Mountfield pool & garden

Azuro

INSTALLATION & INSTRUCTION MANUAL FOR

HEAT PUMP

WITH WIFI MODULE

BP-50HS-A

BP-85HS-A

BP-100HS-A

BP-120HS-A

BP-140HS-A

The illustrations shown in this manual may not always correspond to a specific design; their purpose is to help better understand the text.

The manufacturer and supplier reserve the right to make changes to the product without obligation to update this Installation and Instruction Manual.

EN **INSTRUCTIONS FOR USE AND MAINTENANCE**

3EXX0689-3EXB0603-3EXB0604-3EXB0605-3EXB0606 04/2024

TABLE OF CONTENTS

1.0 INTRODUCTION

Thanks for choosing our heat pump.

The heat pump is manufactured in compliance with strict technical standards to provide our customers with excellent quality and adequate reliability. These instructions for use contain all information required for installing the heat pump, putting it into operation and performing its maintenance. Read the instructions carefully before commencing any handling or maintenance. The manufacturer of this product shall not accept any liability and disclaims any responsibility for damage to property or injury caused by improper installation, putting into operation or inadequate maintenance.

This document shall constitute an integral part of the product and shall be stored in the machine room or close to the heat pump.

1.1 HEAT PUMP APPLICATIONS

This heat pump is intended solely for heating pool water and for maintaining its temperature economically at its required value. Any other application of the pump shall be deemed inappropriate.

The heat pump achieves its highest efficiency at air temperatures within the range from 15 to 25 °C. At ambient temperatures below +8 °C the system efficiency is low, while above 35 °C there is a risk of overheating. That is why the equipment should not be used outside of the temperature range of 8 ÷ 35 °C.

To function properly, the heat pump must have a water flow rate that is specified in chapter **3.1 Technical data.**

1.2 PRINCIPLE OF HEAT PUMP OPERATION

The heat pump, employing the cycle of compression and expansion of heat transfer fluid, makes it possible to take heat from ambient air. The air is driven (by a blower) through the evaporator, where its heat is transferred to the heat transfer fluid and the air temperature decreases. The heat transfer fluid is then compressed (and heated) by the compressor and transported into heat exchanger coils, where it transfers its heat to the pool water. Then, the cooled fluid flows from the heat exchanger into the expansion valve, in which it expands, its pressure is decreased considerably, and its temperature abruptly drops down. The cooled fluid returns to the evaporator to be heated again by air stream and the cycle repeats again. The entire process runs continuously and is controlled using pressure and temperature sensors.

The direction of water circulation can be reversed by selecting the appropriate mode of heat pump control. In this case the pool water would be cooled.

1.3 CHECK OF DELIVERY

The equipment is supplied completely assembled and ready for connection to the pipe manifold of pool filtration system and connection to the socket of single-phase power supply (220 VAC/50 Hz).

At installation one should only put the end piece for condensate drain into the relevant hole in the housing bottom.

Before commencing any handling, please check the equipment for completeness.

NOTE: Illustrations and descriptions given herein shall not be binding and may differ from the supplied product. The product manufacturer and supplier reserve the right to perform product changes without being obliged to update this document.

Symbol for waste separation in the countries of the European Union

Protect the environment! Do not dispose of electrical devices with household waste!

In accordance with EU Directive 2012/19/EU, old electrical devices must be collected separately and recycled in an environmentally friendly manner. You can obtain information about the disposal of your old device from your local or city administration.

2.0 SAFETY INSTRUCTIONS

CAUTION: Before first use, read this instruction manual.

CAUTION: Before installing, read this instruction manual.

CAUTION: Read these operating instructions before servicing or repairing.

CAUTION: DANGER. Contains flammable gas.

CAUTION: The device contains live electrical components. The device may only be opened by a person with appropriate electrical engineering qualifications. Risk of electric shock.

(a) The equipment is not intended for use by persons having reduced physical, sensory, or mental ability (including children) without being supervised and instructed by a responsible adult, for use by persons not well acquainted with the operation of the equipment within the scope hereof, persons whose ability of immediate response is reduced due to consumption of drugs and/or narcotics, etc.

(b) The heat pump shall be located in compliance with the ČSN 33 2000-7-702 standard, i.e. at least 3.5 m from the outer edge of the pool.

(c) The feeding circuit of the heat pump shall meet the requirements of the applicable standard ČSN 33 2000 and shall be provided with the circuit breaker of the minimum breaking current of 30 mA.

(d) Any intervention into the heat pump electrical installation and the power supply circuit shall be carried out only by an electrician of appropriate technical qualification.

(e) Do not install the heat pump in any place, where it can be flooded with water.

(f) Make sure that no children will be present within the heat pump working area. The main switch of heat pump shall not be placed within children's reach.

(g) Do not leave any incomplete heat pump in operation. All its protecting covers shall be always installed! The rotating blower may cause a serious body injury. If in operation, the inner piping is hot and may cause burns.

(h) If it is found that the extension cable or supply cable of the pump is damaged, immediately switch the power supply circuit breaker OFF and have the defect made right.

(i) Any repairs of the heat pump and intervention in its pressure circuit of coolant shall be performed only by a duly qualified specialist.

(j) Maintenance and operation of this equipment shall be carried out in due compliance with these Instructions and their recommended frequency and periods shall be observed.

(k) Only original spare parts shall be used. Any failure to observe these recommendations may cause the guarantee provided with this product shall become void and any claims will be refused accordingly.

(l) The operating instructions must always be available at the location where the heat pump is used. Save these instructions for future reference.

(m) This heat pump is intended exclusively for heating/cooling swimming pools. Any other use is considered unsafe and unsuitable.

(n) Assembly, connection to the power grid and commissioning must be carried out by a qualified person.

