EN

THERMATEC

FRESH WATER HEATING BOX

FOR DOMESTIC WATER HEATING

FRESH WATER HEATING BOX

DEDICATED, COMPLETE SOLUTION
DESIGNED TO HEAT DOMESTIC WATER

INSTALLATION AND OPERATION MANUAL

Our primary goal is customer satisfaction, which is why we introduce devices made from components of renowned global manufacturers and materials that ensure long-lasting and trouble-free operation. From the beginning of our company's operation, we have placed great emphasis on the design of our products.

We believe that devices such as heat pumps, hydraulic cabinet assemblies, or even domestic hot water storage tanks should be a part of good design. To meet these expectations, our devices present themselves exceptionally well against the backdrop of our customers' dream homes and offices.

We attach great importance to the utility, quality of workmanship, and durability of our products, ensuring that we deliver devices prepared for years of trouble-free and efficient operation.

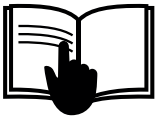
TABLE OF CONTENTS

IMPORTANT!

- This installation and operation manual contains essential information regarding the safe use, proper installation, and operation of the FRESH WATER HEATING BOX for domestic water heating.
- Before using the device, carefully read and fully understand this manual.
- Keep the installation and operation manual for future reference.
- Pass the manual on to any subsequent owner of the FRESH WATER HEATING BOX.
- While operating the FRESH WATER HEATING BOX, always comply with applicable regulations and health and safety standards.

1. SAFETY SYMBOLS

The safety symbols and warning signs shown below are used to emphasize particularly important information regarding safety and proper use of the FRESH WATER HEATING BOX:

SYMBOL	MEANING
 DANGER	**Immediate danger!** Failure to comply may result in death or serious bodily harm.
 WARNING	**Possible danger!** Failure to comply may result in death or serious bodily injury.
 ATTENTION	**Hazardous situation!** Non-compliance may result in minor or moderate bodily injury or property damage.
	**Please read the instruction manual.**
	**Warning of electric shock.**

2. RULES FOR SAFE INSTALLATION AND OPERATION

During the installation and operation of the FRESH WATER HEATING BOX, the following guidelines must be observed:

- use the device only when it is in a technically sound condition and in accordance with its intended purpose,
- installation, commissioning, operation, and dismantling must be carried out exclusively by trained personnel and authorized users,
- do not dismantle any components of the device while it is in operation,
- do not make any modifications to the hydraulic system that are not outlined in the manual,
- perform hydraulic and electrical connections in accordance with the instructions and markings provided in the manual,
- electrical connections must be performed by a qualified electrician with the appropriate certifications and authorizations,
- do not install the device in a humid environment or in locations that may be exposed to flooding,
- disconnect the power supply during installation and maintenance of the device,
- do not operate the device "dry," without the heating medium,
- before dismantling the device, drain the heating medium from the system to avoid potential burns from hot water. Note that the water may be under high temperature and pressure,
- during winter, if the central heating system where the device is installed is not in operation and the ambient temperature falls below 0°C, drain the heating system of water. Keep in mind that freezing water can damage the heat exchanger and pump casing.

3. DESCRIPTION AND APPLICATION

The FRESH WATER HEATING BOX is a dedicated, complete solution designed to heat domestic water to the required temperature range of 35–60°C through continuous flow across a heat exchanger when the hot water tap is opened. In the plate heat exchanger, heat is transferred from the hot water on the heating side to the cooler water on the domestic side. The separate circuits of heating water and domestic water flow opposite each other, ensuring hygienic and efficient heat transfer to the domestic water.

The circulation pump in the heating system is activated by a flow sensor when the hot water tap is opened. The circulation pump operates until the tap is closed, supplying hot heating water from the buffer tank to the heat exchanger.

Optional features available upon request include:

- **Thermostatic Mixing Valve (ATM):** Designed to mix two water streams of different temperatures to ensure a constant preset temperature of mixed hot water at the valve outlet,
- **Programmable Domestic Water Circulation Pump:** Used for recirculating domestic hot water in a circulation loop to maintain consistent water temperature.

The device is intended for indoor installation in closed central heating systems with a buffer tank connected in parallel.

