ES ENERGY SAVE

Installation manual

ES Air / Water R32 monobloc heat pumps
AW-R32-M

AWC6/19-R32-M
AWT6/12-R32-M
AWST6/15-R32-M

Dear Customer,

Thank you for using our products. By reading these installation manuals, you will maximize the experience and get an environmentally friendly heating system. Please follow the instructions as written in this manual. Please note that the heat pump must be registered to the ES system.

Content

1 Before use 5
1.1 Warnings 5
1.2 Warranty 7

2 Heat pump dimensions 8
2.1 Indoor unit 8
2.2 Outdoor unit 9

3 Included in the package 11
3.1 AWC6/19-R32-M 11
3.2 AWT6/19-R32-M 11
3.3 AWST6/15-R32-M 12

4 Installation 12
4.1 Hydraulic system requirements 12
4.2 Indoor unit installation 13
4.3 Outdoor unit installation 14
4.4 Indoor and outdoor unit installation 15
4.5 Buffer tank 16
4.6 DHW production specifications 17
4.7 AWT-R32-M (6-12 kW) hydraulic connections 17
4.8 Visualization of the AWT6/12-R32-M hydraulic connections 18
4.9 Thermostatic mixing valve for domestic hot water 18
4.10 AWST-R32-M (6-15 kW) hydraulic connections 19
4.11 Visualization of the AWST-R32-M hydraulic connections 20
4.12 Temperature sensors 21
4.13 Mixing valve for the heating / cooling circuit 22

5 Cable connections 24
5.1 Indoor unit 24
5.2 Outdoor unit 29

6 Controller 31
6.1 Main screen 32
6.2 Main menu settings 33
6.3 Submenus 37
6.4 Installer access 38

7 Menu settings 39
7.1 ZONE 1 39
7.2 ZONE 2 43
7.3 DHW 45
7.4 DHW STORAGE 47
7.5 NIGHT 49
7.6 LEGIONELLA 50
7.7 VACATION 51
7.8 USER 52

7.9 WORKING MODE 54
7.10 BACK-UP 56
7.11 WATER PUMP SETTINGS 59
7.12 FLOOR CURING 62
7.13 ELECTRIC LOCK 64
7.14 OTHER OPTIONS 66
7.15 REAL TIME DATA 70
8 INFO PAGE 71
9 ERROR CODES 73
9.1 ERROR CODES SHOWN ON THE DISPLAY 73
9.2 ERROR CODE MENU 73
Internet connection 74
9.3 Connecting directly to the Router 74
10 Emergency switch AWT6/12-R32-M 75
11 Digital thermostat AWT6/12-R32-M 75
12 Analog back-up AWST6/15-R32-M 76
12.1 Digital thermostat 77
13 Anti-freeze protection – all units 79
14 Modbus compatibility 79
14.1 ModBus protocol 80
15 ERROR CODE LIST 86
16 Wiring diagram 92
16.1 Indoor unit 92
16.2 Outdoor unit 95
16.3 Dip switch default settings AW15/19-R32-M 98
17 Working range 99
17.1 Heating mode working range 99
17.2 Cooling mode working range 100
18 Technical data 100
18.1 AWC-R32-M; 6 – 12 kW 100
18.2 AWC-R32-M; 15 – 19 kW 102
18.3 AWT-R32-M; 6 – 12 kW 104
18.4 AWST-R32-M; 6-15 kW 106

1 Before use

Thank you for purchasing our product. We ask that you carefully read the manual and to take into account all of the instructions regarding device operation in order to prevent possible damage to the device or personnel. Technical data can be changed without notice because of product upgrades. Please look at the rating label on the device for latest technical specifications

DISCLAIMER

Proper adherence to the directions provided herein is vital for both the smooth operation of this system, as well as for your safety and the safety of those around you. ES Heat Pumps AB. is not responsible or liable for any losses incurred due to misuse or mishandling of this product, which includes, but is not limited to:

Purchasing, installing, and/or operating this product with the intention of using it outside of its established, technical purpose.

Carrying out improper work upon the unit, or any of its components, that has not been given explicit, prior consent in the form of writing.

Installation attempts of this system by anyone other than a properly trained and licensed professional.

Negligence of properly-worn personal protection (safety glasses, gloves, etc.) while performing installation, maintenance, or servicing of this product.

The operation of this system during ambient temperatures which are below or beyond the temperature range intended.

SAFETY

If unsure of what installation procedures to use, please contact your local distributor for information and/or advisement. Any accessories used with this product must be official only. Any electrical work must be carried out by certified electricians only. The manufacturer is not responsible for any Iterations or modifications that are made without explicit, written approval. The design of this unit complies and conforms to all necessary and relevant safety regulations, and is otherwise safe to operate for its intended use.

1.1 Warnings

Warnings in this manual address most important topics for proper and safe operation of the heat pump, for this reason follow them directly. For further questions contact your installer or technical support from Energy Save. Contact details are on the last page of this document.

WARNING

Before first use, read this manual.

WARNING

This unit can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction

concerning use of the unit in a safe way and understand the hazards involved. Children should not play with the unit. Cleaning and user maintenance shall not be made by children without supervision.

WARNING

Installation, dismantlement and maintenance must be carried out by qualified personnel. Any change to structure of the unit is prohibited since they can lead to personal injury or damage to the unit.

WARNING

Water or any other kind of fluid should not come in contact with the unit, it may cause electric shock or destruction of the unit.

WARNING

To avoid electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, measure the voltage at the terminals of main circuit capacitors or electrical parts before touching. Make sure those voltages are lower than the safe value.

WARNING

Do not touch the grill of the ventilator while the device is operating.

WARNING

Improper installation or attachment of equipment or accessories could result in electric shock, short-circuit, leaks, fire or other damage to the equipment. Be sure only to use accessories provided by Energy Save which are specifically designed for use with the equipment and have them installed by a professional.

WARNING

Power supply to the device must be grounded.

WARNING

For sanitary hot water, please always add a mixture valve before water tap and set it to proper temperature.

WARNING

Do not touch the fins of the coil with bare fingers, it might cause injury.

WARNING

It is mandatory to use a suitable fuse for the heat pump and make sure the power supply to the unit corresponds to the specifications.

WARNING

All electrical connections must be done by a professional and in accordance to the electrical standards.

To ensure both your personal and product safety, note the symbols below and be sure to understand their importance to each of the precautions shown.

	Read the manual carefully before using the unit
	Installation, disassembly, and maintenance of the unit must be carried out by qualified personnel. It is forbidden to make any changes to the structure/construction of the unit. Otherwise, personal or device damage may occur
	Do not touch the fan cover when the fan motor is running
	Water or other form of liquid is strictly forbidden to be poured into/on the product, it may cause electric shock or damage to the product
	This marking indicates that this product should not be disposed of with other household waste, valid throughout the EU. To prevent possible damage to the environment or human health, this product must be recycled responsibly. To return the device, follow local instructions for return and recycling or contact the dealer where the product was purchased

1.2 Warranty

By following the instructions and regulations in this manual and the general installation standards, the units have 3-year warranty. A 5-year compressor warranty is only valued if the unit is registered within 30 days of installation in the ES registration system by using the registration link provided by your ES distributor or see the general link below or use the bardcode to access the registration form.

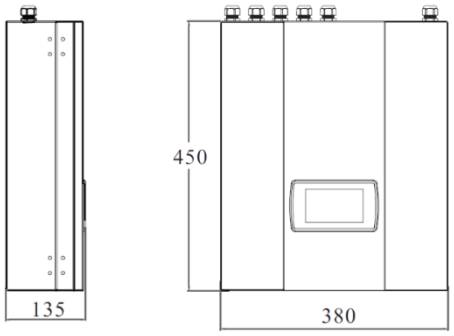
Visit: www.energysave.se/register

or:

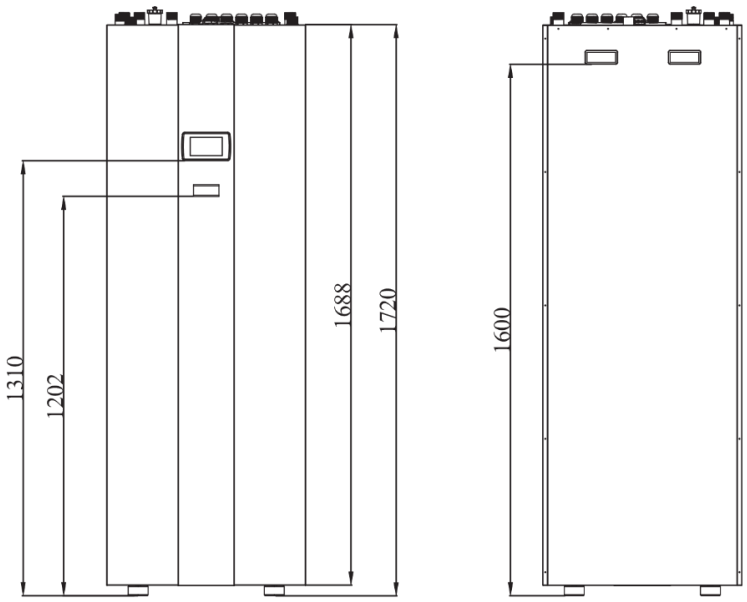
2 Heat pump dimensions

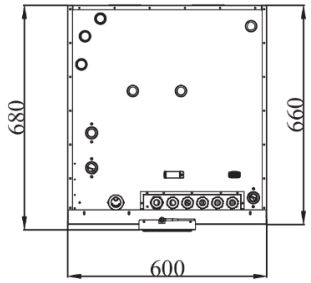
2.1 Indoor unit

AWC6/19-R32-M

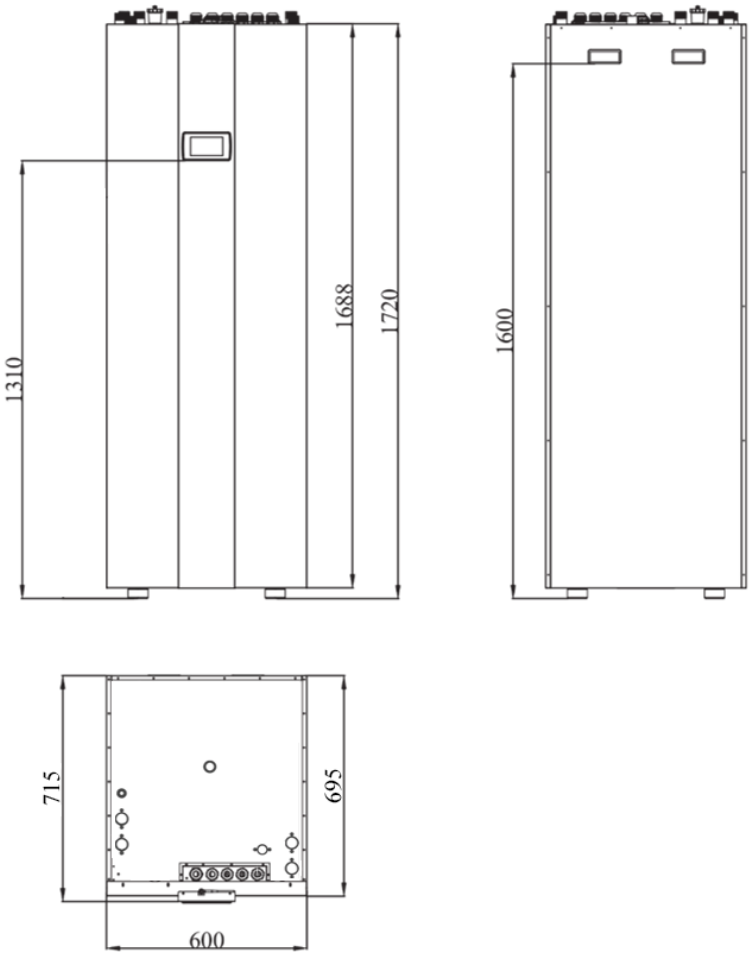


AWT6/12-R32-M



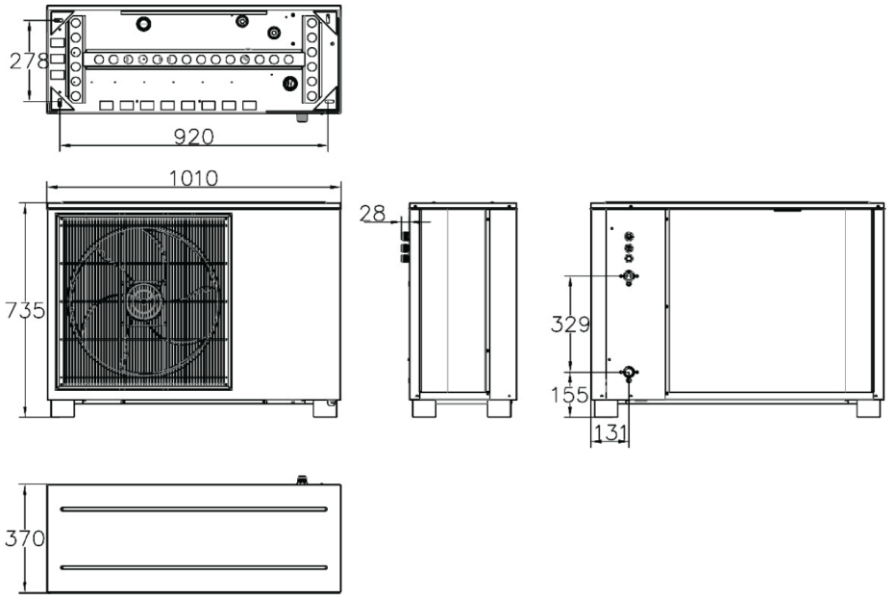


AWST6/15-R32-M

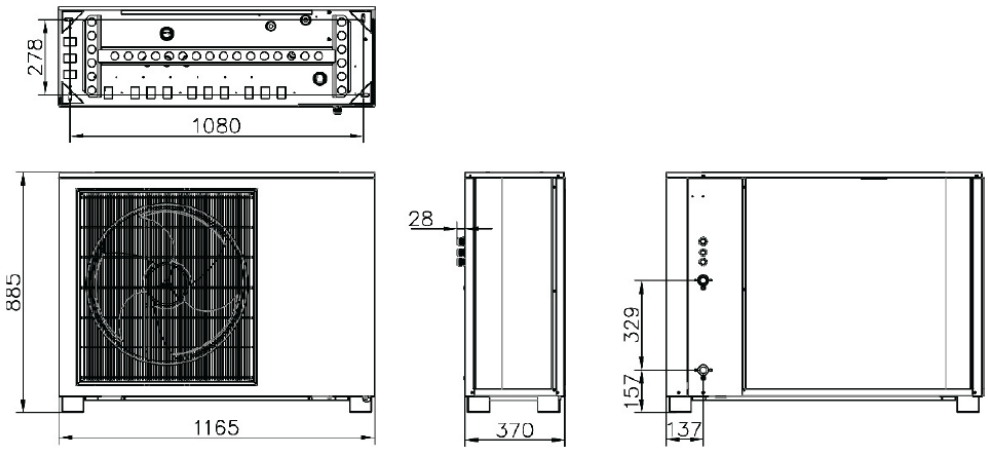


2.2 Outdoor unit

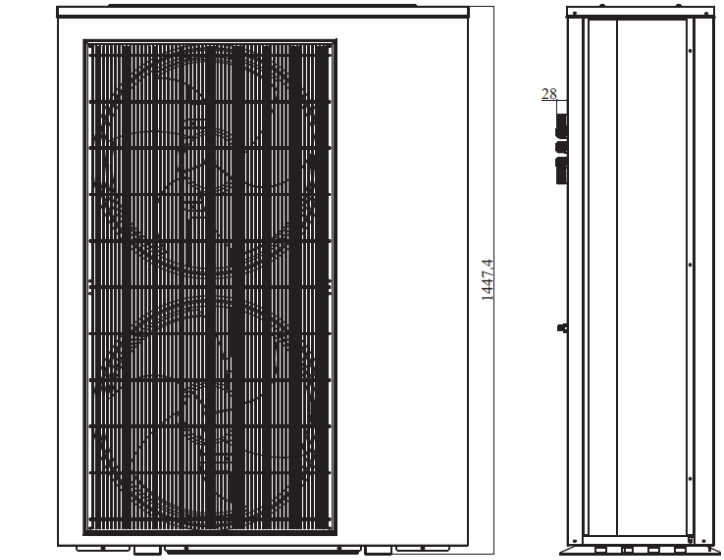
AW6-R32-M

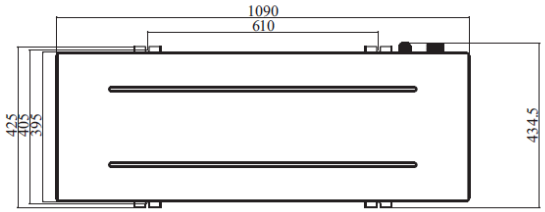


AW9-R32-M
AW12-R32-M



AW15-R32-M
AW19-R32-M





3 Included in the package

3.1 AWC6/19-R32-M

No.:	Description	Quantity
1	Manuals	1 pcs
2	Temperature sensors: TC – Heating / cooling temp. sensor TW – Sanitary hot water temp. sensor TR- Room temperature temp. sensor TV1 – Mixing circuit 1 temp. sensor TV2 – Mixing circuit 2 temp. sensor	1 pcs / each
3	Extension cables for temperature sensors	5 pcs
4	Communication cable (indoor - outdoor unit)	1 pcs
5	Connection cable (indoor – outdoor unit)	1 pcs
6	Connection cable for P0 circulation pump	1 pcs
7	Connection cable for P0 circulation pump PWM signal	1 pcs
8	Wall bracket for indoor unit	1 pcs