(o) When connecting the pump to a socket (power supply), ensure that the phase, working and ground cables are laid correctly.

(p) It is essential that the temperature of the swimming pool is kept below the value recommended by the swimming pool manufacturer.

3.0 EQUIPMENT DESCRIPTION AND TECHNICAL SPECIFICATION

3.1 TECHNICAL DATA

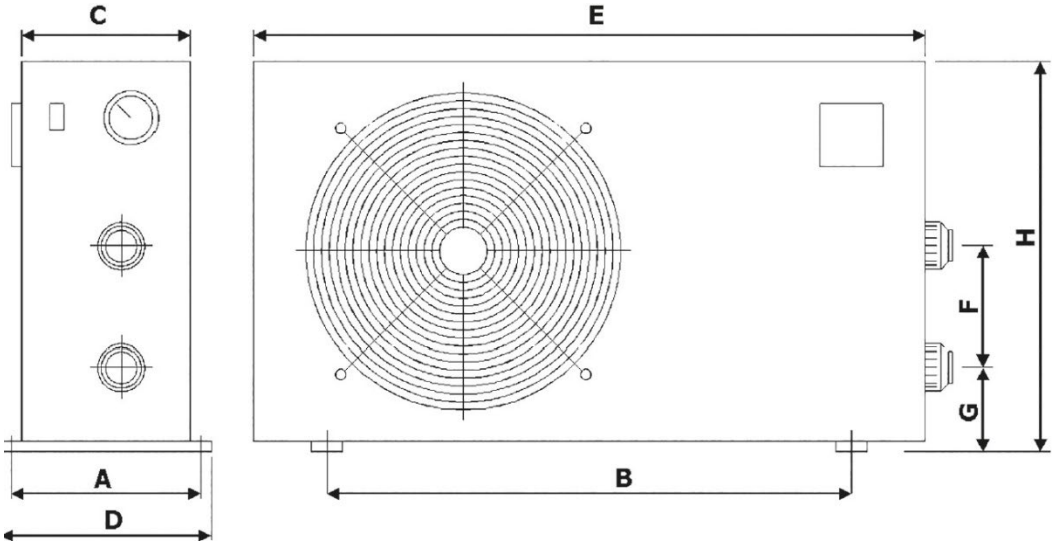
TYPE	**BP-50HS-A**	**BP-85HS-A**	**BP-100HS-A**	**BP-120HS-A**	**BP-140HS-A**
Power supply (V~ / Hz)	230 / 50	230 / 50	230 / 50	230 / 50	230 / 50
Protection degree	IP X4	IP X4	IP X4	IP X4	IP X4
Protection class	I	I	I	I	I
Heating capacity* (kW)	4.9	8.45	10.3	12	14.5
Cooling capacity* (kW	3.1	6.0	7.3	8.4	9.8
Rated power input* (kW)	0.82	1.45	1.75	2.0	2.45
Rated current * (A)	3.6	7.3	8.2	9.5	11
COP (heating, operational)*	6	5.8	5.9	6	5.8
Optimum pool water volume up to	22	35	45	53	64
Required water flow rate (min) (m^3 /h)	4.0	5.0	6.0	7.0	8.0
Air flow rate (m^3/h)	2000	2000	2400	2800	3200
Noise level (dB(A))	<50	<50	<52	<52	<53
Cooling gas charge weight (g)	355	600	750	820	1000
GWP	675	675	675	675	675
Equipment weight (kg)	35	47	53	57	62
Dimensions (L x D x H) (cm)	70 x 27 x 52	85 x 29 x 54	91 x 31 x 62	90 x 31 x 67	96 x 33 x 72
WiFi module	yes	yes	yes	yes	yes

* These values may vary subject to climatic and operating conditions.

3.2 POOL WATER PARAMETERS

The heat pump is designed for heating pool water that meets the requirements for its harmlessness in terms of bathing. The limit values for heat pump operation: pH within the range of 6,8 – 7,9, chlorine total content shall not exceed 3 mg per liter. Water hardness shall be kept at the lower limit of its optimum range, i.e. slightly above 8 °dGh

3.3 HEAT PUMP DIMENSIONS



	BP-50HS-A	BP-85HS-A	BP-100HS-A	BP-120HS-A	BP-140HS-A
A	275	295	340	340	365
B	435	495	555	555	615
C	265	285	305	305	330
D	300	320	370	370	395
E	700	845	900	900	960
F	250	270	300	385	385
G	90	90	100	100	100
H	520	540	615	665	715

Note: The dimensions are given in mm.

WARNING: The manufacturer reserves the right to make such product modifications that will not influence its essential properties.

3.4 DESCRIPTION OF BASIC PARTS

1 – Blower protective grille (air outlet)
2 – Housing
3 – Upper lid
4 – Control panel
5 – Pressure gauge
6 – Neck for water outlet pipe connection
7 – Neck for water inlet pipe connection
8 – Power supply cable
9 – Evaporator

3.5 SAFETY AND CONTROL SYSTEMS

The heating pump is fitted with the following systems:

Heat pump control based on temperature:

- The temperature sensor of evaporator triggers the defrosting process.
- The ambient (outdoor) temperature sensor provides for switching the heat pump OFF, if the temperature drops below -7 °C (factory setting). The normal operation will resume as soon as the ambient temperature has risen to -5 °C (factory setting). For the procedure for changing the factory settings see, please, chapter **5.3 Operating Parameter Setting and Checking.**
- The temperature sensor installed on the heat exchanger provides for switching the heat pump OFF, as soon as the water temperature has achieved its required temperature. The normal operation will resume as soon as the temperature of water in the exchanger has decreased by 2 °C below the set temperature (factory setting).

