 V system:
  Light plastic-sheathed cable: NYM 1,5 mm²
  Flat webbed building wire: NYIF 1,5 mm².

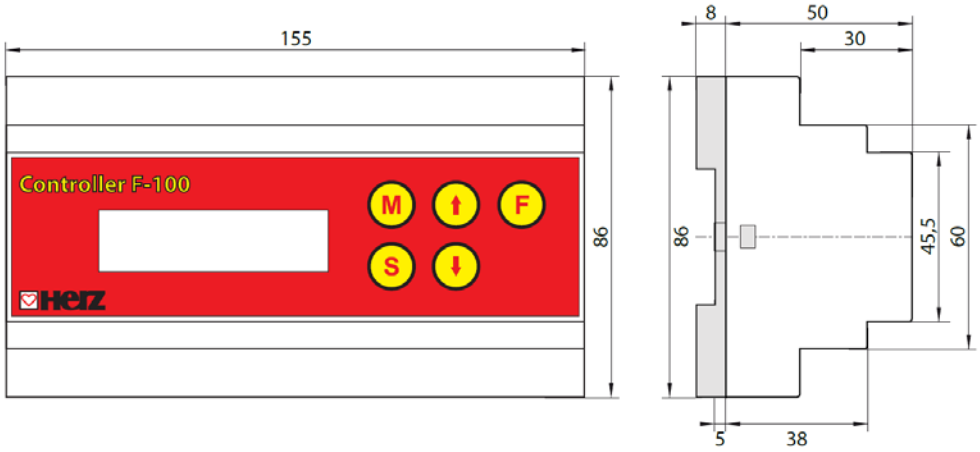


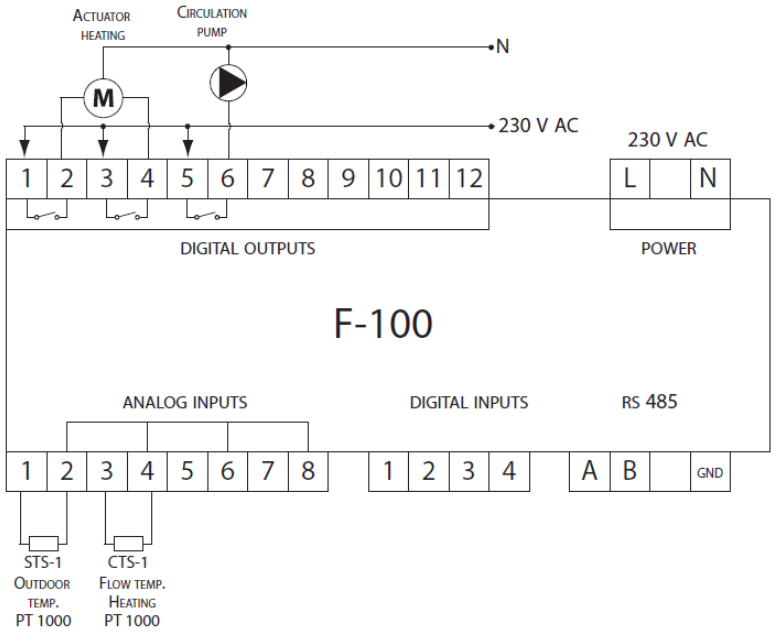
Voltage at L1-1:	actuator opens
Voltage at L1-2:	actuator closes
No voltage at L1-1/L1-2:	actuator remains in current position

- **Safety notes**
  The actuator has been designed for use in heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport
  Caution: Power supply voltage!
  - It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
  - The actuator must be protected against moisture. It is not suitable for use in outdoor applications.
  - Check that the strain relief of the cable in the actuator housing functions correctly.
  - The device may only be opened at the factory. It does not contain any parts that can be replaced or repaired by the user.
  - The device contains electrical and electronic components and is not allowed to be disposed of as household refuse.

  All locally valid regulations and requirements must be observed.