3.2 AWT6/19-R32-M

No.:	Description	Quantity
1	Manuals	1 pcs
2	Temperature sensors: TC – Heating / cooling temp. sensor TR- Room temperature temp. sensor TV1 – Mixing circuit 1 temp. sensor TV2 – Mixing circuit 2 temp. sensor	1 pcs / each
3	Extension cables for temperature sensors	4 pcs
4	Communication cable (indoor - outdoor unit)	1 pcs
5	Connection cable (indoor – outdoor unit)	1 pcs
6	Connection cable for P0 circulation pump	1 pcs
7	Connection cable for P0 circulation pump PWM signal	1 pcs

8	Mixing valve for sanitary hot water	1 pcs
9	Piping for sanitary hot water mixing valve	2 pcs
10	Safety valve kit (manometer, automatic air purging valve and 3,0 bar safety valve)	1 pcs

3.3 AWST6/15-R32-M

No.:	Description	Quantity
1	Manuals	1 pcs
2	Temperature sensors: TC – Heating / cooling temp. sensor TR- Room temperature temp. sensor TV1 – Mixing circuit 1 temp. sensor TV2 – Mixing circuit 2 temp. sensor	1 pcs / each
3	Extension cables for temperature sensors	4 pcs
4	Communication cable (indoor - outdoor unit)	1 pcs
5	Connection cable (indoor – outdoor unit)	1 pcs
6	Connection cable for P0 circulation pump	1 pcs
7	Connection cable for P0 circulation pump PWM signal	1 pcs
8	Automatic air purging valve	1 pcs

4 Installation

4.1 Hydraulic system requirements

- Magnetic filter and dirt separator filter must be installed.
- The water quality used for the system must comply with local regulations or following specifications:
  - Consistency of chloridion ≤ 300 ppm (300mg/L)
  - PH value: 6-8
  - No Ammonia
- Heating system pressure must be between 1 - 1.8 bar.
- Safety valve (3 bar) must be installed in the heating system.
- Expansion vessels must be installed according to heating system.
- Heat pump must be installed into closed loop heating system.
- Installation maintenance must be carried out by qualified personnel.

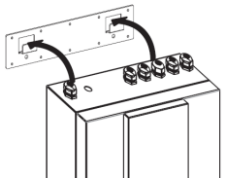
- If the heat pump is being installed into an existing hydraulic system, the system must be cleaned according to standard procedures before installation.
- Buffer tank must be used for systems as specified in chapter 3.5
- DHW production specifications as specified in chapter 3.6

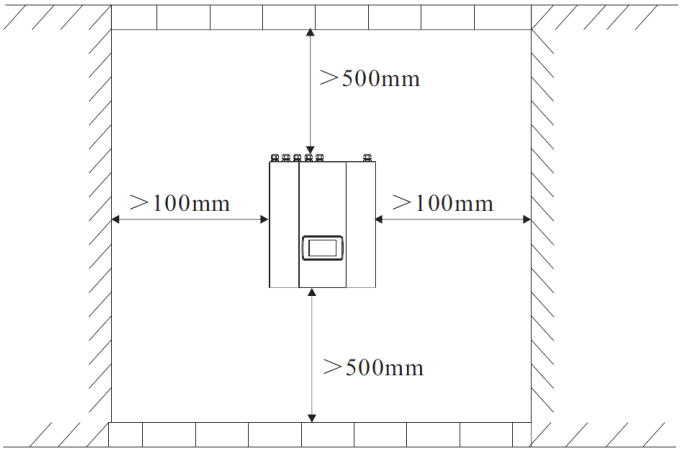
4.2 Indoor unit installation

- The indoor unit should be installed indoors.
- The indoor unit shall be placed in a dry and well-ventilated environment.
- It is forbidden to install the indoor unit in an environment where there exist volatile, corrosive or flammable liquids or gases.
- There should be enough space left around the indoor unit for further maintenance.

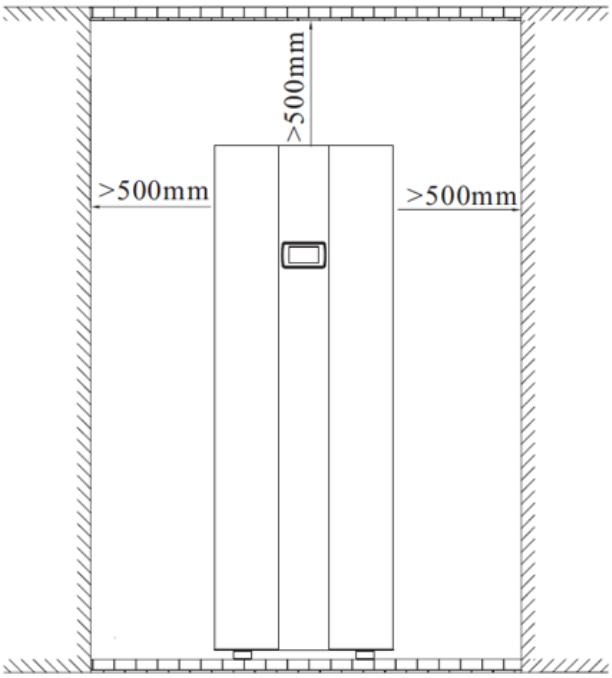
AWC6/19-R32-M

Equipped with a mounting bracket.





AWT6/12-R32-M
AWST6/15-R32-M

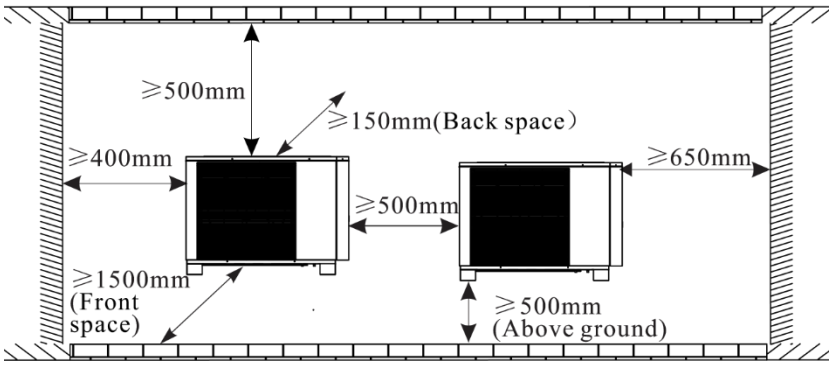


4.3 Outdoor unit installation

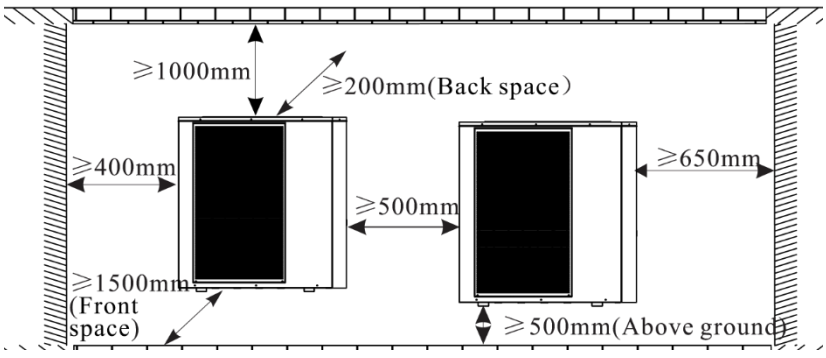
- The outdoor unit can be located in an open space, corridor, balcony, roof or hanged on the wall.
- The outdoor unit shall be placed in dry and well-ventilated environment; If the outdoor unit is installed in a humid environment, electronic components may get corroded or short circuited.
- Outdoor unit mustn't be installed in an environment where there exist volatile, corrosive or flammable liquids or gasses.
- Do not install outdoor unit close to bedroom or living room because it produces some noise when it's operating.
- It is recommended to install an awning above the outdoor unit, to protect the snow from clogging in the air inlet and outlet to ensure normal operation.
- Ensure there is drainage system around the location to drain the condensate water under defrost mode.
- Do not install the outdoor unit near an exhaust port of the kitchen to avoid oil smoke entering into outdoor unit heat exchanger.
- Do not install the indoor and outdoor unit in damp locations. The units should be free from corrosive and moisture surrounding otherwise the lifetime of the unit might be shortened.
- Ensure enough space around the outdoor unit for better ventilation and maintenance.

Please refer to the illustration below.

Single fan units



Double fan units

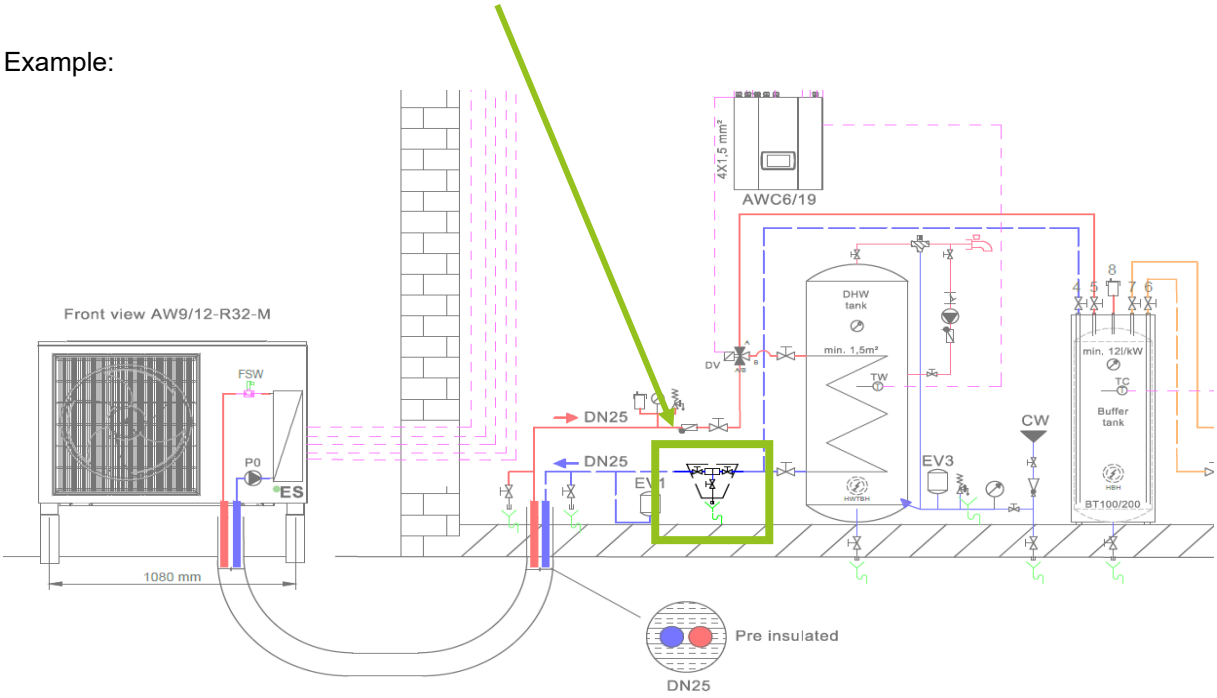


4.4 Indoor and outdoor unit installation

Filter for hydraulic system

On the return line of the system a dirt separator and a magnetic filter must be installed.

Example:



Piping distance Indoor-Outdoor

ES heat pump model	Piping dimensions	Buffer tank in system	Number of elbows	Max piping distance
AW6-R32-M **AWC6/19-R32-M** **AWT6/12-R32-M** **AWST6/15-R32-M**	DN25 / DN32	Yes	6	20 m / 30 m
	DN25 / DN32	No	6	10 m / 15 m
AW9-R32-M **AWC6/19-R32-M** **AWT6/12-R32-M** **AWST6/15-R32-M**	DN25 / DN32	Yes	6	20 m / 30 m
	DN25 / DN32	No	6	10 m / 15 m
AW12-R32-M **AWC6/19-R32-M** **AWT6/12-R32-M** **AWST6/15-R32-M**	DN25 / DN32	Yes	6	20 m / 30 m
	DN25 / DN32	No	6	10 m / 15 m
AW15-R32-M **AWC6/19-R32-M** **AWST6/15-R32-M**	DN32 / DN40	Yes	6	20 m / 30 m
	DN32 / DN40	No	6	10 m / 15 m
AW19-R32-M **AWC6/19-R32-M**	DN32 / DN40	Yes	6	20 m / 30 m
	DN32 / DN40	No	6	10 m / 15 m

NOTE

Hydraulic schemes provided by the ES distributor or ES personnel contain official requirements for the installation of the ES heat pump into a hydraulic system. Those must be followed for a save working of the ES heat pumps. Main schemes are available on the official Energy Save web page https://energysave.se/downloads/.

4.5 Buffer tank

Minimum volume of the buffer tank is 12 Liter per kW of heating capacity. The calculation is based on the nominal heating capacity of the heat pump at A7/W35.

Required buffer tank sizes based on heat pump model

Model (outdoor unit)	**Minimum buffer tank size**
AW6-R32-M	72 Liter
AW9-R32-M	108 Liter
AW12-R32-M	144 Liter
AW15-R32-M	180 Liter
AW19-R32-M	228 Liter

Buffer tank is mandatory if:

System	**Specification**
Multiple zone regulation	If more then one heat distribution circuits are used.
Radiator system	If radiators are used as the heat distribution system.
Zone valve regulation	If any kind of shot-off valves are used on the heat distribution system. For example: electronic valves on the distribution system of the floor heating system are used, that can be regulated separately form the heat pump controls.
Fan Coils for heating or cooling	If Fan Coils are use for the heat distribution system.

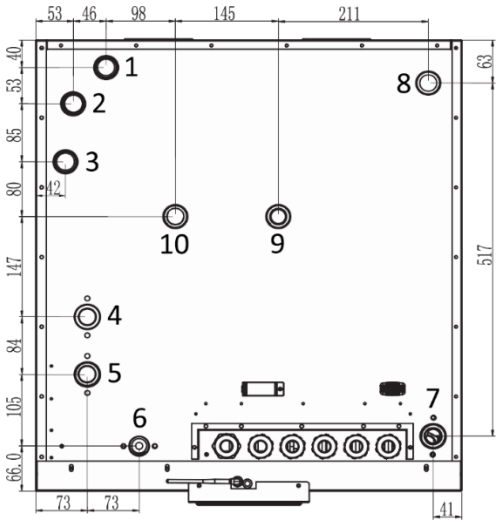
4.6 DHW production specifications

If a DHW tank with coil is used for heating the sanitary water, the coil must have a minimum surface area to insure a normal working of the heat pump.