Safety systems include:

- The water flow rate sensor installed at the heat exchanger inlet.
  The flow rate sensor switches the heat pump ON, when water is flowing through the exchanger and switches the pump OFF in the moment the water stops flowing or the flow rate drops below its minimum required value.
- The sensor of minimum/maximum gas pressure in the cooling circuit.
- The temperature sensor in the compressor delivery line.
- Time delay
  The equipment is provided with a time-delay device with the set time lag of Z 1÷3 min. for protecting the control devices in the circuit and removal of repeated restarts and contactor vibrations. This time delay will restart the equipment automatically within approx. 3 minutes after each interruption of heat pump operation. The time delay will be enabled even in the case of a short interruption of power supply and prevent the equipment from starting earlier than the pressures are equalized in the cooling circuit. Any interruption of power supply during the delay will not influence the set time interval.

In the case of failure of any of these systems (if a system defect or disconnection takes place or an abnormal temperature is measured), the relevant error message is displayed on the screen, see chapter **7.3 Error Messages and Their Removal** herein below.

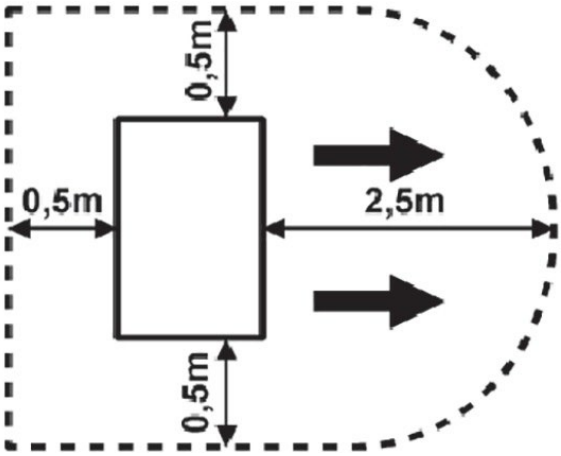
Warning: The removal of any of the safety and control systems or putting it out of operation shall cause cancellation of the guarantee.

4.0 HEAT PUMP INSTALLATION AND CONNECTION

4.1 SITE SELECTION

The heat pump is intended for outdoor installation and will operate well in almost any outdoor environment, provided that the three following prerequisites are met:

(a) Do not install the heat pump in a contained area with limited access of air, where the air cannot circulate freely enough. Both the inflow and outflow of air should not be restricted in any respect. In the working area around the heat pump, as indicated in the figure, no items can be placed. Do not place the pump among bushes and shrubs that could restrict the access of air. Any obstacle to free circulation will reduce the efficiency of heat exchange and can even result in stopping the pump



(b) The equipment shall be installed at a place protected from direct sunlight and other heat sources, where it can intake air from a naturally sun heated space. It is further recommended to erect a light roofing above the pump to protect it from direct sunlight and rain.

(c) Do not place the equipment close to any road where it would come into contact with products of traffic, as any increased dust content in air will cause progressive deterioration of heat exchange efficiency.

(d) The air outlet should not be directed to areas, where the increased circulation of cold air may be bothering (windows, terrace, etc.). The air outlet should not face against the direction of prevailing winds.

(e) The equipment distance from the pool edge shall not be shorter than 3.5 m. It is recommended to install the heat pump at the distance of 7 m from the pool provided that the overall length of interconnecting pipe system will not exceed 30 m. One should consider that the longer the pipe, the greater the heat loss. To get an idea, a 30m long pipe system will show the loss of about 0.6 kW per hour (2000 BTU) for each 5 °C difference between the temperatures of pool water and the ground (provided that the pipe system is buried in dry ground). Such loss represents the increase of 3-5 % in the time of heat pump operation.

(f) The equipment shall be placed on a firm and even surface, such as a concrete slab or steel base and the heat pump housing shall be padded with vibration isolation mounts (rubber silent-blocks) and attached by bolts or screws to the base to reduce noise and extend the heat pump service life

(g) The rear side of the evaporator consists of lamellae made of soft metal and is liable to mechanical damage. Therefore, adequate measures should be taken, and suitable site chosen to have the lamellae protected from damage.

(h) The back wall of the evaporator consists of soft metal fins. This surface can be easily damaged. Therefore, choose a location and take precautions to avoid damage to the slats.

(i) If the device is intended for use in winter, place it in a place protected from snow.

Note: If it is intended to use the heat pump for an indoor pool the supplier should be consulted concerning pump placement and its connection to the pool.