4. TECHNICAL DATA

DEVICE TYPE		FRESH WATER HEATING BOX
ENCLOSURE DIMENSIONS (W x H x D)	mm	654 x 525 x 210
CONNECTION OUTLETS	cal	G 3/4''
MAXIMUM OPERATING PRESSURE OF HEATING MEDIUM	bar	10
NOMINAL DOMESTIC WATER PRESSURE	bar	3
MAXIMUM OPERATING TEMPERATURE OF THE HEAT EXCHANGER	°C	80
MAXIMUM DOMESTIC WATER TEMPERATURE	°C	60
MINIMUM DOMESTIC WATER FLOW FOR HEATING MEDIUM TEMPERATURE OF 55°C / 60°C / 65°C	l/min	2 / 2,5 / 3
HEAT EXCHANGER POWER	kW	70
MINIMUM FLOW RATE	l/min	2,5
MAXIMUM FLOW RATE	l/min	30
POWER SUPPLY VOLTAGE FOR CIRCULATION AND RECIRCULATION PUMPS	V	230 V~

The FRESH WATER HEATING BOX consists of an aluminum frame to which the system components are mounted. The module frame is equipped with brackets for wall mounting. The device is connected to the heating system via a set of water connectors with external threads G 3/4", which should be equipped with shut-off valves and linked to appropriate pipe sections.

The device should be installed in close proximity to the buffer tank. A sample connection diagram is provided in the manual. The room where the device is installed must be protected from frost and excessive humidity.

The device must be mounted in a way that allows for convenient servicing, ensuring easy access to all components.

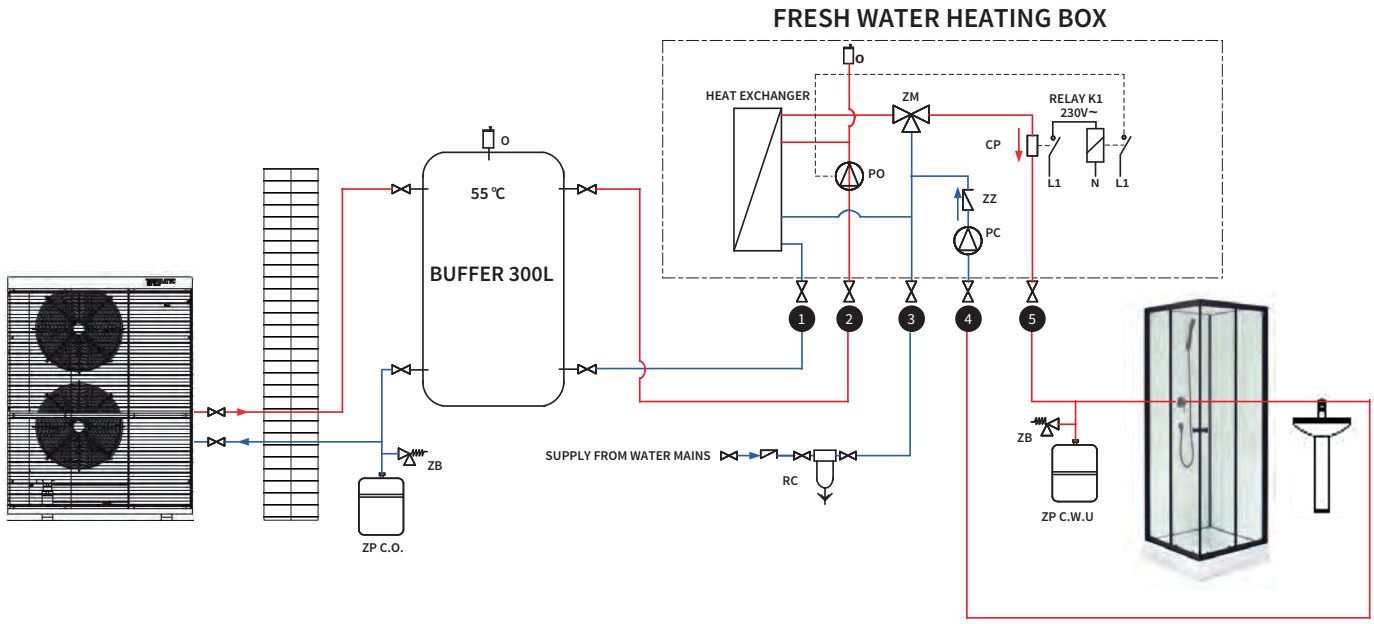


Diagram of an Example Connection of the FRESH WATER HEATING BOX to the Heating (C.O.) and Domestic Hot Water (C.W.U.)

The diagram illustrates the recommended connection of the FRESH WATER HEATING BOX with the heating and domestic hot water systems. It includes suggested hydraulic components installed outside the device for its proper operation. These components are not part of the standard equipment of the device.