The coil must have a minimum surface area of 0,125 x nominal heating capacity of the heat pump at A7/W35.

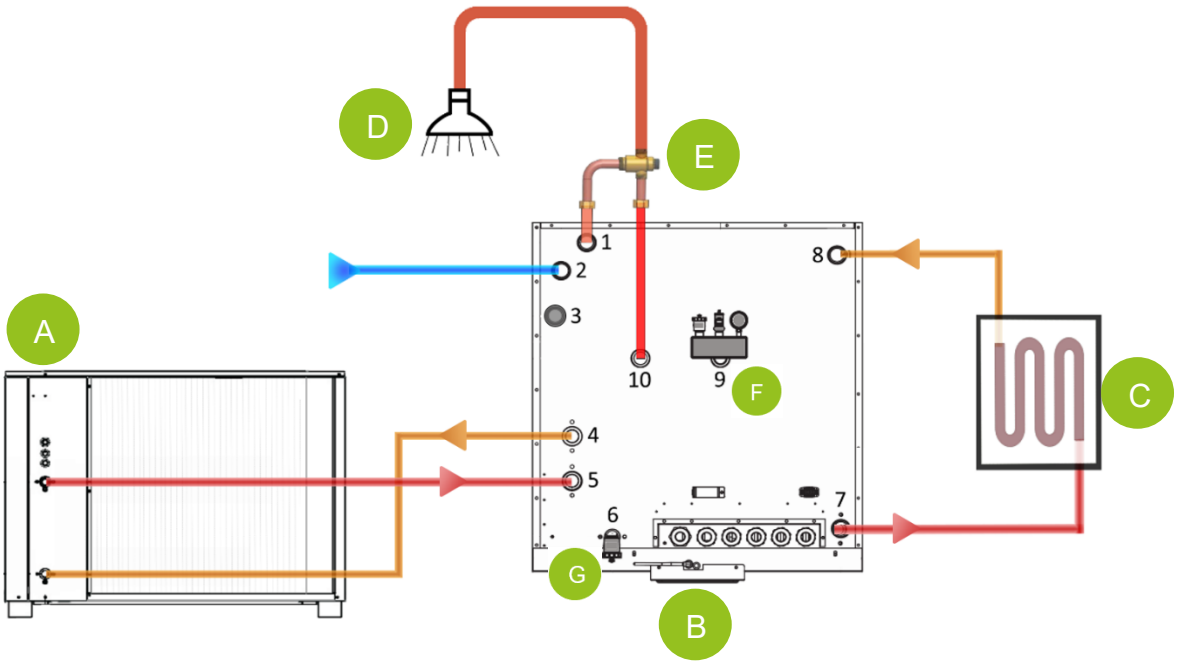
Model (outdoor unit)	Min coil surface area
AW6-R32-M	0,75 m2
AW9-R32-M	1,13 m2
AW12-R32-M	1,5 m2
AW15-R32-M	1,88 m2
AW19-R32-M	2,38 m2

4.7 AWT-R32-M (6-12 kW) hydraulic connections



MN	Connection	Size	MN	Connection	Size
1	Middle temperature sanitary hot water outlet	G1″	6	Automatic Air purging valve	G1″
2	Filling water to coil (cold sanitary water)	G1″	7	Water to heating / cooling system	G1″
3	Filling water to water tank	G3/4″	8	Water from heating / cooling system	G1″
4	Water outlet – back to outdoor unit	G1″	9	Safety valve connection	G1″
5	Water inlet – from outdoor unit	G1″	10	High temperature sanitary water outlet	G1″

4.8 Visualization of the AWT6/12-R32-M hydraulic connections



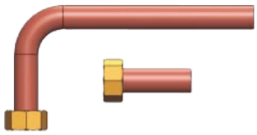
	Description
A	ES heat pump – outdoor unit
B	ES heat pump – AWT model indoor unit
C	Heating system – buffer or floor heating system
D	Sanitary hot water faucet
E	Sanitary hot water mixing valve (included in the package)
F	Safety kit (included in the package)
G	Automatic purging valve (included in the package)

4.9 Thermostatic mixing valve for domestic hot water

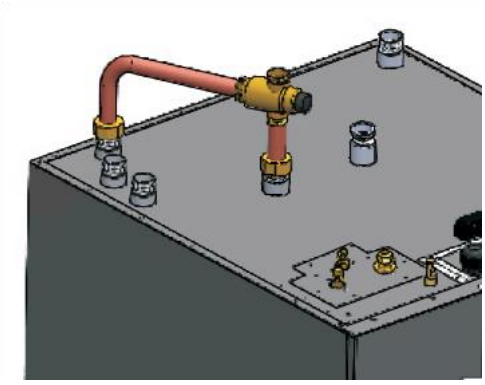
AWT-R32-M units come with a thermostatic mixing valve for domestic hot water that controls that the sanitary hot water doesn't exceed 55°C on the taps. With the valve itself come also piping connections for easier installation – see chapter 4.8 (Visualization of the connections)

Thermostatic mixing valve for domestic hot water	

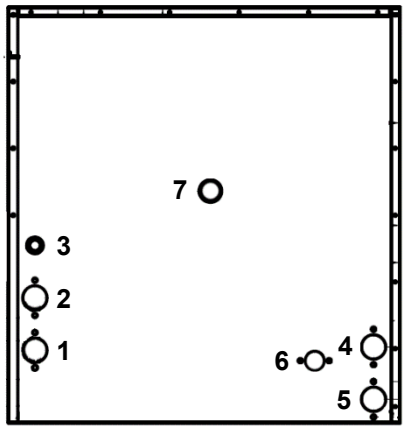
Piping for connecting the mixing valve

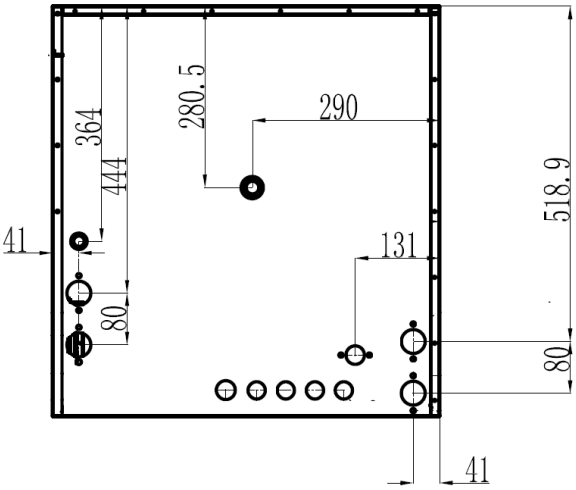


Mixing valve for sanitary water installed on a unit



4.10 **AWST-R32-M (6-15 kW) hydraulic connections**

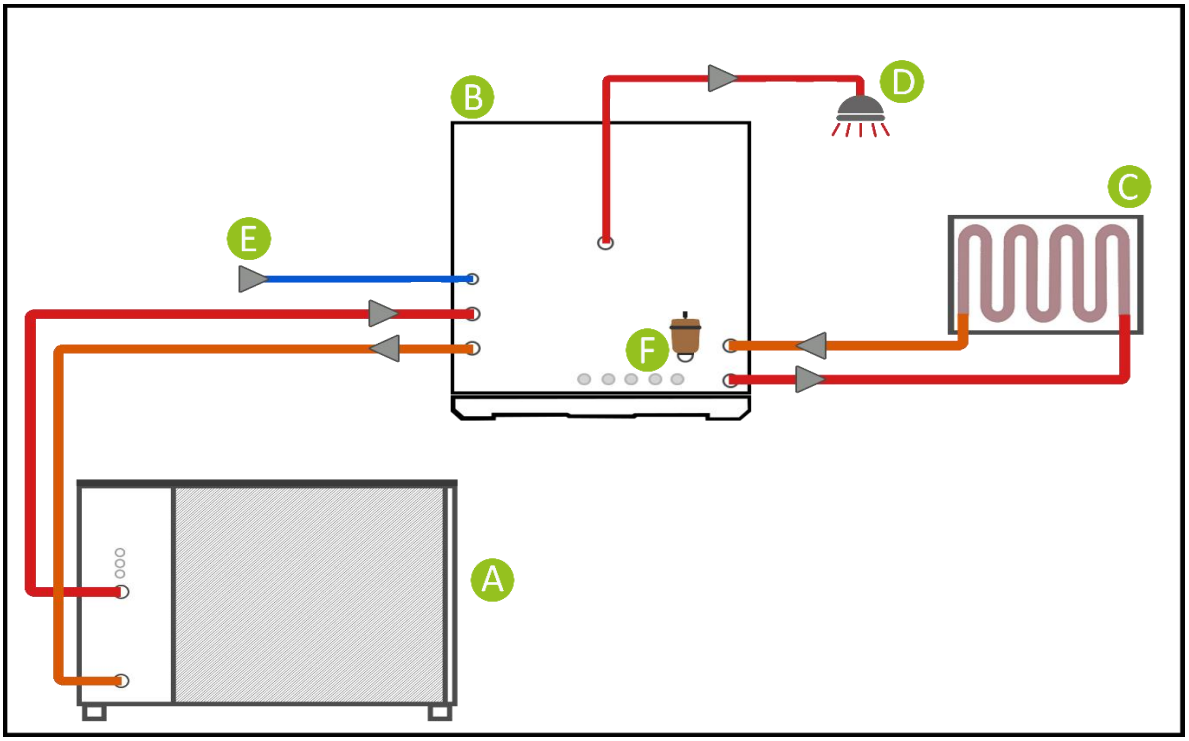




MN	Connection	Size	MN	Connection	Size
1	Water outlet – to outdoor unit	G1″	5	Flow line – Heating system	G1″
2	Water inlet – from outdoor unit	G1″	6	Automatic Air purging valve	G1/2″
3	Fresh cold-water inlet	G3/4″	7	Sanitary hot water outlet	G1″
4	Return line – Heating system	G1″			

See chapter 4.10 for reference.

4.11 Visualization of the AWST-R32-M hydraulic connections



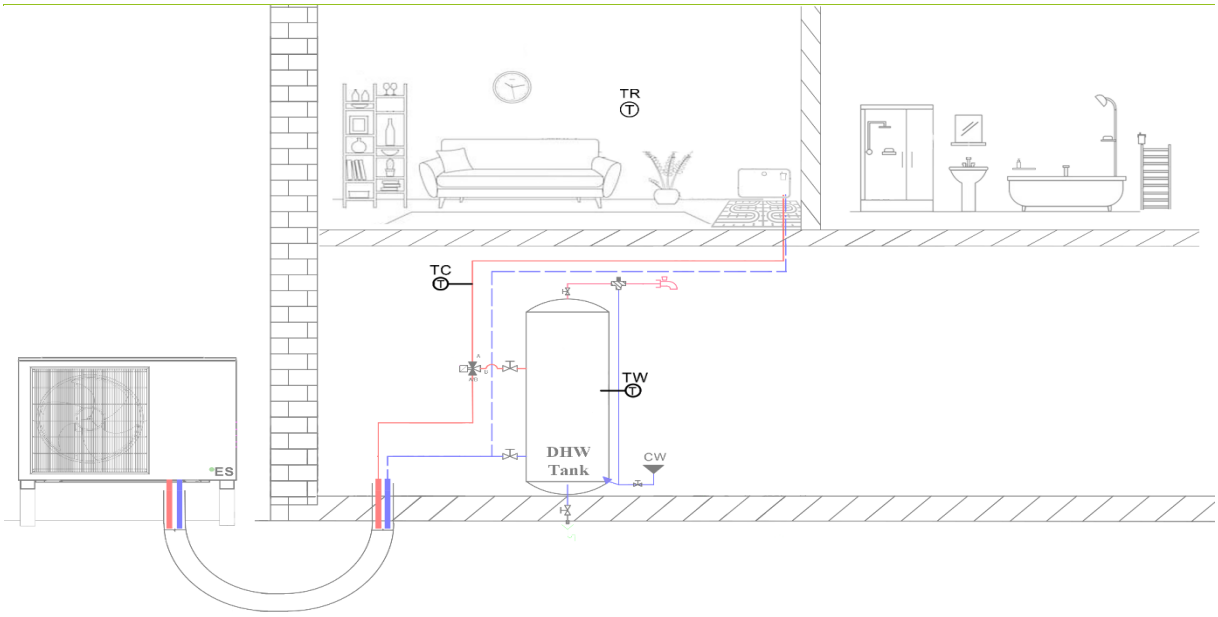
	Description
A	ES heat pump – outdoor unit
B	ES heat pump – AWST model indoor unit
C	Heating system – buffer or floor heating system
D	Sanitary hot water faucet
E	Fresh cold city water
F	Automatic purging valve (included in the package)

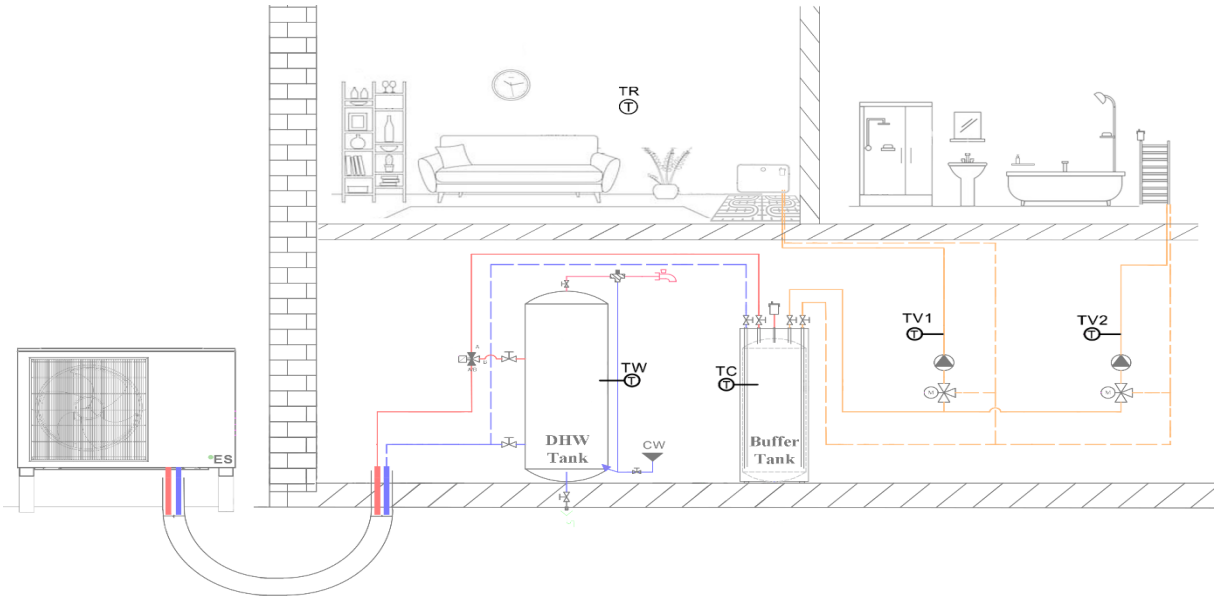
4.12 **Temperature sensors**

The temperature sensors need to be positioned in the correct positions. For reference always use the hydraulic schemes provided by ES.