4.2 HEAT PUMP INSTALLATION

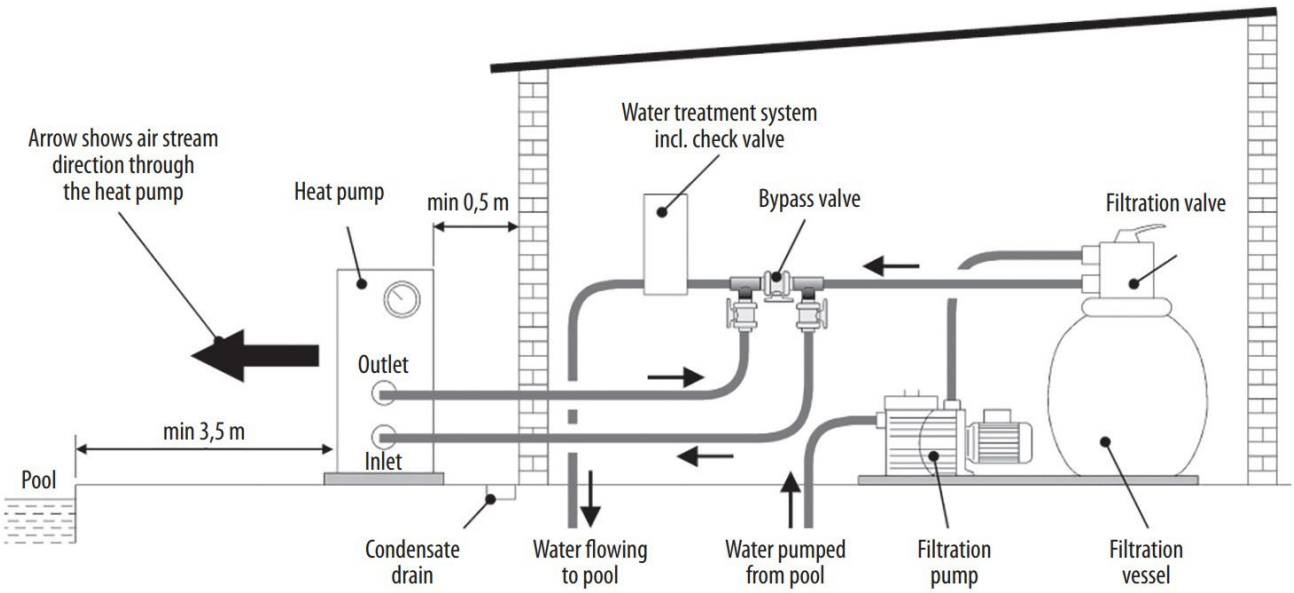
(a) The heat pump should be used in combination with the filtration unit comprising a part of user's installation of the pool. The flow through the heat pump should correspond to its recommended value (see **Table 3.1 Technical Data**) and shall not be more than two times higher. To provide for the proper operation of heat pump the **bypass line** shall be installed. The system consists of three valves that allow setting the flow rate through the pump (see chapter **6.2 Operational State Setting Using Bypass**).

(b) The heat pump is fitted with inlet and outlet fittings with cap nuts and sealing rubber rings for connecting the pump to D50 pipes. For connection to the filtration circuit use a D50 PVC tube, or 50/38 reducing fittings that allow using the ø 38 mm hose. The lower and upper fitting should be used for heat exchanger inlet and outlet, respectively. Before screwing the caps nut on, apply lubricant on the threads. Insert the D50 tube into the sleeve piece of heat exchanger no less than 1 cm and no more than 2 cm. Also consider the use of quick couplers for the heat pump inlet and outlet to make easier its connection to and disconnection from the filtration circuit for draining all water before wintering or commencing maintenance/service works.

(c) The heat pump shall be connected to the pool filtration circuit downstream of the filter and upstream of the water treatment equipment (automatic chlorine dispenser, ozoniser and so on). A typical connection of filtration circuit is shown on the following figure.

Note: In case the automatic chlorine dispenser is used in the filtration circuit, a check valve with titanium spring shall be installed upstream of the dispenser. Failing this, during pump standby time the chlorine concentration will increase in the exchanger of heat pump above its permissible level and cause damage to the exchanger.

Typical connection of the filtering circuit and the heat pump



NOTE: The manufacturer supplies the heat pump only. Other components shown on the figure comprise the parts of appropriate water supply circuit and shall be provided by the heat pump user or installer`s firm.

4.3 ELECTRICAL CONNECTION

4.3.1. CONNECTION TO THE MAINS

IMPORTANT: The heat pump is supplied without a power supply cable. Socket installation shall meet the requirements of the IEC 60364 standard, including adequate protection and installation of a residual-current circuit breaker (RCCB) of the actuating current not exceeding 30 mA.

The use of a double socket with common switching (by a switch or a timer) is recommended.
The heat pump ON/OFF switching is described in chapters **5** and **6**.

4.3.2. PERMANENT ELECTRICAL CONNECTION

IMPORTANT: In case you decide to connect your heat pump permanently it will mean an intervention into its wiring that shall be carried out only by a specialist of appropriate technical qualification and the installation shall meet the following requirements:

(a) The heat pump together with the power supply for the pump of filtration unit shall be connected via a separate circuit breaker and switch, or, possibly, a timer for its regular starting. The supply cable shall be of adequate size (the cable of 3x 2.5 mm^2 cross section is recommended) and provided with a residual-current circuit breaker (RCD) of the actuating current not exceeding 30 mA. The parameters of power network (voltage & frequency) shall comply with the equipment ones.

(b) The electrical connection shall be carried out by a duly qualified technician in compliance with applicable IEC regulations and standards.

(c) The pump wiring shall be properly grounded. The impedance of grounding circuit shall meet applicable IEC regulations and standards.

(d) The power and control cables shall be wired and laid in the simplest and easy to understand way, without any useless crossing.