Opis:
O – Air Vent
RC – Pressure Reducer
ZB – Safety Valve
ZP C.O. – Central Heating Expansion Vessel
ZP C.W.U. – Domestic Hot Water Expansion Vessel
ZZ – Check Valve
PO – Heating Circuit Circulation Pump
PC – Domestic Hot Water Circulation Pump
ZM – Mixing Valve (ATM)
CP – Flow Sensor
1 – Return from Buffer Tank
2 – Supply from Buffer Tank
3 – Cold Water Supply from Mains
4 – Domestic Hot Water Circulation
5 – Domestic Hot Water Supply

ATTENTION

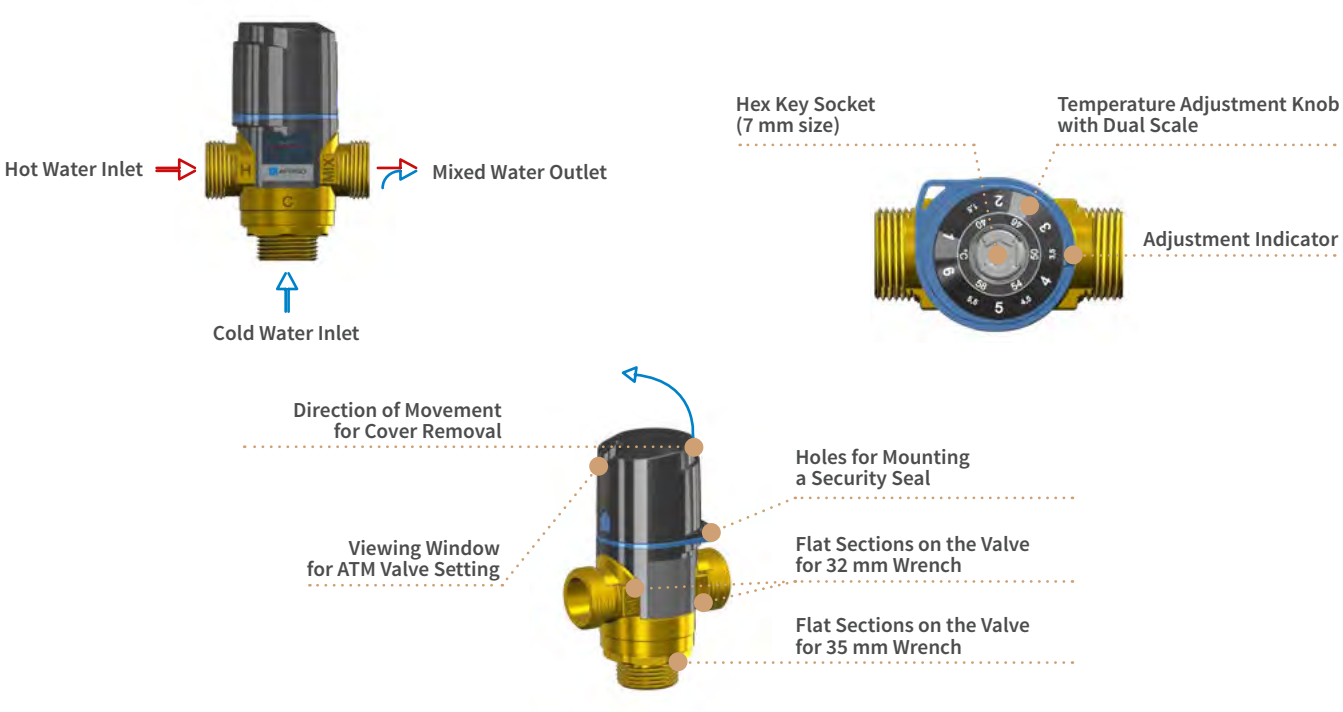
To prevent user burns, the domestic water temperature must never exceed 60°C. This temperature limitation should be achieved either by using the ATM 343 mixing valve or by limiting the maximum heating water temperature in the buffer tank (the recommended maximum heating water temperature should range between 55°C and 65°C). After commissioning the device, check the domestic water temperature at the draw-off point and make the necessary temperature adjustments.

4.1. Components of the FRESH WATER HEATING BOX:

4.1.1. Thermostatic Mixing Valve ATM 343 by AFRISO (optional)

TECHNICAL DATA:

PARAMETER / PART	UNIT	VALUE / DESCRIPTION
Connections	cal	External Thread 3/4”
Valve Flow Capacity (Kvs)	m^3/h	2,5
Required Flow Rate	l/min	6
Water Temperature Regulation Range	°C	35 ÷ 60
Temperature Regulation Accuracy	°C	± 2
Maximum Static Pressure	bar	10
Dynamic Pressure	bar	0,5 ÷ 5
Maximum Domestic Water Temperature at Outlet	°C	60



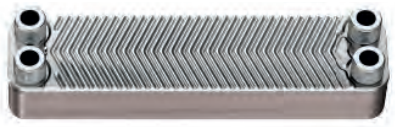
The ATM thermostatic mixing valve is designed to mix two streams of water at different temperatures to ensure that the mixed water at the valve outlet maintains a constant, preset temperature. The "anti-scald" function prevents the flow of hot water if there is no cold water supply to the valve. Under the cover, which protects against accidental adjustment, there is a knob for setting the temperature of the mixed water.