Names of temperature sensors:

	Description	**Position**
TR	Room temperature sensor – for heating curve compensation according to the room temperature setting. For more info see chapter 7.1 ZONE 1 - Room temp. effect on heating curve.	Leaving area.
TW	Sanitary hot water temperature sensor	Upper half of the DHW tank.
TC	Heating / cooling temperature sensor	Upper half of the buffer tank. Flow line after the 3way valve (if no buffer).
TV1	Mixing circuit 1 temperature sensor	After the circulation pump for circuit 1
TV2	Mixing circuit 2 temperature sensor	After the circulation pump for circuit 2

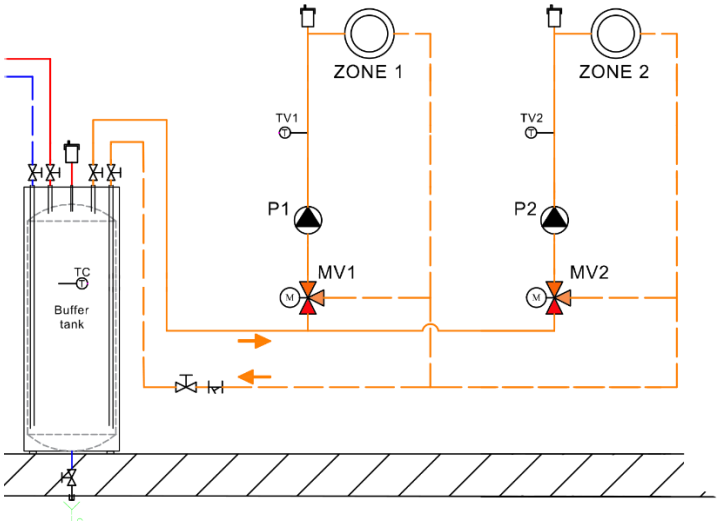




4.13 **Mixing valve for the heating / cooling circuit**

ES heat pumps can control two heating / cooling mixing circuits. Required temperature sensors for two mixing circuits come included in the package. When controlling two circuits a buffer tank must be used in the hydraulic system.

For each circuit (ZONE) the mixing valve must be enabled in the menu ZONE 1 (if used for circuit 1) and ZONE 2 (if used for circuit 2).

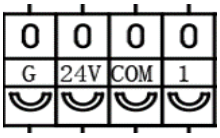
Description	**Scheme**
MV1 = mixing valve for ZONE 1 **P1** = circulation pump for ZONE 1 **TV1** = temperature sensor for mixing circuit 1 **MV2** = mixing valve for ZONE 2 **P2** = circulation pump for ZONE 2 **TV2** = temperature sensor for mixing circuit 2	

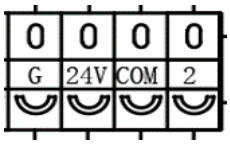
Type of mixing valve

ES heat pump use Proportional actuators - 24VDC power supply and 0...10VDC controlling signal.

ZONE 1 (heating / cooling circuit 1)	**ZONE 2** (heating / cooling circuit 2)
G = N (0VDV)	G = N (0VDV)

24V	= 24VDC	24V	= 24VDC
COM	= N (0VDV)	COM	= N (0VDV)
1	= Signal 0....10VDC	2	= Signal 0....10VDC





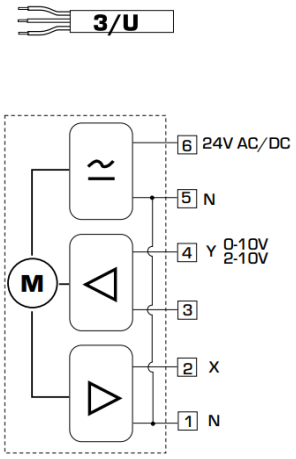
Example:

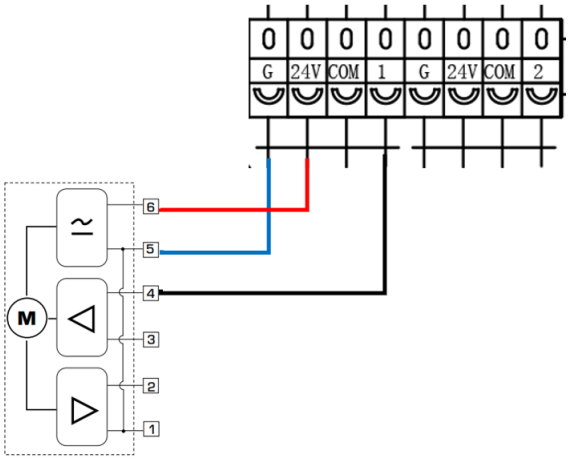
Wire connection of a ESBE ARA 639 mixing valve actuator

ESBE ARA 639 – 3 cables

Connection to ES heat pump

(for controlling the first heating / cooling circuit)

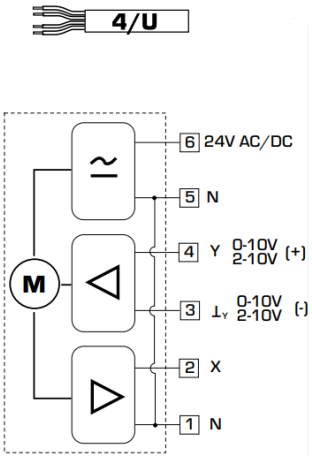


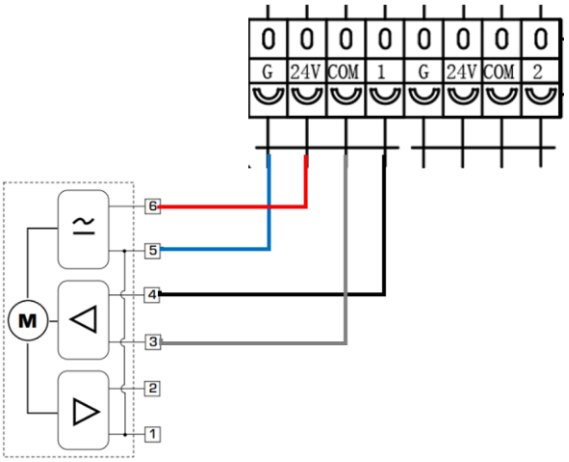


ESBE ARA 639 – 4 cables

Connection to ES heat pump

(for controlling the first heating / cooling circuit)





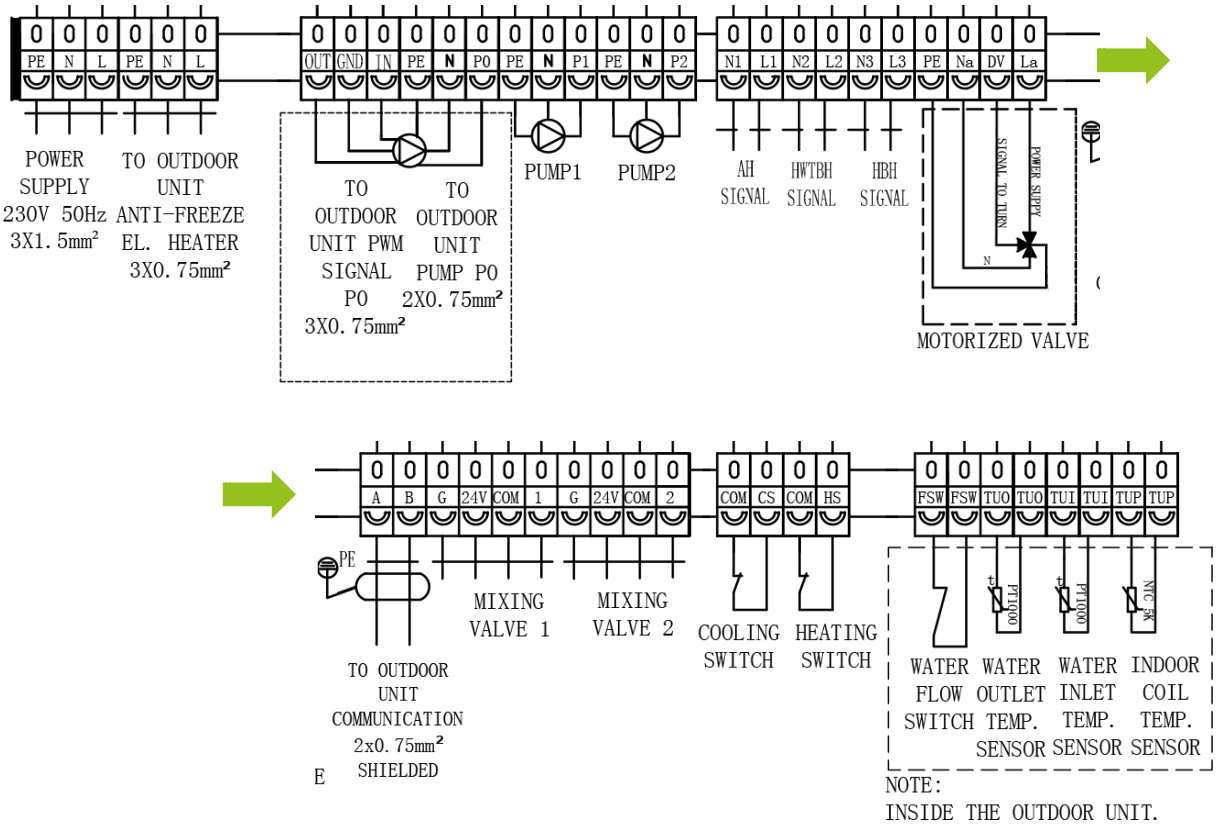
NOTE

Hydraulic schemes provided by the ES distributor or ES personnel contain official requirements for the installation of the ES heat pump into a hydraulic system. Those must be followed for a save working of the ES heat pumps. Main schemes are available on the official Energy Save web page https://energysave.se/downloads/.

5 Cable connections

5.1 Indoor unit

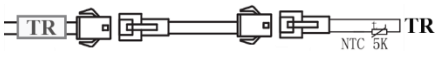
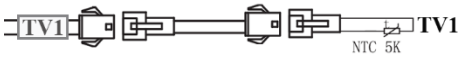
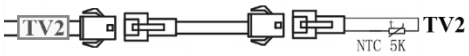
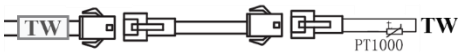
AWC6/19-R32-M



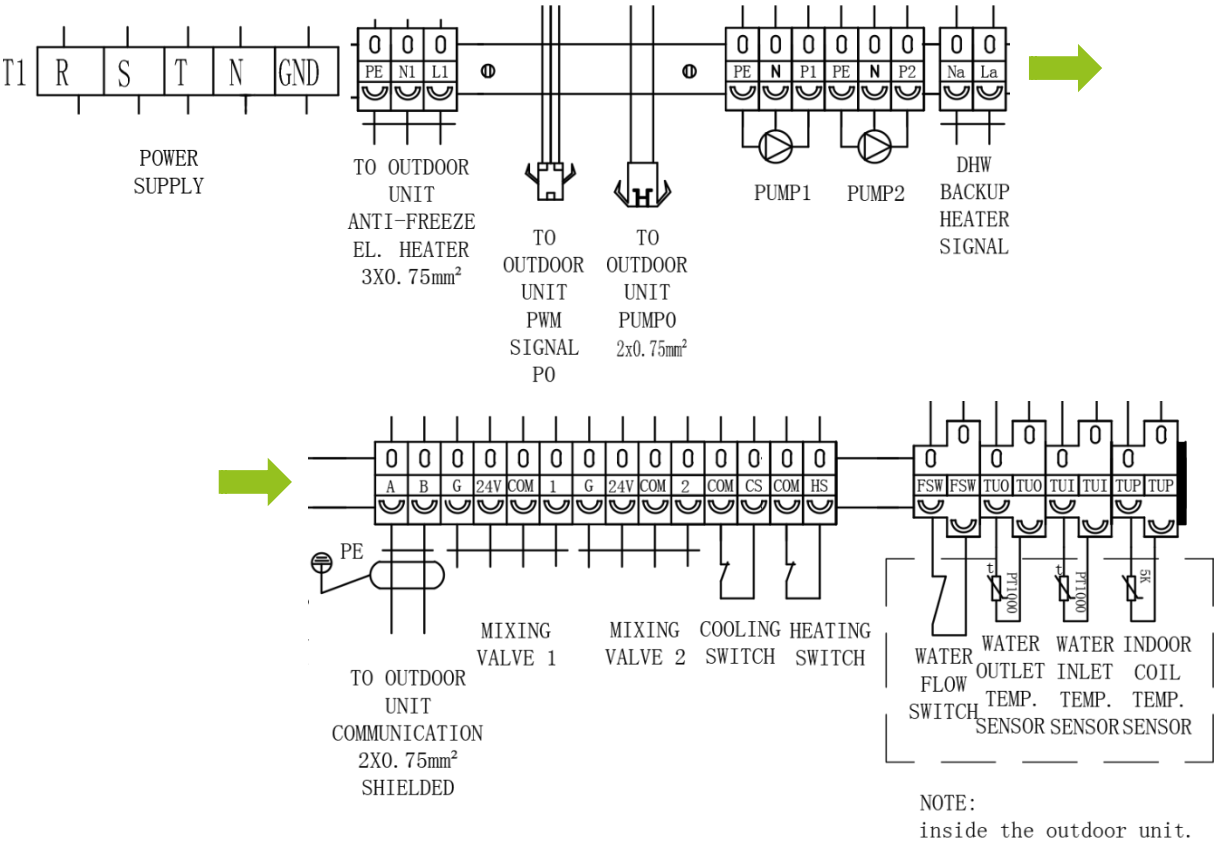
	Connections	Description
Power supply 230V 50Hz 3x1,5mm2	PE, N, L	Power supply for the indoor unit
To outdoor unit Anti-freeze el. Heater 3x0,75mm2	PE, N L	Connection to electrical heater for heat exchanger (230V). Recommended is to use a separate fuse and supply it directly to the heat exchanger electrical heater in the outdoor unit.
To outdoor unit P0 pump	OUT, GND, IN PE, N, P0	Connection to outdoor unit (cable included in the package) Connection to P0 pump located in the outdoor unit (230V)
Pump 1	PE, N, P1	Circulation pump for heating/cooling circuit ZONE 1 **PE** = Ground; **N** = Neutral; **P1** = 230VAC

Pump 2	PE, N, P2	Circulation pump for heating/cooling circuit ZONE 2 **PE** = Ground; **N** = Neutral; **P2** = 230VAC
AH signal	N1, L1	Back-up heating signal for heating and DHW Note: Only for low power switching – relay coil. **N1** = Neutral; **L1** = 230VAC
HWTBH signal	N2, L2	Back-up heating signal for DHW only Note: Only for low power switching – relay coil. **N2** = Neutral; **L2** = 230VAC
HBH signal	N3, L3	Back-up heating signal for heating only Note: Only for low power switching – relay coil. **N3** = Neutral; **L3** = 230VAC
Motorized valve	PE, Na, DV, La	Diverting valve output **La** = constant power (230VAC); **Na** = Neutral; **DV** = Signal output during heating mode (230VAC)
To outdoor unit Communication	A, B	Modbus communication to outdoor unit (cable included in the package)
Mixing valve 1	G, 24, COM, 1	Proportional actuator control **G** = -0VDC; **24** = 24VDC; **COM** = -0VDC; **1** = 0....10VDC;
Mixing valve 2	G, 24, COM, 2	Proportional actuator control **G** = -0VDC; **24** = 24VDC; **COM** = -0VDC; **2** = 0....10VDC;
Cooling switch	COM, CS	Digital contact for controlling cooling mode
Heating switch	COM, HS	Digital contact for controlling heating mode
Water flow switch	FSW, FSW	Connection to outdoor unit (cable included in the package)
Water outlet temp. sensor	TUO, TUO	Connection to outdoor unit (cable included in the package)
Water inlet temp. sensor	TUI, TUI	Connection to outdoor unit (cable included in the package)
Coil temp. sensor	TUP, TUP	Connection to outdoor unit (cable included in the package)

Temperature sensors (connecting with connectors)

TR	Room temperature	
TV1	Mixing circuit 1 temperature	
TV2	Mixing circuit 2 temperature	
TC	Heating / cooling system temperature	
TW	Sanitary hot water temperature	

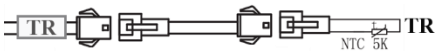
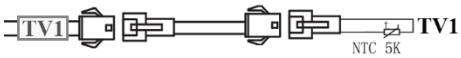
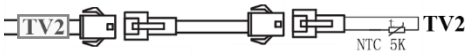
AWT6/12-R32-M