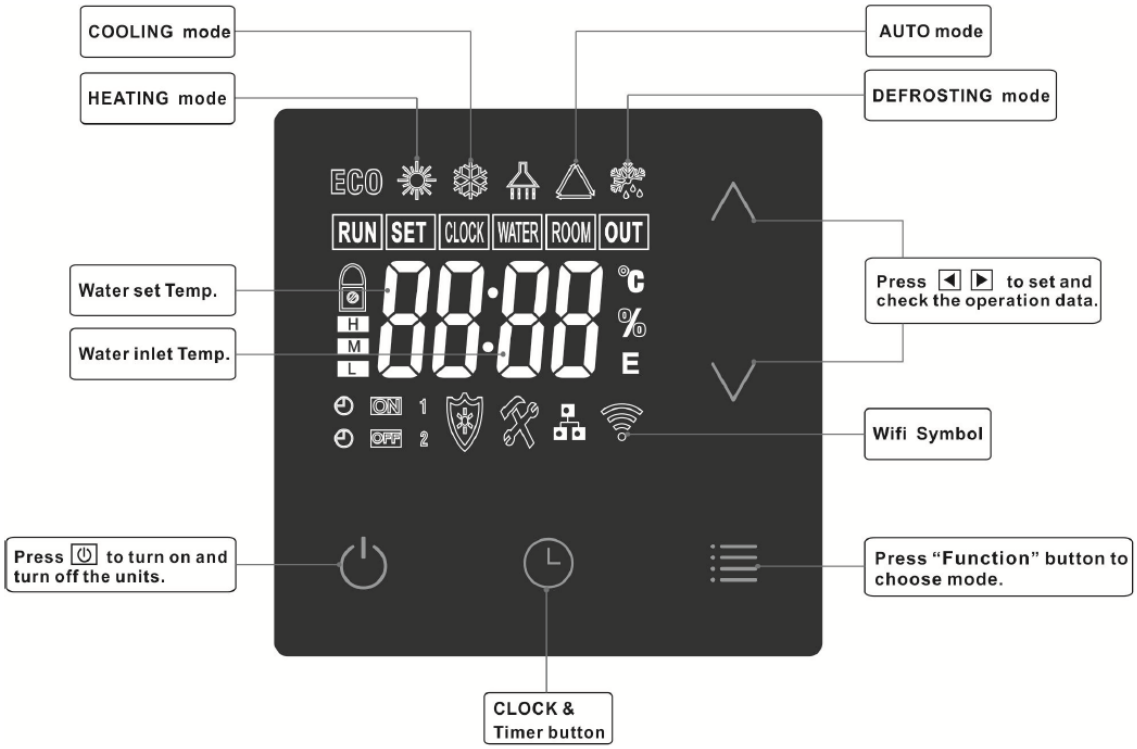
(e) Before putting it into operation, the wiring system should be carefully checked and measured with the view to eliminating any erroneous connections.

(f) The following table gives the data of recommended protection:

Heat pump model		BP-50HS-A	BP-85HS-A	BP-100HS-A BP-120HS-A	BP-140HS-A
RCD parameters:	Rated current	10 A /C	16 A/C	20 A/C	30 A/C
	Actuating current	30 mA	30 mA	30 mA	30 mA
Circuit breaker value:		10 A /C	16 A/C	20 A/C	30 A/C

5.0 CONTROL UNIT

5.1 FUNCTION OF CONTROL UNIT WITH A LED PANEL



5.2 KEYS FUNCTION

Key	Function
	Press for 3s to turn the device on or off. A short press is used to return to the basic display when checking or setting parameters, time and timer.
	A short press is used to change the operating mode. When setting and checking operating parameters, it is used to select and confirm changes in settings.
	In working mode, it is used to set the target water temperature. Used for browsing and setting parameters.
	Used to set the time and timer and to turn the timer on and off.

5.2.1 Setting the Target Temperature

In working mode, press the  or  button to set the new target temperature.

5.2.2 Control Panel Locking

After 60 seconds of inactivity, the control panel is automatically locked (the lock symbol appears on the display).

To unlock, press and hold the button  for 3s.

5.3 OPERATIONAL PARAMETER SETTING AND CHECKING

- Pressing the buttons  and  at the same time turns on the setting interface.
- Use the buttons  to scroll through the list of parameters. Press the  button to select the appropriate parameter (it will flash on the display) and use the  and  buttons to set its value.
- Press  to confirm the setting and return to the next level.
- To exit the mode, briefly press the  button. If no button is pressed for approx. 20 seconds, the changes are automatically saved and the display switches to the standard display.

No.	Meaning	Range	Setting (yes/no)	Factory setting
C0	Target temperature in the heating mode	15 ~ 40 °C	yes	26 °C
C1	Adjustment of thermostat sensitivity (difference between switch-out and switch-on temperatures)	1 ~ 10 °C	yes	1 °C
C2	Automatic restart after power outage	0/1 0(no) 1(yes)	yes	1
C3	Temperature protection at compressor outlet	30 ~ 120 °C	yes	100 °C
C7	Target temperature in the cooling mode	7 ~ 30 °C	yes	23 °C
C8	Adjustment of thermostat sensitivity (difference between switch-out and switch-on temperatures)	1 ~ 10 °C	yes	1 °C
C12	Protection from low ambient temperature	-25 ~ 20 °C	yes	-7 °C
C13	Protection from high ambient temperature	35 ~ 60 °C	yes	42 °C
C15	Target temperature in the automatic mode	7 ~ 40 °C	yes	26 °C
H0	Interval of checks of frosting	1 ~ 240 min.	yes	45 min
H1	Defrosting time	1 ~ 25 min.	yes	8 min
H2	Defrosting stop temperature	1 ~ 25 °C	yes	12 °C
H3	Defrosting start temperature	-20 °C ~ 20 °C	yes	-3 °C
H4	Temperature difference between evaporator inlet temperature and ambient temperature (start of defrost mode)	0 °C ~ 15 °C	yes	5 °C
H5	Ambient temperature (start of defrost mode)	0 °C ~ 20 °C	yes	20 °C
P0	Filtration pump mode	0/1	NO	0
P1	Time interval of filter pump operation after compressor operation	30 ~ 120 min	yes	15 min

Note: The factory setting may differ from the data shown in the table.

Note: It is recommended not to change any setting marked with the word NO.

Notes on the table of operating parameters:

- **Parameter H0 - H5** – automatic defrost setting

  If the temperature sensor detects a temperature lower than the temperature set by parameter H3 on the evaporator, which it checks at regular intervals given by parameter H0, the device switches to defrost mode and ends this mode after reaching one of the values set in parameters H1 and H2. Defrost will not start if the difference between the evaporator inlet temperature and the ambient temperature is less than that set by parameter H4 or the ambient temperature is higher than that set by parameter H5.

- **Parameter C3** - compressor outlet temperature.

  The temperature sensor switches off the device when the set temperature is reached. We recommend that you do not change the factory settings.