SETTING	TEMPERATURE RANGE 35÷60°C	SETTING	TEMPERATURE RANGE 35÷60°C
1	35°C	4	52°C
2	44°C	5	56°C
3	48°C	6	60°C

The temperature of the water at the MIX outlet of the ATM valve should be adjusted using the knob, following the settings table. After setting the desired temperature, it is recommended to reattach the plastic cover to reduce the likelihood of accidental adjustments or unauthorized tampering. If the ATM valve is installed in a publicly accessible location, it is advised to seal the cover with a security seal using the designated hole. The ATM valves exhibit optimal regulatory performance at a maximum system pressure of 3 bar.

4.1.2. Plate Heat Exchanger

The compact brazed plate heat exchanger consists of a series of channel plates with grooved surfaces, separated by filler material between each plate. During the vacuum brazing process, the filler material forms brazed joints at all contact points between the plates, creating a set of channels. In the exchanger, media at different temperatures flow in close proximity to each other, separated only by the channel plates. This design ensures very high efficiency in transferring heat from one medium to the other.



TECHNICAL DATA:

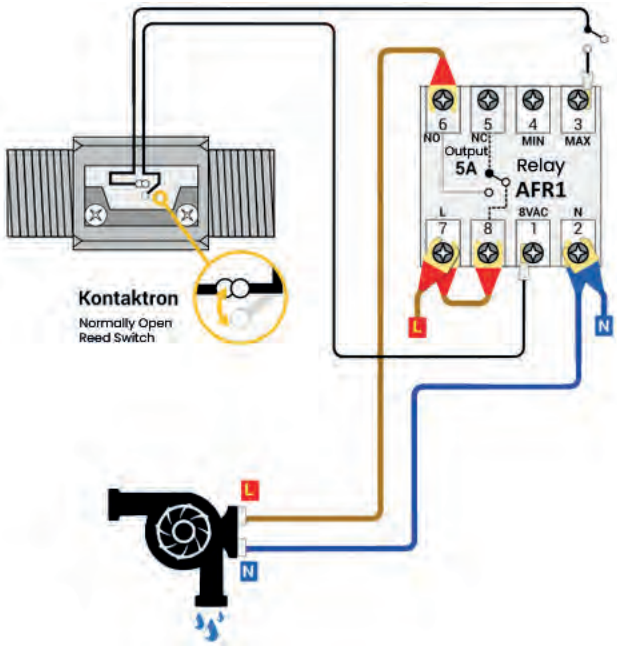
PARAMETER	UNIT	VALUE / DESCRIPTION
Material	-	Stainless Steel Plate 316/316L, Copper Brazed
Heat Exchanger Power	kW	70
Maximum Operating Pressure	bar	10
Operating Temperature Range	°C	5–85
Total Heat Exchange Area	m^2	1,0

4.1.3. CP3/4-B Flow Sensor

The water flow sensor is installed at the outlet of the domestic hot water system. Its high sensitivity allows it to detect even minimal liquid flow. When the hot water tap is opened, water flows through the sensor. The flow of water activates the reed switch inside the sensor, which closes the circuit and energizes the AFR1 relay coil. The auxiliary contacts of the relay supply 230V AC to the circulation pump. The circulation pump operates until the tap is closed, delivering hot heating water from the buffer tank to the heat exchanger.

TECHNICAL DATA:

PARAMETER	UNIT	VALUE
Maximum Operating Pressure	bar	17,5
Minimum Flow Rate	l/min	2,5
Maximum Flow Rate	l/min	30



Wiring Diagram for Connecting the Flow Sensor to 230V AC Power.

CAUTION! Electrical installation tasks must be carried out by a qualified electrician with the appropriate certifications and authorizations.

The device must be connected to an electrical network equipped with a functional grounding system.
The device must be connected to a 230V~ power supply equipped with a residual current circuit breaker (RCD) with a tripping current ΔIn not exceeding 30 mA.