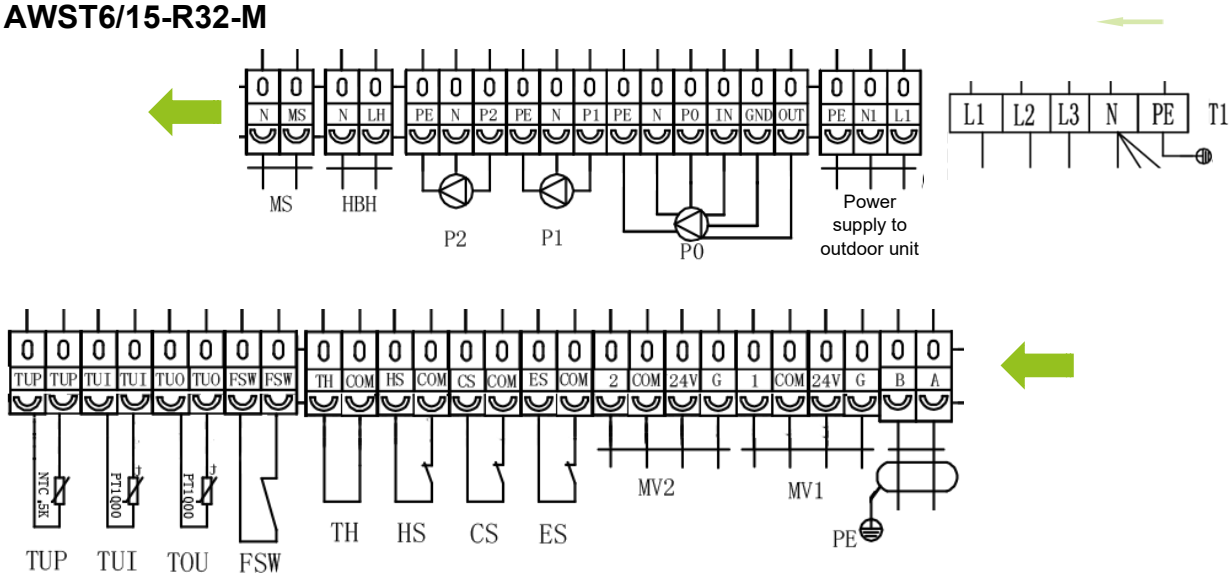
	Connections	Description
Power supply 230V 50Hz 3x2,5mm2	R, S, T, N, GND	Power supply for the indoor unit **R** = L1; **S** = L2, **T** = L3, **N** = Neutral, **GND (G)** = PE Ground
To outdoor unit Anti-freeze el. Heater 3x0,75mm2	PE, N L	Connection to electrical heater for heat exchanger (230V). Recommended is to use a separate fuse and supply it directly to the heat exchanger electrical heater in the outdoor unit.
To outdoor unit PWM signal P0	Connector	Connection to outdoor unit (cable included in the package)
To outdoor unit pump P0	Connector	Connection to outdoor unit (cable included in the package) Connection to P0 pump located in the outdoor unit (230V)
Pump 1	PE, N, P1	Circulation pump for heating/cooling circuit ZONE 1 **PE** = Ground; **N** = Neutral; **P1** = 230VAC
Pump 2	PE, N, P2	Circulation pump for heating/cooling circuit ZONE 2 **PE** = Ground; **N** = Neutral; **P2** = 230VAC
DHW backup heater signal	Na, La	Back-up heating signal for DHW only **Na** = Neutral; **La** = signal 230VAC Note: Only for low power switching – relay coil. **N2** = Neutral; **L2** = 230VAC
To outdoor unit Communication	A, B	Modbus communication to outdoor unit (cable included in the package)

Mixing valve 1	G, 24, COM, 1	Proportional actuator control **G** = -0VDC; **24** = 24VDC; **COM** = -0VDC; **1** = 0....10VDC;
Mixing valve 2	G, 24, COM, 2	Proportional actuator control **G** = -0VDC; **24** = 24VDC; **COM** = -0VDC; **2** = 0....10VDC;
Cooling switch	COM, CS	Digital contact for controlling cooling mode
Heating switch	COM, HS	Digital contact for controlling heating mode
Water flow switch	FSW, FSW	Connection to outdoor unit (cable included in the package)
Water outlet temp. sensor	TUO, TUO	Connection to outdoor unit (cable included in the package)
Water inlet temp. sensor	TUI, TUI	Connection to outdoor unit (cable included in the package)
Coil temp. sensor	TUP, TUP	Connection to outdoor unit (cable included in the package)

Temperature sensors (connecting with connectors)

TR	Room temperature	
TV1	Mixing circuit 1 temperature	
TV2	Mixing circuit 2 temperature	
TC	Heating / cooling system temperature	
TW	Sanitary hot water temperature	

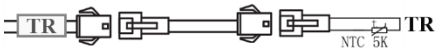
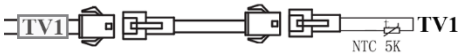
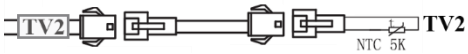
AWST6/15-R32-M



	Connections	Description
Power supply Recommended cable 5x2,5mm2	L1, L2, L3, N, PE	Power supply for the indoor unit
Power supply to outdoor unit	PE, N1, L1	Recommended to route the power supply to the outdoor unit separately with its own fuse.
To outdoor unit PWM signal P0	OUT, GND, IN P0, N, PE	Connection to outdoor unit (cable included in the package) OUT, GND, IN – PWM signal for the P0 circulation pump P0, N, PE – Power supply (230VAC) for the P0 circulation pump
Pump 1	P1, N, PE	Circulation pump for heating/cooling circuit ZONE 1 **PE** = Ground; **N** = Neutral; **P1** = 230VAC
Pump 2	P2, N, PE	Circulation pump for heating/cooling circuit ZONE 2 **PE** = Ground; **N** = Neutral; **P2** = 230VAC
DHW backup heater signal	LH, N	Back-up heating signal for DHW only **N** = Neutral; **LH** = signal 230VAC Note: Only for low power switching – relay coil.
Mode signal	MS, N	Gives signal when unit is selected mode (heating or cooling according to the settings). **MS** = 230VAC, **N** = Neutral
To outdoor unit Communication	A, B	Modbus communication to outdoor unit (cable included in the package)
Mixing valve 1	G, 24, COM, 1	Proportional actuator control **G** = -0VDC; **24** = 24VDC; **COM** = -0VDC; **1** = 0....10VDC;
Mixing valve 2	G, 24, COM, 2	Proportional actuator control **G** = -0VDC; **24** = 24VDC; **COM** = -0VDC; **2** = 0....10VDC;
Electrical utility lock	COM, ES	Digital contact for electrical utility lock
Cooling switch	COM, CS	Digital contact for controlling cooling mode

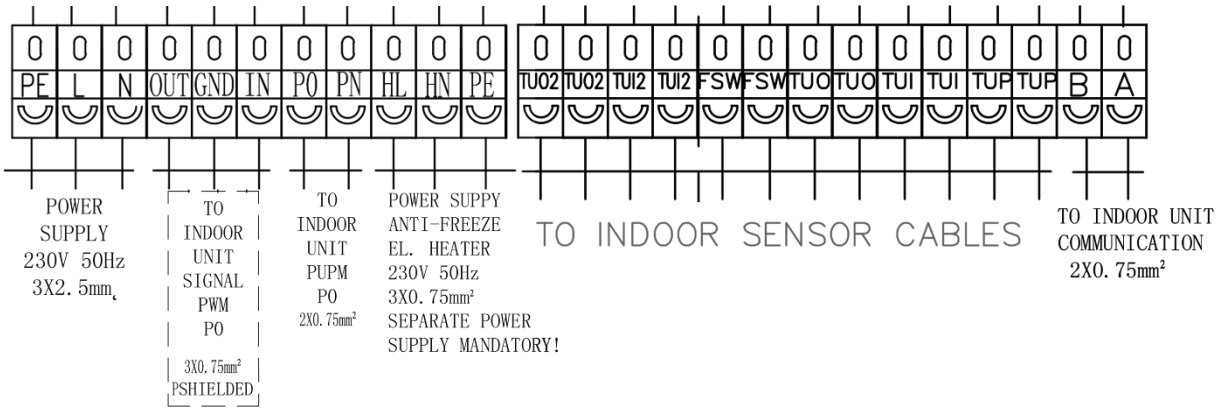
Heating switch	COM, HS	Digital contact for controlling heating mode
High temperature switch	COM, TH	Digital contact for high temperature switch
Water flow switch	FSW, FSW	Connection to outdoor unit (cable included in the package)
Water outlet temp. sensor	TUO, TUO	Connection to outdoor unit (cable included in the package)
Water inlet temp. sensor	TUI, TUI	Connection to outdoor unit (cable included in the package)
Coil temp. sensor	TUP, TUP	Connection to outdoor unit (cable included in the package)

Temperature sensors (connecting with connectors)

TR	Room temperature	
TV1	Mixing circuit 1 temperature	
TV2	Mixing circuit 2 temperature	
TC	Heating / cooling system temperature	
TW	Sanitary hot water temperature	

5.2 Outdoor unit

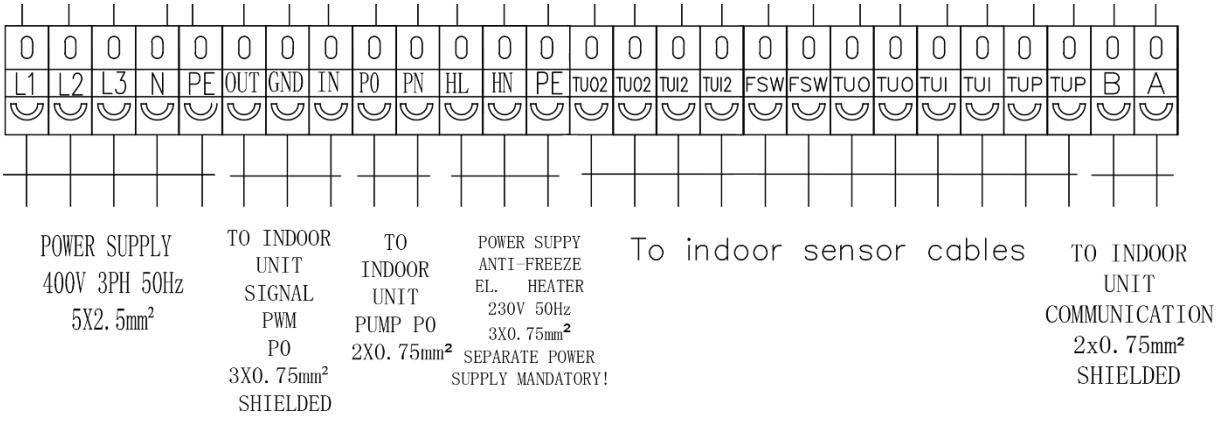
AW6/15-R32-M



	Connections	**Description**
Power supply 230V 50Hz 3x2,5mm2	PE, L, N	Power supply for the outdoor unit **PE =** Ground; **L** = 230VAC; **N** = Neutral
To indoor unit	OUT, GND, IN	Connection to outdoor unit (cable included in the package).

signal PWM P0		Optional!
To indoor unit pump P0	Connector	Connection to indoor unit (cable included in the package)
Power supply anti-freeze el. heater	HL, HN, PE	**HL** = 230VAC; **HN** = Neutral; **PE** = Ground Separate power supply and separate 6A fuse.
/	TUO2, TUO2	NOT IN USE!
/	TUI2, TUI2	NOT IN USE!
Flow switch connection	FSW, FSW	Connection to indoor unit (cable included in the package)
Sensor connection	TUO, TUO	Connection to indoor unit (cable included in the package)
Sensor connection	TUI, TUI	Connection to indoor unit (cable included in the package)
Sensor connection	TUP, TUP	Connection to indoor unit (cable included in the package)
To indoor unit communication	B, A	Modbus communication to indoor unit (cable included in the package)

AW15/19-R32-M



	Connections	**Description**
Power supply 400VAC 50Hz 5x2,5mm2	L1, L2, L3, N, PE	Power supply for the outdoor unit **L1** = Phase 1; **L2** = Phase 2; **L3** = Phase 3; **N** = Neutral; **PE =** Ground
To indoor unit signal PWM P0	OUT, GND, IN	Connection to outdoor unit (cable included in the package). Optional!
To indoor unit pump P0	Connector	Connection to indoor unit (cable included in the package)
Power supply anti-freeze el. heater	HL, HN, PE	**HL** = 230VAC; **HN** = Neutral; **PE** = Ground Separate power supply and separate 6A fuse.
/	TUO2, TUO2	NOT IN USE!
/	TUI2, TUI2	NOT IN USE!

Flow switch connection	FSW, FSW	Connection to indoor unit (cable included in the package)
Sensor connection	TUO, TUO	Connection to indoor unit (cable included in the package)
Sensor connection	TUI, TUI	Connection to indoor unit (cable included in the package)
Sensor connection	TUP, TUP	Connection to indoor unit (cable included in the package)
To indoor unit communication	B, A	Modbus communication to indoor unit (cable included in the package)

6 Controller

The AW-R32-M ES heat pumps use an advance LED Touch Screen controller which allows a big range of installation options, ensuring the best performance to reduce heating costs and offer sophisticated safety features for a carefree working of the heat pump.

Key features

Heating, cooling	Heating and cooling the building.
DHW mode	Heating sanitary water.
Two mixing heating/cooling circuits	Controlling two mixing heating and cooling circuits.
Night mode	Lowering the heat production during the night. Quite operation during the night.
Controlling additional heating sources	Can control additional heating sources as back-up or as bivalent mode.
Dual temperature settings for DHW	The sanitary hot water can be set with to set points at different times for each day of the week.
Vacation mode	Setting vacation time for the heat pump to reduce the heat production.
Floor curing	Drying and distressing the screed floor.
Anti-Legionella function	Preventing legionella in sanitary hot water.

6.1 Main screen

1	**Outdoor temperature**
2	**Room temperature**– press the temperature to: • Parallel move the heating curve of the zones1 & 2 (if the room temperature is set <u>not</u> to affect the heating curve, factory setting) • Change the set room temperature (if the room temperature is set to affect the heating curve, not factory setting)
3	**Domestic hot water**– press the temperature to change the desired temperature of the hot water in the tank
4	**Zone 1 – current temperature in the heating system**– press on the temperature to change the temperature of the water for the current outdoor temperature. (Nearest point of the heating curve, outdoor temperature)
5	**Zone 2 – current temperature in the heating system**– see point 4
6	**Mode selection** – Auto mode / manual mode  Auto – automatically alternates between heating, cooling and domestic hot water  Heating –only heating is activated  Domestic hot water – only domestic hot water is activated  Cooling - only cooling is activated  Quick heat – fast heating of domestic hot water to set temperature (when done it switches back to **Auto**)
7	**Menu** – access to submenus
8	**ON/OFF** – Blue color= the heat pump is on; Grey color= heat pump is switched off (stand by)

Additional symbols

The symbols below are shown in cases where a special function is active.

	Night mode is active
	Outdoor unit defrosting – normal operation
	Timer for heating domestic hot water is active
	Heating- and cooling timer is active
	Legionella function is active
	Vacation mode is active
	Floor curing function is active
	Electrical utility lock is active
	ECO heating function is active
	Warning (yellow); The heat pump operates normally but authorized service personnel must be informed! Alarm (red); To ensure the safety of the system and heat pump, the heat pump is switched off. If the "Emergency Operation" function is activated, the heat pump continues to operate, but only with backup heating sources (e.g. electric heater). Contact an authorized service personnel immediately!