- **Parameter C2** - automatic restart after power failure

  At setting 1, the device automatically restarts after a power failure. If the parameter is set to 0, the device waits for operator intervention. We recommend that you do not change the factory settings.

- **Parameter C12-C14** - protection against low / high ambient temperature

  The temperature sensor switches off the device when the set temperature is reached by parameter C12 or C13. Parameter C14 determines when the device will be restarted after raising / lowering the ambient temperature.

Checking operating conditions:

Press and hold the  button for 3 seconds and check the operating status of the heat pump

No.	Importance	Range	Display
d0	Ambient temperature	-20 °C ~ 80 °C	Measured value
d1	Inlet water temperature	-20 °C ~ 80 °C	Measured value
d2	Refrigerant temperature at the compressor outlet	-20 °C ~ 140 °C	Measured value
d3	Refrigerant inlet temperature to the evaporator	-20 °C ~ 80 °C	Measured value
d4	Compressor status	ON/OFF	Measured value
d5	Fan condition	ON/OFF	Measured value
d6	4-way valve condition	ON/OFF	Measured value
d7	High pressure sensor status	ON/OFF	Measured value
d8	Low pressure sensor status	ON/OFF	Measured value
d9	Flow sensor status	ON/OFF	Measured value

Return to factory settings

To return to the factory settings, simultaneously press and hold  in standby mode until a confirmation tone sounds

5.4 CHANGE OF OPERATING MODE

The heat pump has 3 operating modes - heating, cooling, and automatic mode.

If you want to change the operating mode, briefly press the  button. The operating mode changes, the corresponding signal changes on the display, and if the compressor is running, it stops. The compressor will start again after the safety time delay has elapsed (if the conditions for operation in the newly selected mode are met).

5.5 TIME AND TIMER SETTING (CLOCK, TIMER ON, TIMER OFF)

5.5.1 TIME SETTING

Press and hold the  for about 3 seconds, the time on the display will start flashing. Press briefly and the hour will flash. Use the  and  buttons to set the hour. Briefly press the  again and use  and  to set the minutes. Press the  button to confirm the setting. To check the set time, press and hold the  button. Press the  to end the check.

5.5.2 TIMER SETTING

Note: Before setting the timer, you must first set the time.

Note: 2 work cycles can be set, which will be repeated regularly every day.

You set the on and off time setting of the duty cycle in the same way as when setting the time.

To make the setting, briefly press the  button. A screen with a flashing cycle number is displayed, which can be changed using the  and  buttons. To select the cycle number, briefly press the  button. Then set the ON time and the OFF time one after the other, finally confirm with the  button.

To activate and deactivate the timer, press and hold the  button in the duty cycle number selection screen, for each of the two cycles separately.

Note: If you set the same time ON and OFF, the timer will not be used.

5.6 Using the Boost CORE app

To control the heat pump you can use your smartphone and the **Boost CORE app.** which you can download for free from the Apple Store (for iOS) or the Google Store (for Android).

Note: The WiFi module may not be included with the product. Information on this can be found in the product specification.

6.0 EQUIPMENT APPLICATION AND OPERATION

6.1 OPERATING INSTRUCTIONS

IMPORTANT:

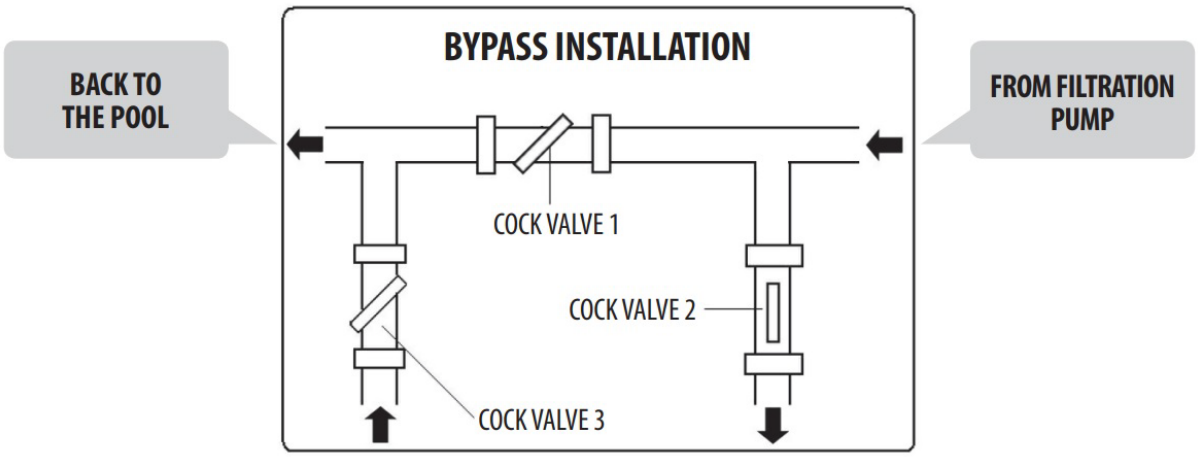
- **In order the heat pump to heat the pool the filtration pump has to operate, and water must flow through the heat exchanger.**
- **Never switch the heat pump on if dry and the filtration system is not operating.**
- **Never cover the heat pump, as fresh ambient air must fl ow through it.**
- **Protect the heat pump from frost. Before winter season drain all water from the filtration system and the heat pump and store them for winter according to relevant instructions.**

6.2 ADJUSTMENT OF OPERATING STATE USING BYPASS

In case a bypass line comprises a part of filtration circuit (it is not delivered as a part of heat pump supply), it may be used for setting the optimum operation of heat pump after putting the latter in operation.

Bypass Use

The bypass line consists of three cock valves installed according to the figure below. On the right water comes from the filtration pump, while on the left it flows through the return line back to the pool.