4.1.4. E-IBO PRO 15-14 Domestic Water Circulation Pump (optional)

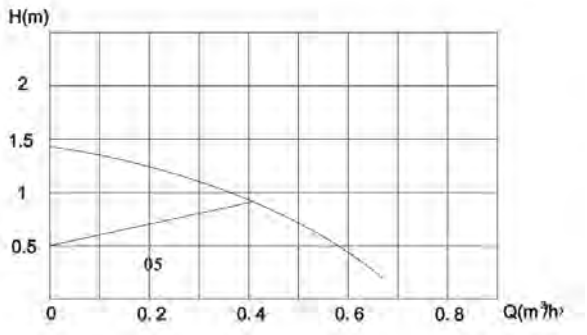
The circulation pump is installed above outlet No. 4 of the device, to which a shut-off valve and an appropriate domestic hot water circulation loop should be connected as per the schematic diagram. After connecting the circulation pump to the power supply, it must be programmed using the control panel.

TECHNICAL DATA:

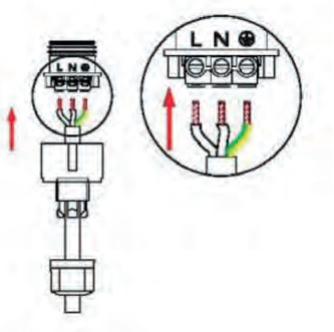
PARAMETER	UNIT	VALUE
Power Supply	V	230V~, 50 Hz, PE
Energy Consumption	W	3-9
Head	m	1,2
Flow Rate	l/min	10
Permissible Ambient Temperature	°C	0 to 40
Permissible Water Temperature	°C	+2 to 95
Maximum Pressure	bar	10
Protection Rating	-	IP44

To prevent pump bearing damage caused by cavitation, the inlet of the pump must maintain a minimum supply pressure of no less than 2 m H_2O.

Water Temperature [°C]	< 85°C	90°C	90°C
Minimum Inlet Pressure	0,20 bar	0,28 bar	0,50 bar
	2 m Water Column (H_2O)	2,8 m Water Column (H_2O)	5 m Water Column (H_2O)



The circulation pump is electrically connected using a special plug provided with the pump.



CONTROL PANEL

I II III	Displayed only during the time-setting process. Not shown during normal operation. They represent three programmed time periods.		
ON OFF	Displayed During Time and Temperature Setting Not displayed during normal operation, representing start and stop.		
88:88	During Setting, Displays the start and end time, as well as the temperature. During Operation, Displays the operating time and temperature.		
	Displayed when the pump operates in time and temperature control mode.		
8W	Displays the current power consumption during operation.		Pump Not Operating
	Indicator lit when the pump is operating in manual mode.		Pump Operating
	Indicator lit when the pump is operating in automatic mode.		

Button for Changing Operating Mode. Pressing the button for 3 seconds will allow you to set the initial activation and deactivation temperature. Pressing it again will enable you to set the second parameter, i.e., the start and stop times for the next three activity periods. After setting the times, wait 10 seconds for the settings to be saved in the device.

Button for Modifying Pre-Programmed Time Frames. Pressing the button for 3 seconds will allow you to edit the activation and deactivation times for the next three activity periods.

Button for Increasing Time or Temperature Values During Programming. Pressing the button for 3 seconds during operation will reset the temperature settings, allowing the pump to operate independently of the temperature. Pressing it again for 3 seconds will restore the previously saved settings.

Button for Decreasing Time or Temperature Values During Programming. Pressing the button for 3 seconds during operation will reset the temperature settings in the first and third programmed operating ranges. Only the second range remains active. In this case, the pump will have only one programmed time and temperature range.

ON/OFF: For the time-setting function:
ON indicates the start time or temperature. OFF indicates the stop time or temperature.
Displayed During Time and Temperature Setting Not shown during normal operation, representing start and stop. However, it will display the set time and temperature sequentially with a 5-second interval.
If all three periods are set to 0, the pump operates solely based on temperature.

POSSIBLE PROBLEMS AND HOW TO SOLVE THEM

PROBLEM	POSSIBLE CAUSES	SOLUTION
The Pump Does Not Start	Blown installation fuse	Check the cause and replace the fuse
	Overcurrent circuit breaker tripped	Turn on the circuit breaker
	Pump is damaged	Replace the pump
	Voltage is too low	Verify that the mains voltage complies with the supplier's specifications
	Pump rotor is blocked	Unblock the rotor
Noisy System Operation	Air in the system	Perform system venting
	Excessive flow rate	Reduce inlet pressure to the pump
Noisy Pump Operation	Insufficient inlet pressure causing cavitation	Increase the inlet pressure to the pump
Insufficient Heat in the System	Pump parameters are too low	If possible, increase the pump's operating mode to a higher performance setting; otherwise, install a more powerful pump