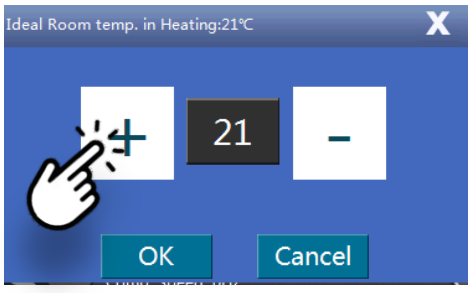
6.2 Main menu settings

Setting room temperature

Room temperature control <u>with</u> room temperature sensor (TR)

Note: Room temperature control can only be used if the room temperature sensor is located in an appropriate room (e.g. living room) and the **Room temp. effect on heating curve** is activated (see Chapter 4.1).
If the function is not activated, the heat pump operates according to the heating curve. Room temperature affects both zones.

Follow the instructions below to adjust the room temperature:



Press + or – to raise or lower the temperature. Press **OK** to confirm.

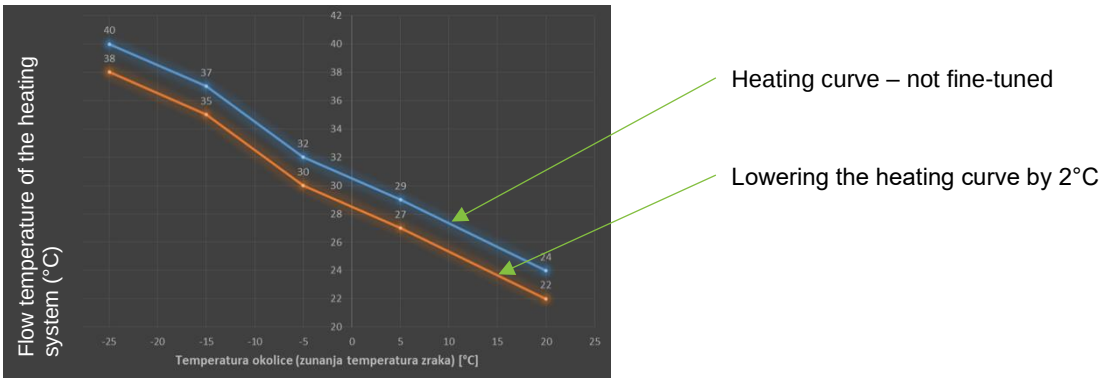
Room temperature control <u>without</u> room temperature sensor (TR)

When commissioning, the heating curve must be adjusted based on the type of heating system of the house and the desired indoor temperature.

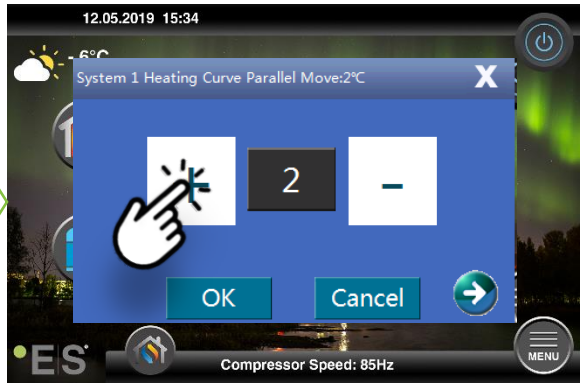
On the main menu, the heating curve can be fine-tuned by moving parallel (raised or lowered). The heat curve can be raised or lowered by 3°C (-3 to +3).

Normally, raising the heating curve by 2-3°C means an increase in room temperature of about 1°C. If major adjustments are required, see Chapter 1. 4.1.

The graph below shows a reduction (parallel move) of the heating curve by 2°C



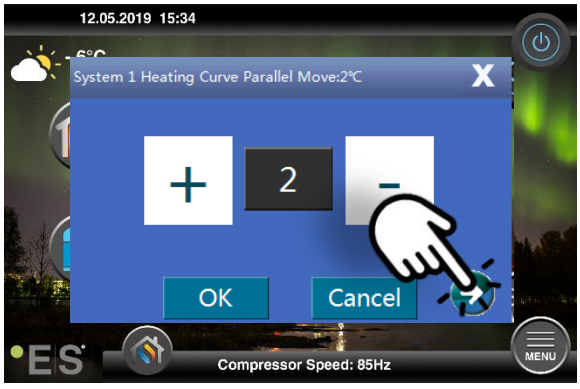
Parallel move the heating curve - ZONE 1

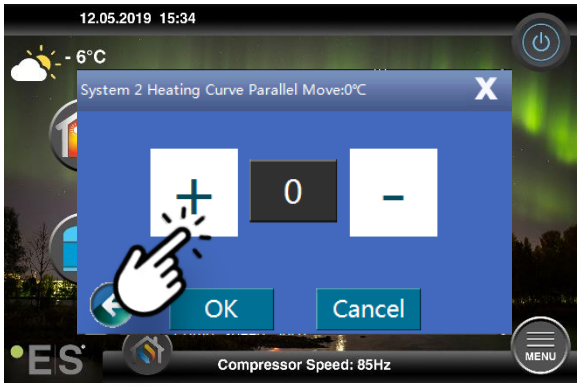


Press + or – to raise or lower the temperature. Press **OK** to confirm.

Parallel move the heating curve - ZONE 2

If the house has two heating systems with separate heating curves, these can be fine-tuned individually. First comes the window to parallel move the heating curve for zone 1. To fine-tune the heating curve for zone 2, press .

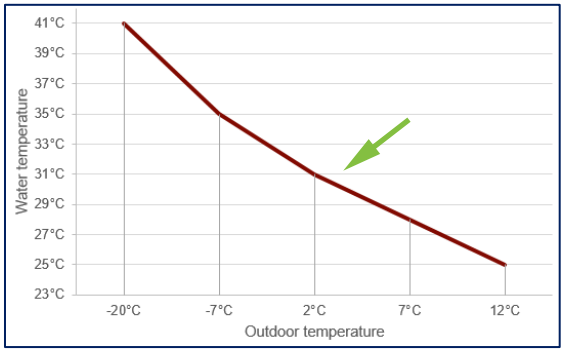


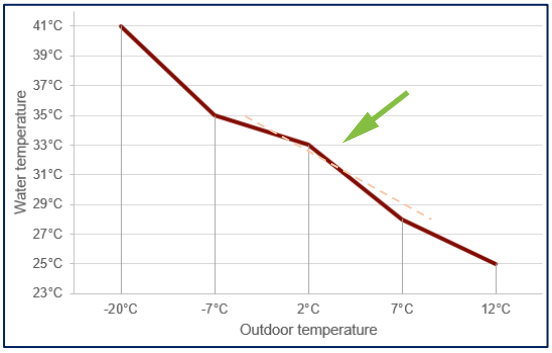


Press + or – to raise or lower the temperature. Press **OK** to confirm.

Adaptation of (break) heating curve

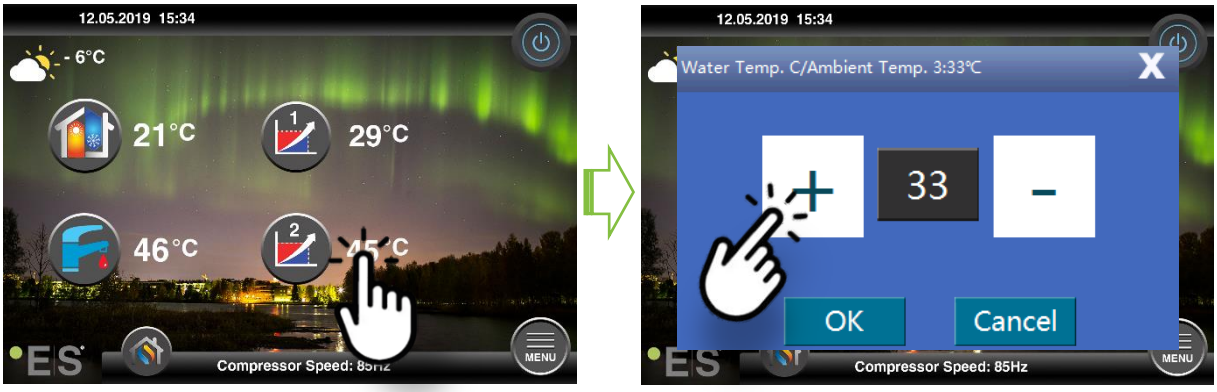
If the heating curve needs to be adjusted at a certain outdoor temperature, it can be adjusted (break). This is done directly from the main menu, see pictures below.
Example: changing the temperature setting for +2°C outdoor temperature produces a heating curve as shown below



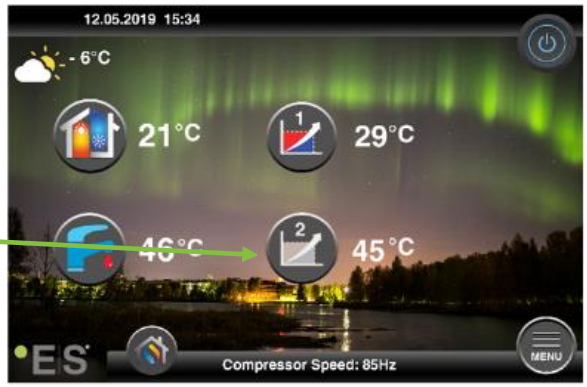


Zone 1 (e.g.: first floor/underfloor heating):

Zone 2 (e.g.: second floor/radiators):

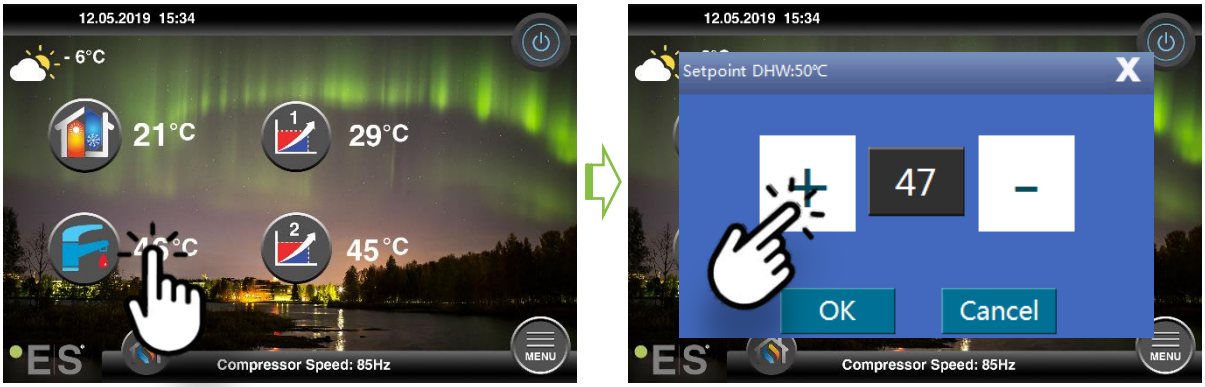


Note: if  is gray  ,
means that the zone is not activated.



Temperature setting domestic hot water

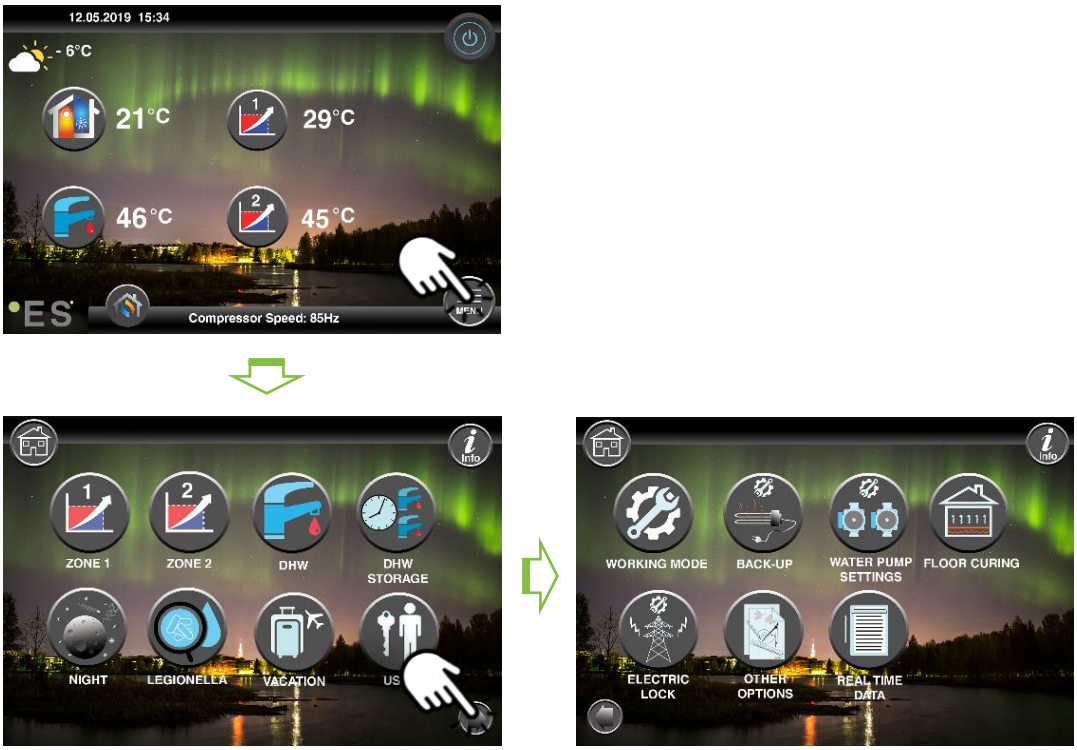
Press the temperature next to the domestic hot water symbol to adjust the setting.



The temperature that is suitable to set depends on the user's needs and habits.

The recommended setting is between 47°C and 50°C. If higher temperatures of domestic hot water are needed, see Chapter 4.3.

6.3 Submenus



Submenu 1:

Most settings concern the end user.

Submenu 2:

Most settings concern the installer(commissioning).

Settings that affect the installer during deployment are protected with a password. The end user can see all the changes but can only change those that are not related to commissioning.

Note:

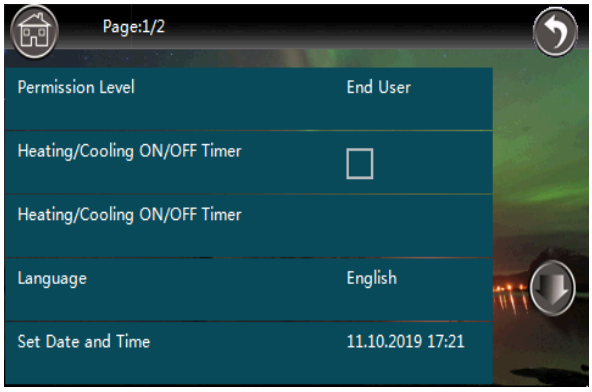
The naming of the functions in the menus may differ depending on the version of the software. But the order and function are the same in the menus.

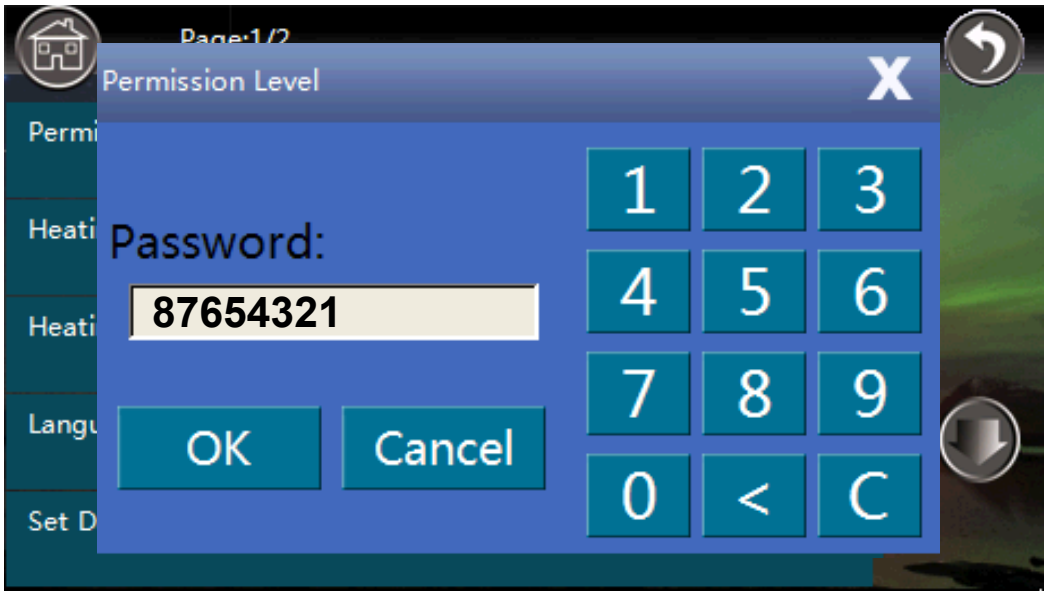
6.4 Installer access

It is forbidden to pass on the installer password to the end user!