Controller F-100



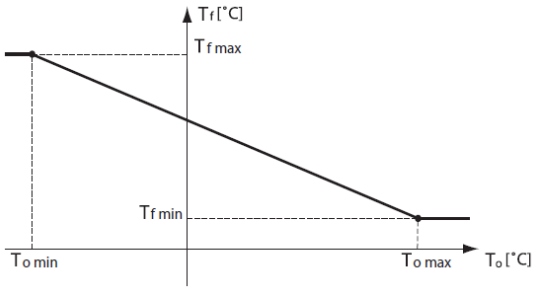


- **DESCRIPTION**

  The controller F-100 is an electronic temperature controller for use in district heating and cooling systems.

  The desired flow temperature is calculated in F-100 controller based on the outdoor temperature.

  The heat curve relation between outdoor temperature and destred flow temperature is set by means of parameters.



	Parameter	Channel
Tf max	Max. Flow Temp.	1
To min	Min. Outdoor Temp.	2
Tf min	Min. Flow Temp.	3
To max	Max. Outdoor Temp.	4

The motorised control valve is opened gradually when the temperature is lower than the desired flow temperature and vice versa.

Circulation pump control

The circulation pump is ON when the desired flow temperature is higher than a user defined value (factory setting 20 °C). Hysteresis is 3 °C. The pump remains switched ON for at least 5 minutes.

Frost protection

The controller automatically switches the circulation pump ON, when the outdoor temperature is lower than user defined value (factory setting 2 °C), or the flow temperature is lower then 7 °C fixed value. Hysteresis is 3 °C.

CUT-OUT function

If the outdoor temperature is higher than a user defined value (factory setting 18 °C, hysteresis is 2 °C) the heating switch OFF (the motorized control valve is closed and circulation pump is OFF).

- **FEATURES**
  - Built - in LCD alphanumerical display (2 rows of 16 characters) with backlighting,
  - Easy operator guidance with 5 buttons called **M** , **S** , ↑ , ↓ , **F**
  - 4 analogue inputs PT 1000 sensor,
  - 4 digital outputs for motorised valve control,
  - The application parameters are stored in the controller and are not affected by a power break
  - The enclosure is designed for mounting on DIN rail,
  - Electrical connection with plug terminals for wires up to 2,5 mm2.

- **HANDLING WITH CONTROLLER**

List of measured values

In succession press button M (1 CLICK) you can list measured values:

Channnel	Measure Value	Unit
1	Outdoor Temp.	°C
2	Desired Temp. Heating	°C
3	Flow Temp. Heating	°C

Diagnostic:

- If flow temp. sensor is short circuited then display is + + +;
- If flow temp. sensor is not connected then display is - - -.
- If outdoor sensor is short circuited then display is + + +;
- If outdoor sensor is not connected then display is - - -.

List of statuses

In succession press button F (1 CLICK) you can list statuses of motorised valves:

Channnel		Status
1	Actuator	(OFF) (Closing) (Opening)
2	Circulation Pump	(ON) (OFF)

Press the M key or S to exit the menu.

Viewing and setting parameters

Constant pressure on the S key and single pressing the M key (1 CLICK) provides an overview of the parameters:

Channnel	Parameter	Factory Setting	Range
1	Max. flow temp. Heating	90	(25 – 130) °C
2	Min. outdoor temp. Heating	-18	(-01 – -50) °C
3	Min. flow temp. Heating	40	(25 – 130) °C
4	Max. outdoor temp. Heating	12	(00 – 30) °C
5	Flow temp. start pump	20	(15 – 50) °C
6	Outdoor temp. Frost prot.	-02	(-05 – 5) °C
7	Outdoor temp. Cut-out	18	(15 – 30) °C
8	P - band	04	(01 – 15)
9	I - time	45	(10 – 240) sec
correction parameters			
10	Correction outdoor temp.	0	(-5 – +5) °C
11	Correction flow temp.	0	(-5 – +5) °C

Value of the selected parameter can be changed by holding down S and pressing the ↑ key for increase, or press ↓ for decrease value. Releasing the buttons with all the parameters are entered into memory that stores the set values.