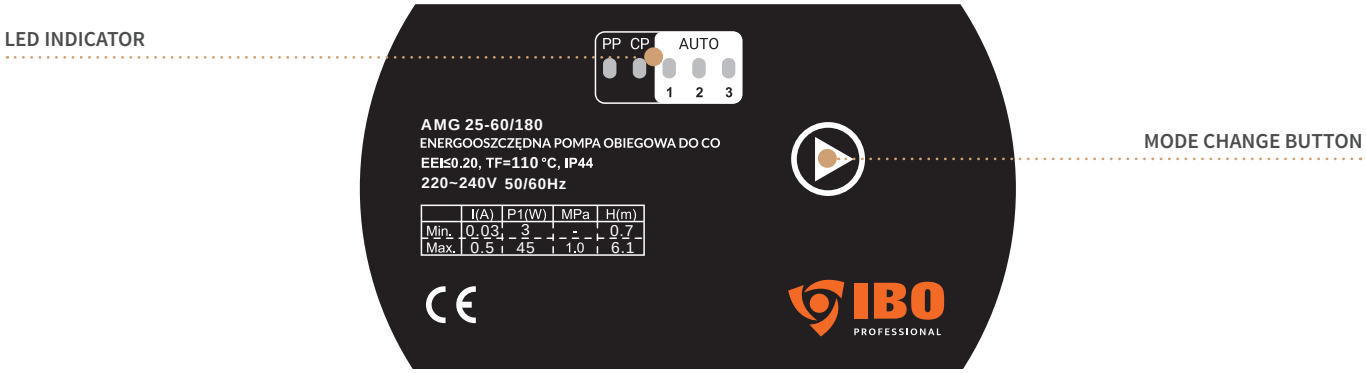
4.1.5. AGM Heating Circuit Pump

TECHNICAL DATA:

PARAMETER	UNIT	VALUE
Power Supply	V	230V~, 50 Hz, PE
Maximum Power Consumption	W	65
Maximum Head	m	8
Flow Rate	l/min	10
Permissible Ambient Temperature	°C	0 to 40
Current Consumption	A	0,65
Permissible Water Temperature	°C	+2 to 110
Maximum Pressure	bar	10
Protection Rating	-	IP44

To prevent pump bearing damage caused by cavitation, the following minimum inlet pressure must be maintained

Heating Medium Temperature [°C]	< 85°C	90°C	110°C
Minimum Inlet Pressure	0,05 bar	0,28 bar	1,08 bar
	0,5 m water column H_2O	2,8 m water column H_2O	10 m water column H_2O



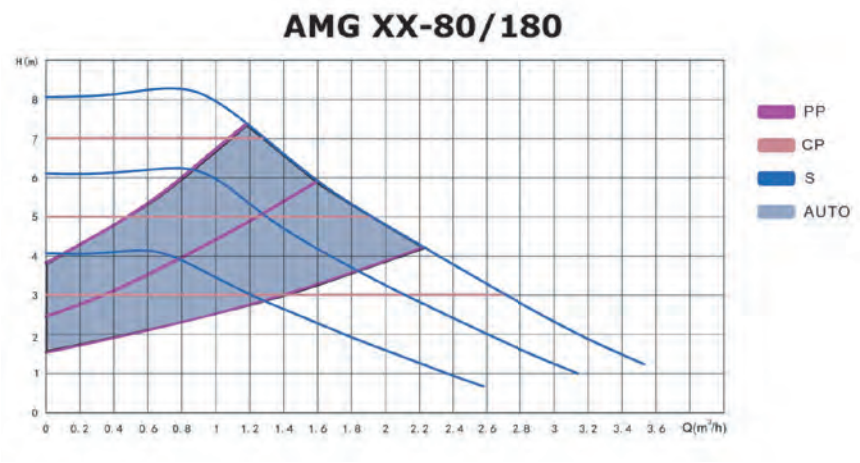
PROCEDURE FOR SELECTING THE OPERATING MODE

Upon startup, all mode indicators will briefly light up, after which the pump will resume the last operating mode used before shutdown.
Pressing the main mode change button once will switch the mode in the following sequence:
AUTO, PPI, PPII, PPIII, CPI, CPII, CPIII, CSI, CSII, CSIII.
Pressing the ▶ button once will switch to the next mode on the list. Entering a specific mode is indicated by the corresponding indicator lighting up on the control panel.