There are two levels:

1. End user level – no password required
2. Installer level – password - **87654321**

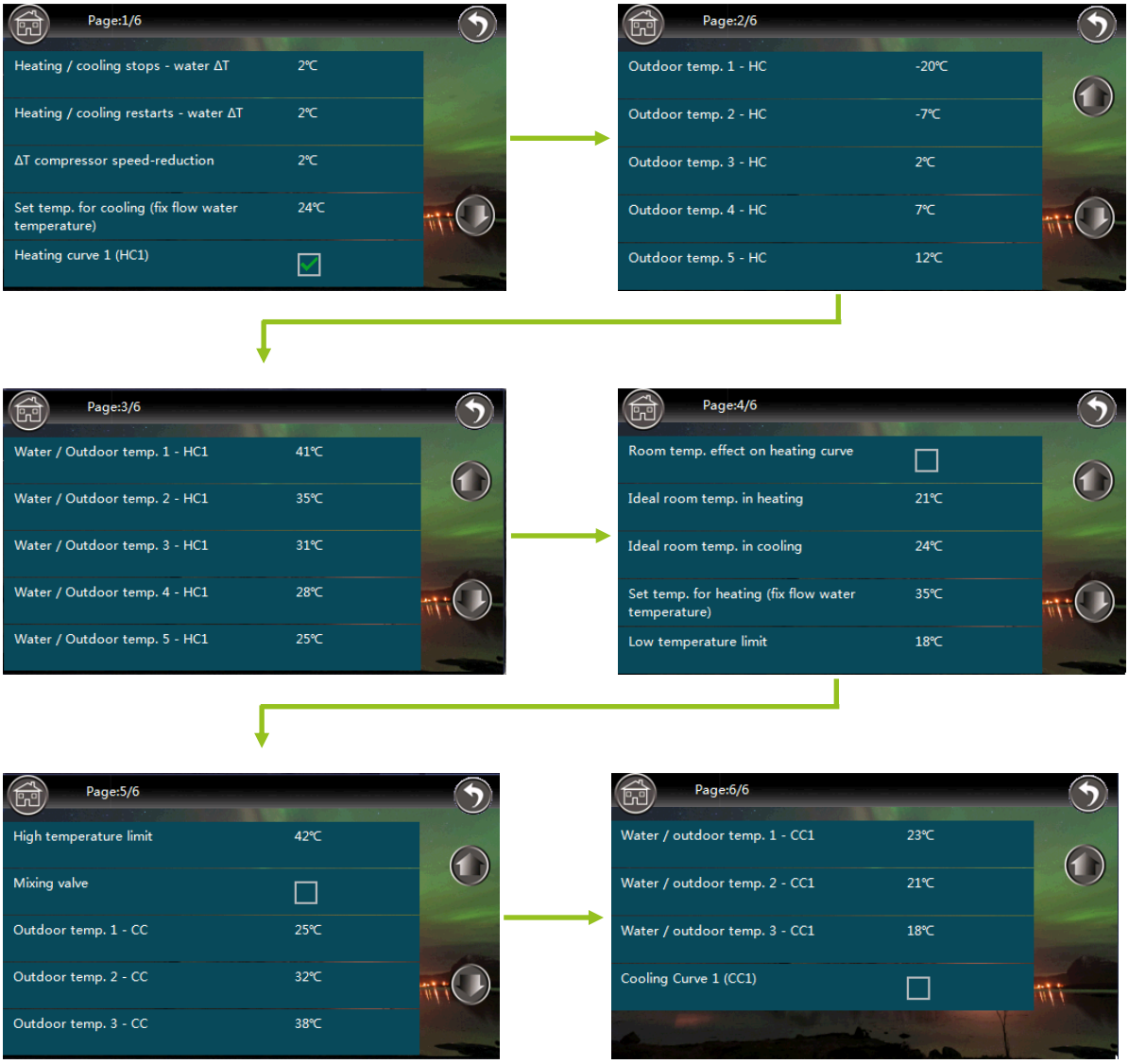




Note: The unit returns to the end user level automatically after 5 minutes.

7 Menu settings

7.1 ZONE 1



Heating / cooling stops based on water ΔT

Temperature setting that allows overheating of the heating system for the set value.

The recommended setting is 2 °C! This enables efficient operation of the Inverter technology and brings the highest savings.

Please note, that we allow the Heat Pump to overheat the system, to maintain a low working speed and to avoid a frequent stopping and starting of the compressor.

Heating / cooling restarts based on ΔT

The compressor restarts based on the set values of heating/cooling circuits.

The recommended value is 2 °C. This enables efficient operation of the Inverter technology and brings the highest savings.

ΔT compressor speed reduction

This setting tells the system when the compressor will start lowering its working speed. The recommended value is 2 °C. This enables efficient operation of the Inverter technology and brings the highest savings.

For example:

If the set/calculated temperature is 30°C and the ˝ΔT COMPRESSOR SPEED REDUCTION˝ is set to 2°C, the compressor will work at its max working speed (check chapter ˝Max Compressor Working Speed˝) till it reaches 28°C. At a 28,1°C and above the compressor speed will start to decrease towards the lowest working speed of the compressor.

Set temp. for cooling (fix flow water temperature)

Setting the desired cooling water temperature of the first cooling circuit is set (the second circuit is set in the menu “Heating/Cooling Circuit 2”).

Heating curve 1 (HC1)

Enabled	Heat pump produces hot water for the heating system according to the heating curve setting.
Disabled	Heat pump produces hot water for the heating system according to the fixed temperature setting (**set temp. for heating – without heating curve**).

Note: HC = heating curve; HC1 = heating curve zone 1

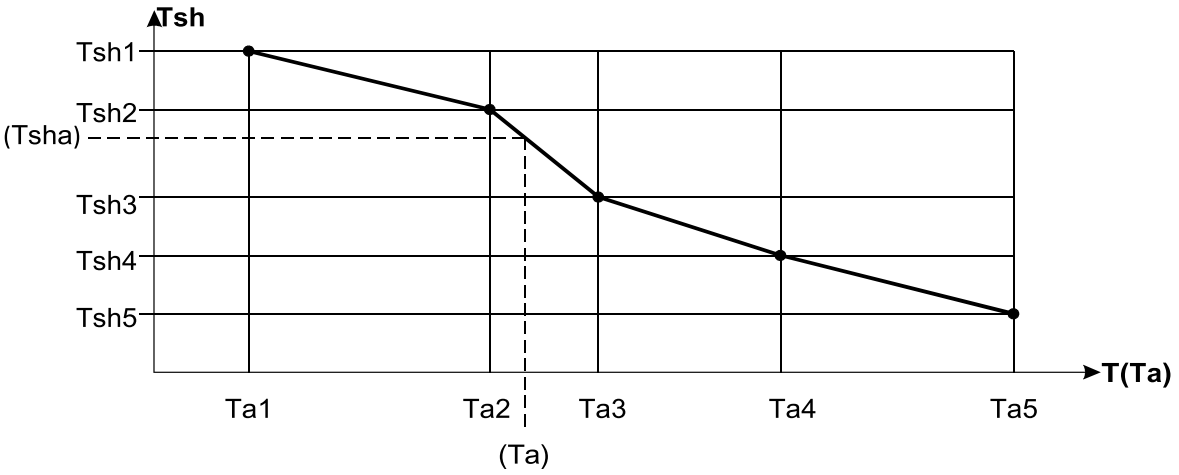
Outdoor temp. 1 - HC
Outdoor temp. 2 - HC
Outdoor temp. 3 - HC
Outdoor temp. 4 - HC
Outdoor temp. 5 - HC

} Heating curve – outdoor temperatures

Water / Outdoor temp. 1 – HC1
Water / Outdoor temp. 2 – HC1
Water / Outdoor temp. 3 – HC1
Water / Outdoor temp. 4 – HC1
Water / Outdoor temp. 5 – HC1

} Heating curve – water temperatures ZONE 1

Tsh – Space heating temp.; T(Ta) – Outdoor temp.

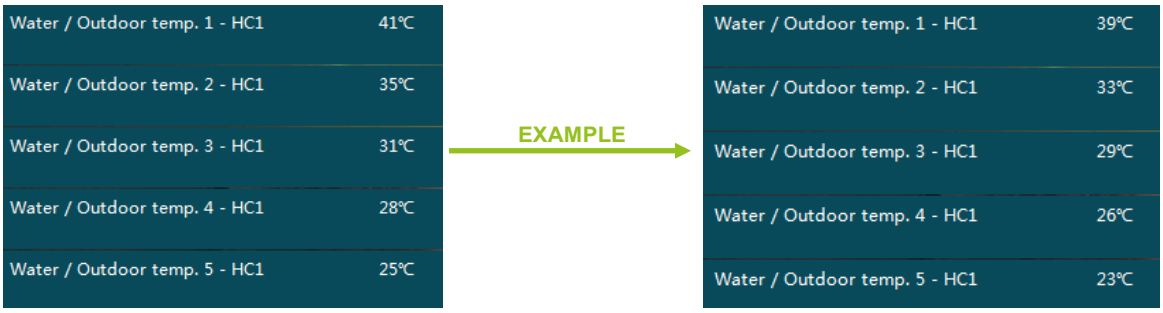


NOTE:

It is recommended to reset only the space heating water temperatures (figure above on the right). Resetting outdoor temperatures for the heating curve affects both heating circuits.

SETTING THE HEATING CURVE FOR THE FIRST HEATING CIRCUIT

Heating curve is set on page 3 of the “ZONE 1” menu!



Example:

The customer wants the room temperature to be 21 °C, but the heat pump heats the rooms to 22 °C. In this case the heating curve must be lowered. On page 3, all temperatures need to be lowered by 2-3 °C, which means that the room temperature will be lower by 1 °C. If the room temperature is lower than the desired temperature, the temperature values must be increased.

Room temp. effect on heating curve

When the temperature sensor ″TR″ is mounted in the living area, this function can make small corrections of the heating curve, depending on the set “Ideal Room Temp. in Heating”.

Note:

This feature does not mean temperature control by room temperature, but only a correction of the heating curve!

If this feature is on and the temperature in the room (where the TR room temperature sensor is located) still exceeds the set ideal value, the heating curve settings should be reset!

Ideal room temp. in heating

The setting is active only when the feature “Room Temp. Effect on Heating Curve” is enabled.

Ideal room temp. in cooling

The setting is active only when the feature “Room Temp. Effect on Heating Curve” is on.

Set temperature for heating (fix flow water temperature)

Set temperature for the heating water system – without heating curve.

When the heating curve is disabled, the heat pump operates with fixed system heating water temperature.

Weather-related control of the heating circuit is disabled, which can lead to higher heating costs!

NOTE:

The parameters in grey are protected by an Installer code!

Low temperature limit

For setting the lowest possible water temperature setting that the end customer can set, without accessing the service level. This setting applies for the heating mode and cooling mode.

High temperature limit

For setting the highest possible temperature that the end customer can set, without accessing the service level. This setting applies for the heating mode only.

Default setting is 42°C, meaning if a system with higher desired temperatures is used (radiators, fan-coils…) the Limitation must be increased.

Mixing valve

Enabling or Disabling the Mixing Valve for the first Heating/Cooling Circuit (ZONE 1).

A check in a box means that the Heating/Cooling Circuit 1 uses a Mixing Valve for the Circuit.

Please note that if the Mixing Valve is Enabled a temperature sensor (TV1) must be added after the Mixing Valve.

Outdoor temp. 1 - CC
Outdoor temp. 2 - CC } Cooling curve – outdoor temperatures
Outdoor temp. 3 - CC

Water / Outdoor temp. 1 – CC1
Water / Outdoor temp. 2 – CC1 } Cooling curve – water temperatures
Water / Outdoor temp. 3 – CC1

ZONE 1

Cooling curve (CC1)

Enabled	Heat pump produces cold water for cooling according to the set cooling curve.
Disabled	Heat pump produces cold water for cooling according to fixed temperature setting (set temp. for cooling)

Note: **CC** = Cooling curve; **CC1** = cooling curve zone 1

7.2 ZONE 2

Heating/cooling Circuit 2

A check in a box means that the heating/cooling circuit 2 is on.

Set temp. for Cooling (fix flow water temperature)

Setting the desired space cooling water temperature in Cooling Circuit 2.

The desired temperature of Cooling Circuit 2 is set.

Set temp. for heating (fix flow water temperature)

Set temperature of space heating water– without heating curve.

When the heating curve is off, the heat pump operates with fixed space heating water temperature.

Weather-related control of the heating circuit is off, which can lead to higher heating costs!

Mixing Valve

Enabling or Disabling Mixing Valve for the second Heating/Cooling Circuit (ZONE 2).

A check in a box means that the Heating/Cooling Circuit 2 uses a Mixing Valve for the Circuit.

If the Mixing Valve is Enabled, a temperature sensor (TV2) must be added after the Mixing Valve.

Heating curve (HC2)

Enabled	Heat pump produces hot water for the heating system according to the heating curve setting – ZONE 2.
Disabled	Heat pump produces hot water for the heating system according to the fixed temperature setting (set temp. for heating – without heating curve).

Note: **HC2** = heating curve zone 2

Water / Outdoor temp. 1 – HC2
Water / Outdoor temp. 2 – HC2
Water / Outdoor temp. 3 – HC2
Water / Outdoor temp. 4 – HC2
Water / Outdoor temp. 5 – HC2

} Heating curve – water temperatures ZONE 2

Note: it refers to the Outdoor setting in the menu ZONE 1.

Low temperature limit

This is for setting the lowest possible temperature that the end customer can set, without accessing the service level. This setting applies for the heating mode and cooling mode.

High temperature limit

This is for setting the highest possible temperature that the end customer can set, without accessing the service level. This setting applies for the heating mode only.

Default setting is 42°C, meaning if a system with higher desired temperatures is used (radiators, Fan-coils…) the Limitation must be increased.

Water / Outdoor temp. 1 – CC2
Water / Outdoor temp. 2 – CC2
Water / Outdoor temp. 3 – CC2

} Cooling curve – water temperatures ZONE 2

Note: it refers to the Outdoor setting in the menu ZONE 1.