TECHNICAL SPECIFICATIONS

Supply voltage	230 V, 50 Hz
Power consunption	4 VA
Analogue inputs	4 (PT 1000)
Digital output	6 (SSR) 230 V / 3A
Communication	RS 232 / RS 485
Display	alpha numerical 2 × 16 characters
Degree of protection	IP 40
Dimensions	155 × 86 × 58 mm
Mounting	on DIN - rail 35 mm
Ambient temperature	0 - 70 °C
Ambient humidity	max 75% RH

SAFETY INSTRUCTIONS

Before disposal the controller must be dismantled into groups of structural components and delivered to authorized waste recycling organizations in order to preserve the environment. Local legislations must be obeyed when disposing of the components.

Packaging

The following points should be observed during unpacking:

- Check the delivery immediately upon receipt for completeness and transport damage.
- In the event of transport damage, the delivery should only be accepted conditionally.
- Carefully unpack the unit taking care not to damage the contents; sharp implements should not be used.
- Ensure that all packaging material is removed and the unit is clean from all materials to avoid anything preventing the unit from operating correctly.
- Do not use damaged components for assembly.

Recycling and disposal

The substation as well as its transport packaging consists of mostly recyclable resources.

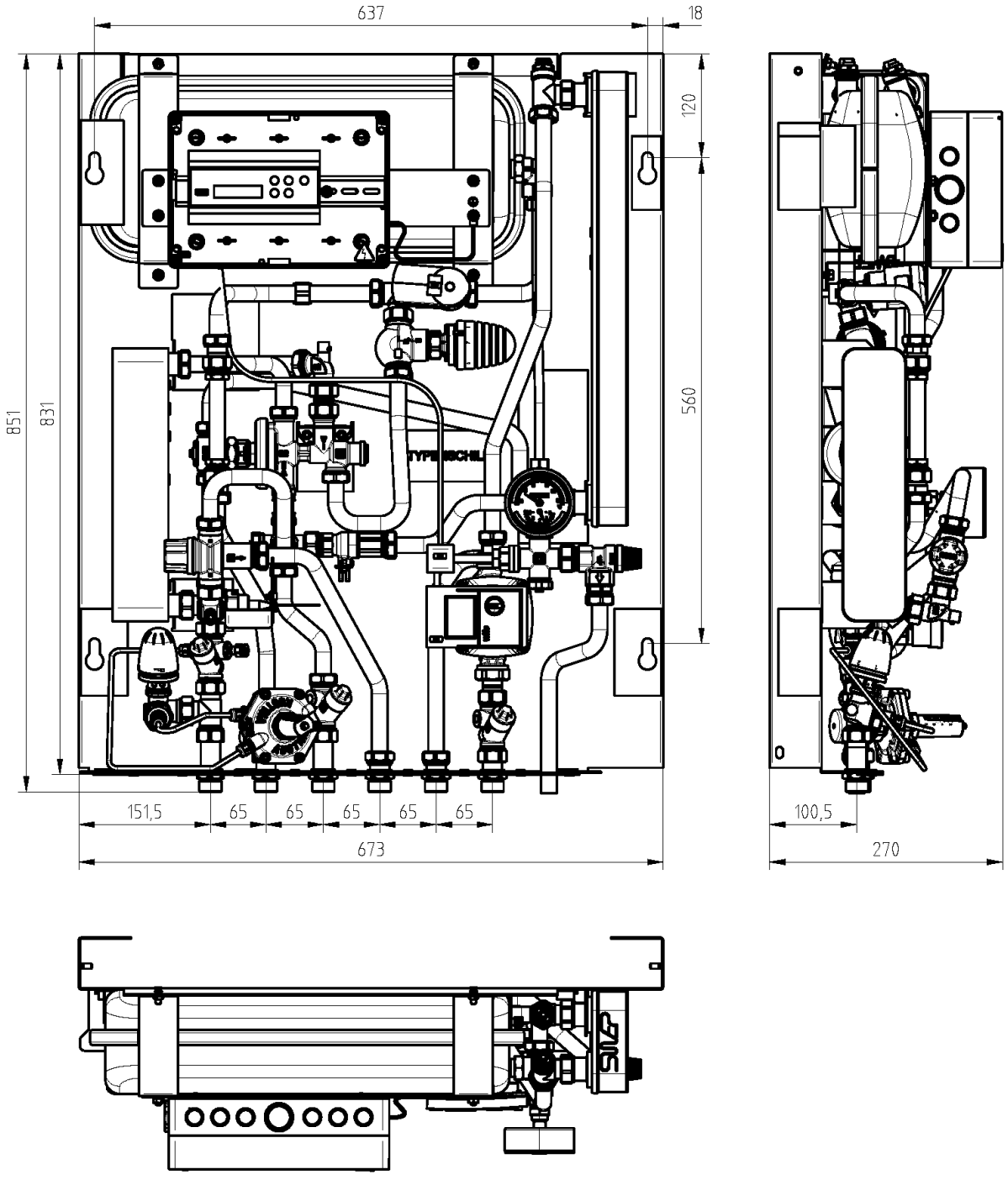
Device:

Your substation as well as any accessories does not belong in the household waste.
Ensure that your device and any accessories get disposed properly.

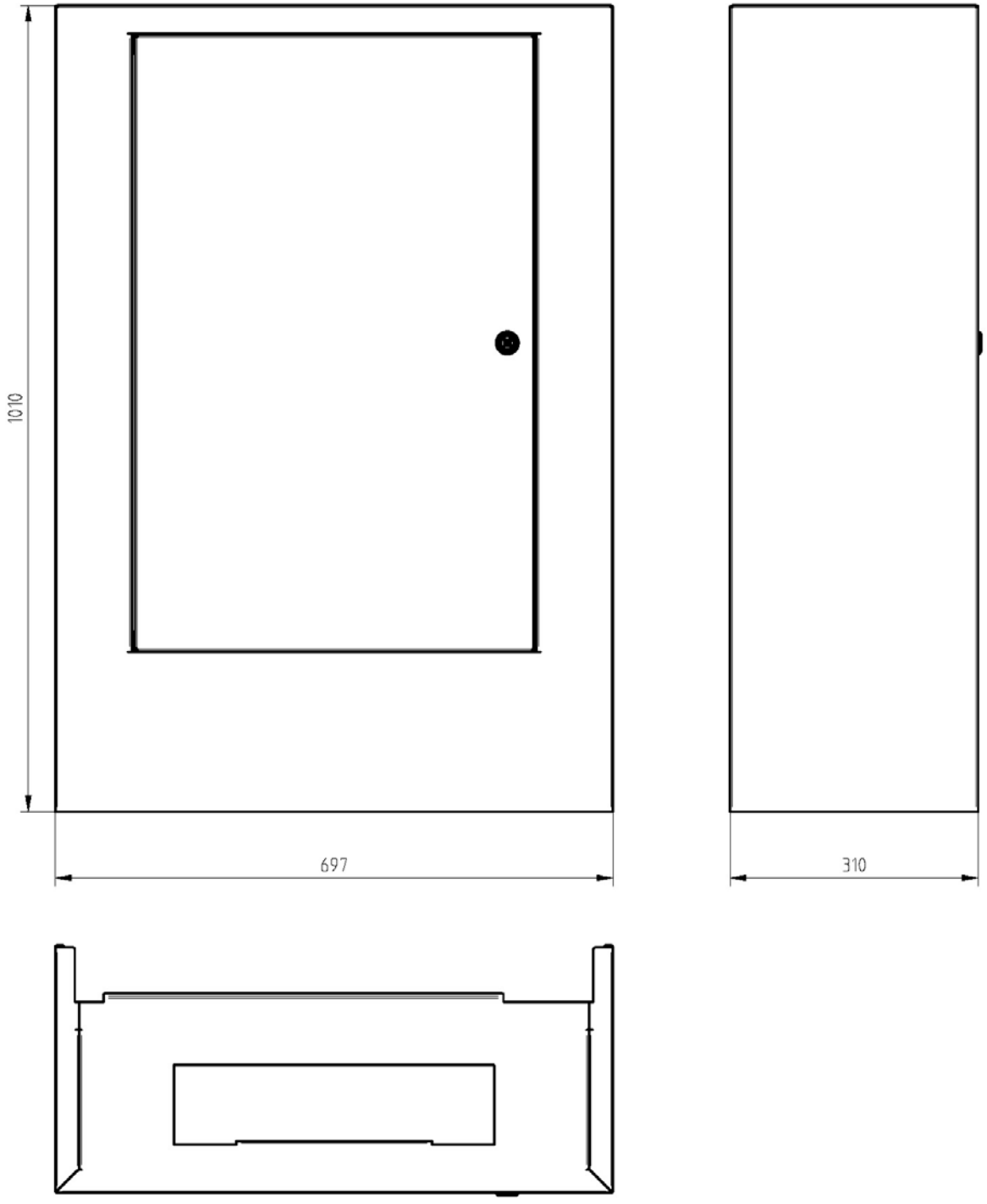
Packaging:

Leave the disposal of the transport packaging to the recognized qualified servicing company, that has installed the device.

Dimensions for HIU Stockholm



Dimensions for Cover



Commissioning and maintenance protocol for Hydraulic Interface Units

Customer:

Name and address

Telephone number and e-mail

Commissioning or maintenance carried out by:

Name and address

Telephone number and e-mail

Commissioning or maintenance location

Article number substation/type

serial number substation

Maintenance work	Interval	done
1. Visual inspection and tightness test	annually	☐
2. Visual inspection of electrical connections (if existent)	annually	☐
3. Functionality test and inspection of the parameters and settings	annually	☐
a) Inspection of the tightness and functionality of the PT-controller	annually	☐
b) Inspection of the installed strainer	annually	☐
c) Inspection of the tightness and functionality of the drinking water valves (if existent)	annually	☐
d) Tightness test of the heat exchanger	annually	☐
e) Functionality test of the shut-off valves	annually	☐
f) Inspection of the bypass circuit	annually	☐
g) Inspection of hot water temperature	annually	☐
Actual value: ☐ nominal value: ☐		
h) Inspection of hot water volume flow	annually	☐
Actual value: ☐ nominal value: ☐		

Annotation:

The commissioning or maintenance was carried out properly.

Place, date | signature customer/operater | signature specialised tradesman

SERVICING GUIDE FOR

HERZ STOCKHOLM HEAT INTERFACE UNITS

Servicing should only be carried out by professionally trained servicing engineers.

CAUTION: The district heating side of the HIU can be operated with high pressure and temperature systems. Please apply extreme caution and wear the appropriate safety equipment (PPE) when working on suspected leaks.

CAUTION: Risk of electric shock
Isolate the mains electrical supply before starting any work and observe all relevant safety precautions.

Please refer to the Installation, Maintenance and Operating manual provided with this unit for full servicing procedures

List of components to be serviced regularly and servicing intervals

A Service (every year)	**B Service** (every 2 years)
Pressure temperature control valve	Domestic hot water heat exchanger
Thermostatic bypass valve	Space heating heat exchanger
Zone valve	Pressure gauge
Actuating drive	
Ball valves	
Tempering valve	
Strainers	
Expansion vessel	
Pressure relief safety valve	
Differential pressure controller	

The A service should be carried out annually with the addition of the B service every two years, failure to service the HIU as per the above will invalidate the warranty.

Installation date	

Service	**Date**	**Engineer**	**Company**
A			
B			
A			
B			

Service	Date	Engineer	Company
A			
B			
A			
B			
A			
B			
A			
B			
A			
B			
A			
B			
A			
B			