SETTING	PUMP PERFORMANCE CURVE	FUNCTION
AUTO	Proportional Pressure Performance Curve From highest to lowest	• The AUTO Function automatically controls the pump's performance within a specified range. • Adjusts the pump's performance based on the size of the system. • Adapts the pump's performance according to load variations over time. • In AUTO mode, the pump operates in proportional pressure control mode.
PP: I / II / III	Proportional Pressure Curves	The operating point will move up and down along the proportional pressure curve based on the system's flow demand. When the flow demand decreases, the pump's water pressure will drop, and when the energy demand increases, the pressure will rise.
CP: I / II / III	Constant Pressure Curves	The pump's operating point moves back and forth along the constant pressure curve based on the system's demand. The pump pressure remains constant and is independent of the flow demand.
S: I / II / III (Factory Settings)	Constant Speed Curves	I, II, III (1-3): The pump is set to the maximum curve under all operating conditions. When the pump is set to mode III, it will quickly self-vent during operation.

PERFORMANCE CURVE

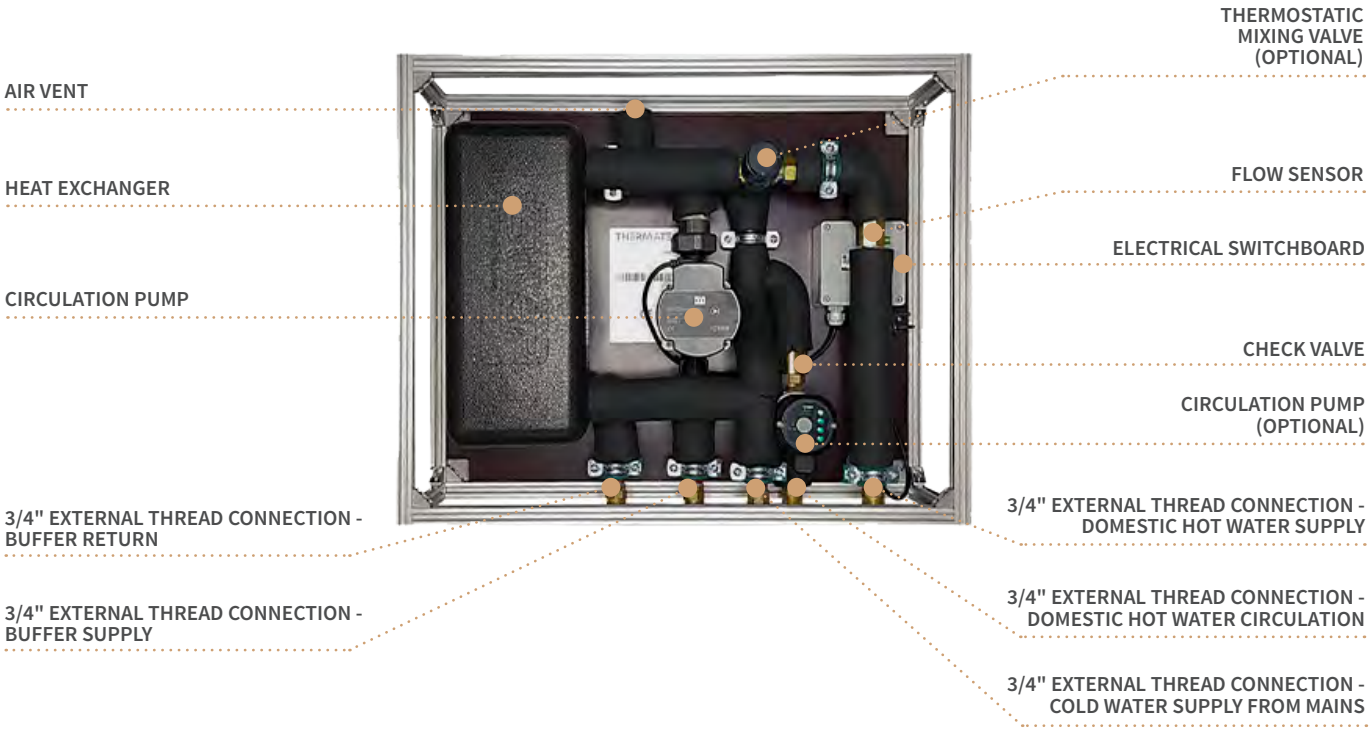
Guide to the Performance Curve:
Each pump setting corresponds to a specific performance curve (Q/H curve).
The AUTO/ECO mode with auto-adaptation encompasses a range of performance curves.
Each Q/H curve is associated with a power input curve (P1 curve).
The power curve represents the power consumption (P1) of the pump in watts for the respective Q/H curve.