Close the cock valve 1 completely and open the cock VALVES 2 AND 3 on the inlet and outlet lines of the heat pump, respectively. At these conditions there is the maximum flow through the heat pump. Put the heat pump into operation in the heating mode. Wait until the value of pressure read on the pressure gauge stabilizes. The correct pressure setting should be within the range of 21 - 35 kg/cm^2 (bar).

If the pressure stabilizes below the value of 21 kg/cm^2, the cock valve 1 should be open a bit and the cock valve 3 closed a bit to reduce the flow rate through the heat pump. If the pressure stabilizes above the value of 35 kg/cm^2 the flow through the filtration circuit is insufficient and measures should be taken to increase it.

Routine adjustments of the three bypass valves:

COCK VALVE 1: Closed a bit so that the heat pump pressure gauge shows a pressure within the range from 21 to 35 kg/cm^2 (bar).

COCK VALVE 2: Open.

COCK VALVE 3: Half closed.

This completes the adjustment of the bypass valve, in principle there is no reason to adjust it during the season. See also chapter **6.5 Possible problems due to external conditions.**

6.3 WATER CONDENSATION

Lower temperatures of the evaporator during the heat pump operation are the cause of air moisture condensation on evaporator lamellae and condensate formation. If the relative air humidity is very high, as much as a few liters per hour can be produced. This water will flow down over the lamellae into the space of cabinet bottom and drains away through a plastic fitting designed for connection to a 3/4“ PVC draining hose directing the condensate to a suitable sewer system. It is very simple to mix up the condensed water with water leaked from heat pump inside. There are two simple methods how one can find whether the liquid is the condensate or not:

1. Switch the equipment off and leave the pool pump in operation only. If the water stops flowing out, the condensate is concerned.

2. Make the test for the presence of chlorine in the water in question (if chlorine is used for pool water treatment) - condensate should not contain chlorine.

Note: Moisture that can be present near the equipment results from water vapor condensation and is quite OK.

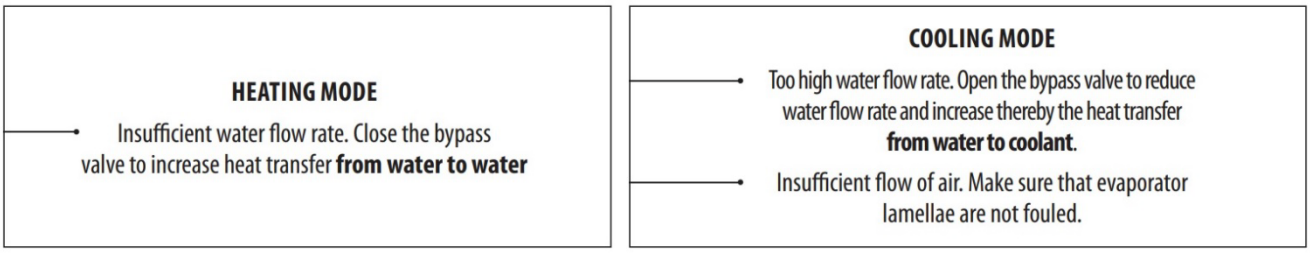
6.4 AUTOMATIC DEFROSTING OF EVAPORATOR

The evaporator must be defrosted in the heating mode only, as the evaporator lamellae can get iced up by condensate if ambient temperatures are too low. The process runs automatically according to parameters set for the defrosting mode, see chapter 5.3 Operating Parameter Setting and Checking.

6.5 POSSIBLE PROBLEMS DUE TO EXTERNAL CONDITIONS

Under certain external conditions the exchange of heat may be insufficient between coolant and water on one side and coolant and air on the other side. It results in a pressure increase in the cooling circuit and increased power consumption of the compressor. The temperature sensor fixed at compressor discharge line and the circuit breaker in the supply line will protect the equipment from such extreme conditions. The display will show the error message E3.

This state is due to the following causes:

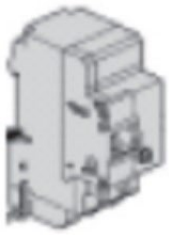
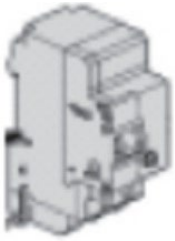
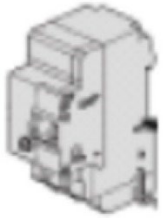


Note: This error message will be most possibly displayed when the temperatures both of pool water and of ambient air are high.

6.6 REMARKS ON HEAT PUMP OPERATION

- **Heat pump efficiency will increase with the increasing temperature of ambient air.**
- **The achievement of required pool water temperature may take a few days. This time is quite normal and depends particularly on climatic conditions, the volume of pool water, size of water surface area, time of heating pump operation and pool heat loss (caused by evaporation, heat transfer through pool walls, radiation, etc.). Failing to take measures to limit the heat loss, it will not be economical, or even possible, to maintain any higher temperature of pool water.**
- **To limit the heat loss at the time in which the pool is out of use, a cover or solar blanket can be used.**
- **The temperature of pool water should not exceed 30 °C. Warm water has not any refreshing effect and, moreover, creates favorable conditions for microbial growth (of algae, etc.). In addition, certain pool components may have temperature limits, for instance the foils of foil pools can get soft and lose their firm shape. Do not set any higher temperature than 30 °C on your thermostat.**

6.7 SIMPLIFIED DESCRIPTION OF CONTROL

Activity	Remote device or control key of heat pump		Display	Heat pump response
Heat pump		Connect the supply cable plug in the mains socket or switch ON the circuit breaker of HP supply circuit (in case of fixed connection)		Shows the current water temperature.
Switching ON the pool water circulation in the pipe system		Switch the filtration pump ON	dtto	
HP power ON		Press the key for 3 sec		The HP will start in a time interval of up to 3 minutes.
Switch between operating modes		Press the key		The HP will stop for 3 – 4 min, its mode changes and the HP starts in the newly set mode.
Setting pool water temperature	 	Selectable within the range of 7°C to 40 °C		The HP heats or cools the water until the desired temperature is reached.
Stop		Press the key		The HP stops immediately and stays in the standby state.
Switching OFF		Pull out the supply cable plug from the mains socket or switch OFF the circuit breaker of HP supply circuit (in case of fixed connection.		The heat pump gets completely switched OFF.