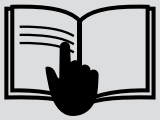


POSSIBLE ISSUES AND TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump Does Not Start	Blown installation fuse	Check the cause and replace the fuse
	Overcurrent circuit breaker tripped	Turn on the circuit breaker
	Damaged pump	Replace the pump
	Pump rotor is blocked	Unblock the rotor
Noisy System Operation	Air in the system / Excessive flow rate	Perform system venting to remove trapped air
Insufficient Heat in the System	Insufficient Inlet Pressure - Cavitation	Increase the inlet pressure to the pump
	Pump Parameters Too Low	If possible, adjust the pump to a higher performance mode; otherwise, install a more powerful pump

6. CONSTRUCTION OF THE FRESH WATER HEATING BOX





The installer should inform the user about the functions of the FRESH WATER HEATING BOX and provide the necessary information for its safe operation.

6. ELECTRICAL CONNECTION

The FRESH WATER HEATING BOX for domestic water heating is equipped with a cable and plug for connection to a 230V~ mains socket with PE grounding. The power circuit for the socket used by the connected device must be linked to the main distribution board via a type AC residual current device (RCD) with a 30 mA rating. If no RCD is present, to ensure safe operation of the device, an additional RCD must be installed in the distribution board before the device's power circuit.

CAUTION! Electrical installation tasks must be carried out by a qualified electrician with the appropriate certifications and authorizations.

7. SAFETY INFORMATION

The FRESH WATER HEATING BOX is intended for installation only in closed heating systems, in compliance with the appropriate instructions for the heat source used.

The device may only be used for its explicitly intended purpose; any other use should be considered improper and consequently unsafe.

The installation of the device must be carried out in compliance with applicable standards and regulations, according to the manufacturer's instructions, and by qualified personnel. Improper installation of the device may cause injury to people and animals, as well as damage to property, for which the manufacturer assumes no liability.

ATTENTION

The device should not be used by children or individuals with limited physical, sensory, or mental capabilities, or by persons lacking the required experience and knowledge, unless they are supervised or instructed on the proper use of the device by someone responsible for their safety. The device should be installed out of the reach of children.

Before starting operation, carefully read and fully understand this user manual, and follow the rules and guidelines contained within.

8. OPERATION

Before starting operation, the general technical condition of the FRESH WATER HEATING BOX must be inspected. Ensure the following:

1. The FRESH WATER HEATING BOX is equipped with additional components (e.g., safety valves, expansion vessels, pressure reducers) as specified in the hydraulic diagram.
2. All pipe connections are leak-free, and the water circuits are properly filled and vented.
3. The 230V~ power plug is connected to a socket with PE grounding, and the power supply is routed through a **type AC residual current device (RCD) with a 30 mA rating.**

ATTENTION

Failure to comply with the above instructions will result in the voiding of the warranty.
In case of any irregularities, the device must be returned to the manufacturer's service center.

9. INSPECTION AND MAINTENANCE

External parts can be cleaned with a damp cloth and commercially available cleaning agents. Do not use abrasive cleaners or solvents for cleaning the device. In hospitals and other public buildings, applicable regulations regarding cleaning and disinfection must be observed. If the heat pump's hydraulic system is taken out of operation or experiences an extended downtime, it must be drained after disconnecting the 230V~ power supply.

A visual inspection of the device's technical condition, including checking for leaks in the connections, should be carried out every two weeks. A comprehensive device inspection should be performed every 12 months.

ATTENTION

CAUTION! Before performing any maintenance or repair on the device, ensure that the power supply is disconnected and cannot be accidentally turned on.

10. DISPOSAL

For Disposal, Follow These Steps:

1. **Drain the Water:** Drain water from the system into the sewer. If glycol is used in the heating system, pump the fluid into a container and deliver it for proper disposal.
2. **Disassemble Components:** Dismantle the threaded components of the device.
3. **Dispose of Plastic Parts:** Transfer all plastic components for recycling or disposal.
4. **Electrical Components:** Deliver electric pumps and electrical parts to appropriate electronic waste collection points.
5. **Metal Components:** Scrap clean metal parts at a designated recycling facility.

11. SERVICE

ATTENTION

Improper repair or poorly performed service of the device may damage the device and/or cause personal injury.

To ensure the highest quality and safety, all repairs and servicing of the device should be performed by a service partner, who will determine the scope and method of repair in consultation with the manufacturer.

NOTES

MANUFACTURER'S STAMP

HOME STAR Sp. z o.o.
ul. Misjonarzy Oblatów 20A
40-129 Katowice
KRS 0000729842 NIP 634 292 88 43

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FRESH WATER HEATING BOX