7.0 MAINTENANCE AND INSPECTION

7.1 MAINTENANCE

CAUTION: The equipment includes live electrical components. Only an electrician of adequate technical qualification may open the housing.
There is a risk of electrical accident!

IMPORTANT: Before any attempt to make intervention into the equipment make sure it is fully disconnected from its power supply.

(a) Clean regularly both the pool and the filtration unit to protect the equipment from damage due to fouled or clogged filter.

(b) Regularly inspect the power supply system, mainly the condition of the supply cable. In case the equipment begins to show operational irregularities, switch it off immediately and contact an authorized service center.

(c) Regularly check the working area of heat pump (see the figure in chapter 4.1 Site Selection) and keep it clean and free of debris, dead leaves, or snow.

(d) If the heat pump is not used, disconnect it from the mains, drain it and cover it with an impermeable tarpaulin or PE foil.

(e) Wash the heat pump exterior with clean water and an ordinary kitchenware cleaning agent.

(f) Using a soft brush clean regularly the outer surfaces of evaporator and keep it free of any stuck dirt. The lamellae can be carefully cleaned using a flat, not sharp tool. The guarantee shall not apply to any mechanical damage to the lamellae.

(g) Regularly check the tightness of screws (bolts) anchoring the equipment to the support and the screws fixing the covers. Check the supply cable for damage and wear. Clean any rusted parts with a wire brush and treat them with corrosion resistant coating.

(h) Regularly remove the top cover and clean the heat pump from dirt.

(i) Any repair shall be carried out by a duly qualified technician.

(j) Any maintenance work of the cooling system shall be carried out by a duly qualified technician.

7.2 WINTERING

(a) Disconnect the heat pump from the mains.

(b) Close the bypass cock valves nos. 2 and 3 (see the figure in chapter **6.2 Adjustment of Operating State Using Bypass**).

(c) Drain all water from the heat pump by disconnecting the pipe system from both connections of the filtration circuit (**THERE IS A RISK OF FREEZING**).

(d) Suck all residual water from the evaporator to leave it dry (THERE IS A RISK OF FREEZING).

(e) Reconnect the filtration circuit (do not tighten its connections) to protect the heat pump against ingress of dirt or water.

IMPORTANT: Correct wintering is very important. No water can be left in the heat exchanger. The guarantee shall not apply to any exchanger damage caused by frost.

7.3 ERROR MESSAGES AND TROUBLESHOOTING

Displayed error message and related equipment failure		Component	Possible cause	Putting it right Other possible causes and solutions
E0	Compressor and blower have stopped.	Ambient air temperature sensor	Ambient temperature is lower than set.	
E1	Compressor and blower have stopped	Water temperature sensor	Sensor signal wire or supply wire is broken, or the sensor is defective.	Check the wires and connections, replace defective ones. If the failure persists, replace the sensor.
E2	Compressor and blower have stopped.	Ambient air temperature sensor	Sensor signal wire or supply wire is broken, or the sensor is defective	Check the wires and connections, replace defective ones. If the failure persists, replace the sensor.
E3	Compressor and blower have stopped.	Temperature sensor at compressor discharge	The temperature more than 105 °C on the compressor discharge was detected more than three times within the period of 24 hours.	The problem that may be caused by external conditions. Coolant leakage. Clogged capillary tube.
E4	Compressor and blower have stopped	Temperature sensor at compressor discharge	Sensor signal wire or supply wire is broken, or the sensor is defective	Check the wires and connections, replace defective ones. If the failure persists, replace the sensor.
E5	Compressor and after 30 s blower have stopped	“HEATING COIL PIPE” sensor	Sensor open or short-circuited	Check or replace the sensor
EL / EH	Compressor and blower have stopped.	Maximum / Minimum pressure switch	Low water flow rate.	Clean the filtration unit and open fully the bypass.
			Protection is disconnected or defective	1)
			Surplus coolant in the system	1)
			Lack of coolant in the system.	1)
			Coolant leakage from the system.	1)
E6	Compressor and blower have stopped.	Flow rate sensor	Water flow rate is low. Flow rate sensor signal wire or supply wire is broken, or the flow rate sensor is defective.	Clean the filtration unit and open fully the bypass. Check connections and wires, replace them or replace the control unit.
E9	Control panel does not communicate	Communication error	A problem of equipment communication with the control unit.	Check the connections of signal cable.

Note: 1) A specialized technician of refrigeration equipment shall be contacted to check the system.

IMPORTANT: In case of a necessary intervention into electrical wiring an authorized service shall be contacted.

7.4 WARRANTY CONDITIONS, SERVICE AND SPARE PARTS

The warranty period is listed in the sales document, is at least 24 months and begins when the product is taken over; This must be proven with the original sales receipt. The guarantee covers defects that the product has when it is taken over as well as verifiable manufacturing defects that occur during the guarantee period. The warranty does not cover normal wear and tear of the product and its parts, as well as damage caused by failure to follow the operating instructions, neglect of maintenance, improper use, intentional damage, improper intervention, modification or repair using non-original parts, external influences (oxidation, corrosion, flooding, etc.). Repairs during the warranty period may only be carried out by authorized workshops or the manufacturer's service workshop.

The service and spare parts are provided by your dealer.