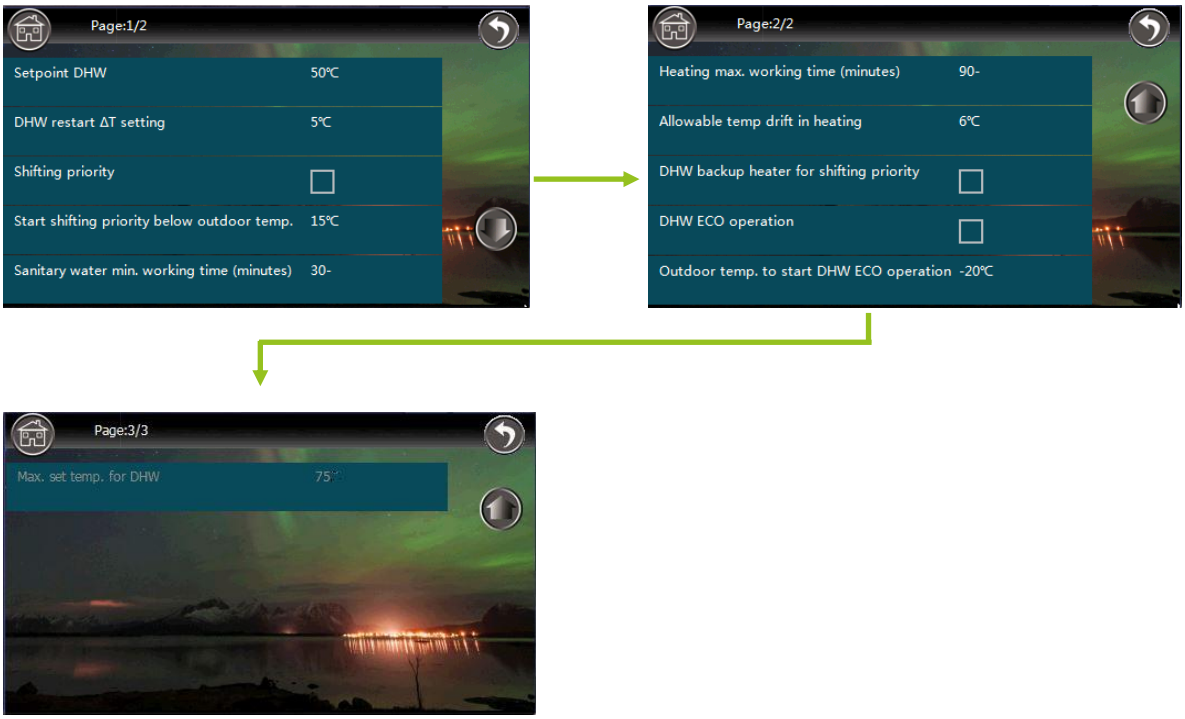
Cooling curve (CC2)

Enabled	Heat pump produces cold water for cooling according to the set cooling curve.
Disabled	Heat pump produces cold water for cooling according to fixed temperature setting (set temp. for cooling)

Note: **CC2** = heating curve zone 2

If the second heating circuit is active and the room thermostat is not used, a wire must be placed between TH and COM. If a wire is not placed between TH and COM, the heat pump will heat the buffer tank according to the lower temperature demand.

7.3 DHW



Setpoint DHW

Setting of the desired temperature for domestic water.

DHW restart ΔT setting

Domestic hot water restart setting.

Example:

Desired temperature of domestic water is 47 °C and the domestic hot water restart ΔT setting is 5 °C. (47–5=42).

This means that the heat pump will restart the heating of domestic water when the temperature drops below 42 °C!

Recommended domestic hot water restart ΔT setting is 5 °C!

Shifting priority

The heat pump has absolute priority for the preparation of domestic hot water. With this feature, the priority adjusts to the heat losses when the outdoor temperature reaches a certain point.

This feature is used in new buildings that still lack insulation and that will be without insulation for at least one heating season.

Enabled	The Heat Pump will decide based on the temperatures of the heating system if it should switch to heating although the DHW set temperature is not reached yet.
Disabled (default setting)	The Heat Pump will switch to Heating mode only when the desired DHW temperature is reached

Example:

Set temperature for DHW is 47°C and the Heat Pump is currently working in DHW mode. The actual DHW temperature is 44°C, meaning it still has to heat up the DHW for another 3°C, before it can switch to heating mode (heating the House). In that moment, the Unit sees that the temperature of the Heating water for the heating system is dropping for a certain value, meaning it is a high risk of undercooling the house. It switches to Heating mode to provide heat to the house. When the temperature is in safe level, or the max set time for heating is exceeded, the Heat Pump switches back to DHW mode to heat up the DHW to the desired value, before it switches back to Heating mode.

Shifting priority starting temperature

Only valid if Shifting Priority enabled!

Setting the Outdoor temperature to activate the Shifting Priority Function.

If the Shifting Priority Function is enabled, it will not be active before the Outdoor temperature falls below a certain value (Shifting Priority Starting temperature).

Sanitary water min. working hours

Only valid if Shifting Priority enabled!

This setting is set in Minutes!

The Heat Pump will try to heat up the DHW for a minimum time before it switches to Heating, even if all other conditions for Shifting Priority are met.

Heating max. working hours

Only valid if Shifting Priority enabled!

This setting is set in Minutes!

When the Heat Pump switches to Heating mode in Shifting priority mode, it will allow the unit to stay in Heating mode only for a certain time, before it switches back to heat up the DHW.

Allowable temp. drift in heating

Only valid if Shifting Priority enabled!

Setting for the max. temperature drift in heating system during DHW heating mode. Only when this value is exceeded, the Unit will switch to heating.

DHW backup heater for shifting priority

Only valid if Shifting Priority enabled!

Enabled	Backup Heater will help to faster heat up the DHW.
Disabled	Backup heater will work only according to the normal back-up function settings.

DHW ECO Operation

Enable or Disable this function.

Enabled	The compressor speed never exceeds 50% of the compressor working speed, which is determent by the outdoor temperature. However, if the normal working compressor speed is below 50%, this function is not valued.
Disabled	Normal operation of DHW working mode.

NOTE:

In normal operation (DHW ECO Operation – Disabled), the compressor speed is limited by the Outdoor temperature, meaning that the compressor speed will decrease when outdoor temperature is increasing.

Outdoor Temp. to Start DHW ECO Operation

Setting the Outdoor temperature when the DHW ECO Operation function will be active.

Please note, that DHW ECO Operation will be active if the Outdoor temperature is higher than this setting!

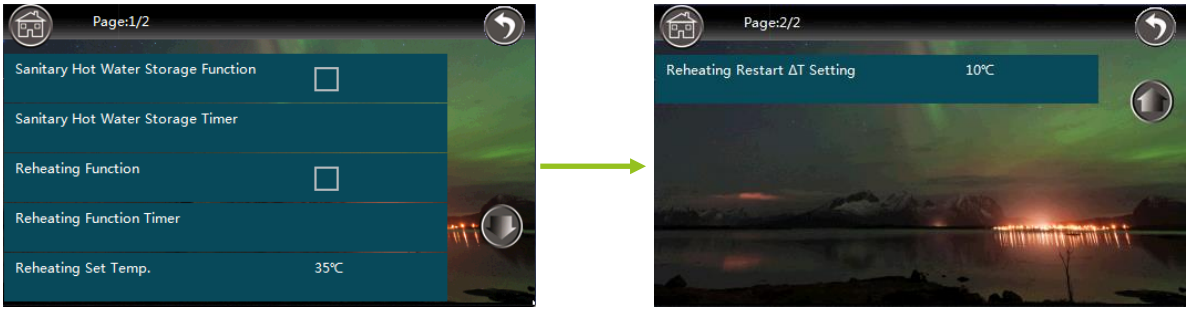
Max. Set temp. for DHW

For setting the highest possible temperature that the end customer can set, without accessing the service level. This setting applies for the DHW mode only.

Example: if set to 50°C, the end customer will not be able to set the desired DHW temperature higher then 50°C.

Note: it will also limit to which DHW temperature the Legionella function will use the refrigerant system to heat up the DHW tank, before the additional heating sources start.

7.4 DHW STORAGE



Sanitary hot water storage function

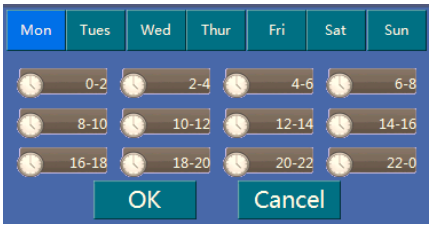
Enabled	Hot water will be prepared only in the selected day and time periods, set in parameter ″Sanitary hot water storage timer″.

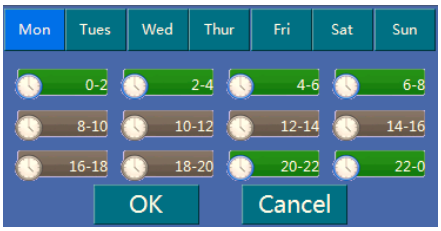
Disabled	Normal operation of DHW working mode.

This feature enables water preparation at a certain time and day. It can be set for each day of the week individually.

Sanitary hot water storage timer

Setting domestic water heater timer!





If the fields are green, domestic water heating is on.

If the fields are grey, it means the heat pump is not heating domestic water.

Reheating function

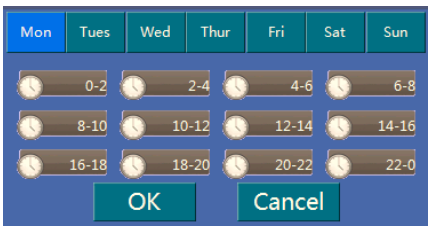
A check in the box means that the feature is on.

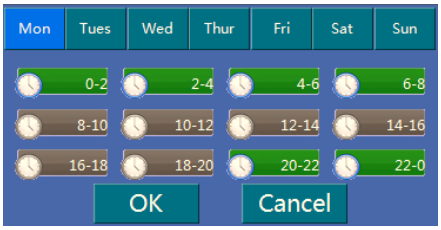
The feature enables the setting of a second temperature mode for domestic water heating. This means that it enables two different temperatures of domestic water at various times in an individual day of the week.

Setting of a second temperature of domestic hot water corresponds to the parameter “Reheating Set Temp.”.

Reheating function timer

Setting the second timer for the heating of domestic hot water!





If the fields are green, domestic water heating is on.

If the fields are grey, it means the heat pump is not heating domestic water.

Reheating set temp.

Setting the desired temperature for the second mode of heating of domestic water.

This temperature will be the default temperature for domestic water heating in the “double mode”.

The temperature can be lower or higher than the primary setting of the desired domestic hot water temp.!

Note:

If timers overlap, the heat pump will take into account the higher level of desired domestic water temperature!

Reheating restart ΔT setting

For the second temperature mode for heating domestic water, this parameter is used to set the DHW restart. The recommended setting is 5 °C.

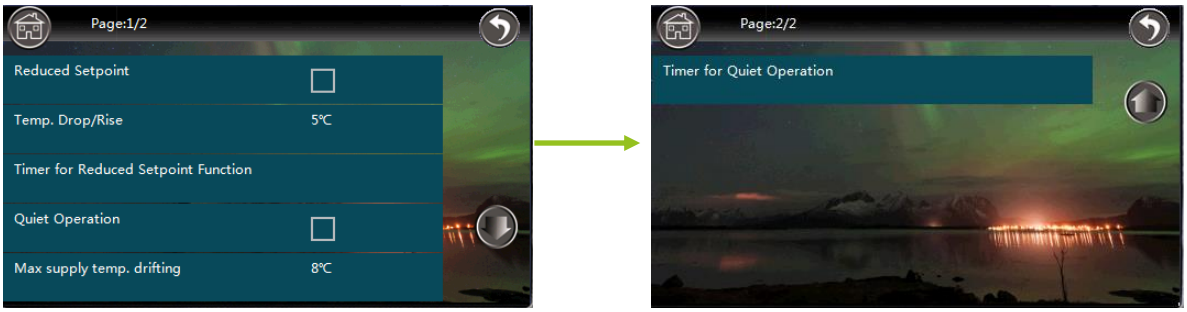
Example:

Desired domestic hot water temperature is 45 °C and the DHW restart setting is 5 °C

(45 – 5 = 40).

Heat pump will start reheating domestic water once it drops below 40 °C.

7.5 NIGHT



Reduced setpoint

Enabled	Lowers water temperature by the set value for both heating circuits in the set time. The main purpose is to lower room temperature at night.
Disabled	Normal operation

The feature lowers water temperature by the set value for both heating circuits in the set time. The main purpose is to lower room temperature at night.

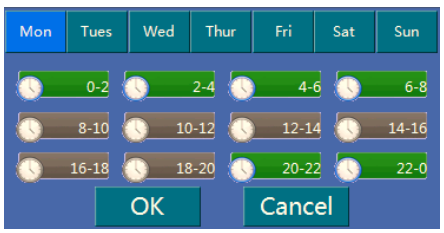
Temp. drop/rise

The space heating water temperature drop/rise is set for both heating circuits.

Min. possible setting = 2; Max possible setting 10.

Timer for reduced setpoint function

Timer for feature activation is set!



If the fields are green, reduce working is active.

If the fields are grey, reduce working is not active.

Quiet operation

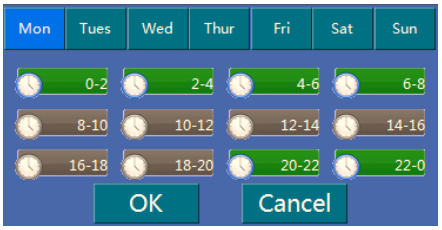
Enabled	The heat pump tries to operate with the lowest possible rpm of compressor and fans, so that noise is reduced in the nighttime.
Disabled	Normal operation

Allowable temp. drifting

The maximum allowable space heating water temperature drifting is set for both circuits when the “Quiet operation” feature is on. Min. possible setting = 2; Max possible setting 10.

Timer for quiet operation

Timer for the Quiet Operation Feature!



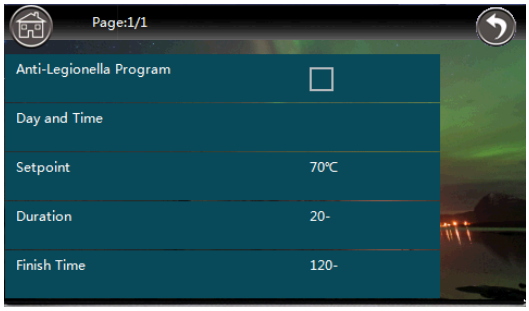
If the fields are green, the feature is on.

If the fields are grey, it means the feature is off – normal operation!

Note:

If the timers “Reduced Setpoint” and “Quiet Operation” overlap, the heat pump will operate in the quiet mode with an additional temperature drop, as set in the “Temp. Drop/Rise”.

7.6 LEGIONELLA

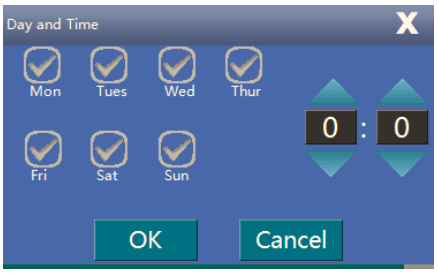


Anti-legionella program

Enabled	The unit will perform the anti-legionella function according to the set day, time and temperature.
Disabled	No anti-legionella function.

Day and time

The day and time for the feature to be switched on is set here.



Recommended setting: Monday at 2:00 AM

Setpoint

The desired temperature (setpoint) of the Anti-legionella feature is set here.

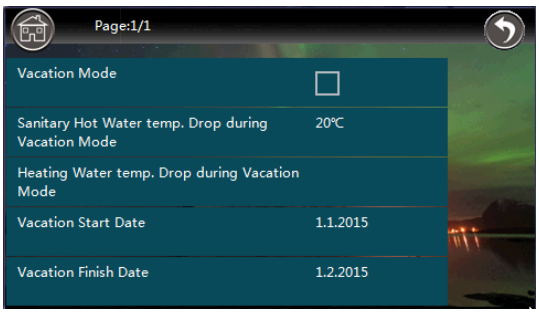
Duration

Here you can determine how long the heat pump should maintain the desired temperature in the Anti-legionella program!

Finish Time

If the heat pump cannot heat the domestic water in the set time, the program is terminated and an error message appears on the display.

7.7 VACATION



Vacation mode

This feature can be used for the time when you are absent and there is no need for heating or hot water. The date of departure (start date) and date of arrival (finish date) is set and the desired heating and water temperature drop for the duration of your vacation.

Enabled	Vacation mode will be active according to the settings of the times and temperatures.
Disabled	Normal operation

Sanitary hot water temp. drop during vacation mode

Setting domestic hot water temperature drop during the vacation mode. Min. possible setting = 1

Heating water temp. drop during vacation mode

Setting heating water temperature (heating) drop during the vacation mode. Min. possible setting = 1

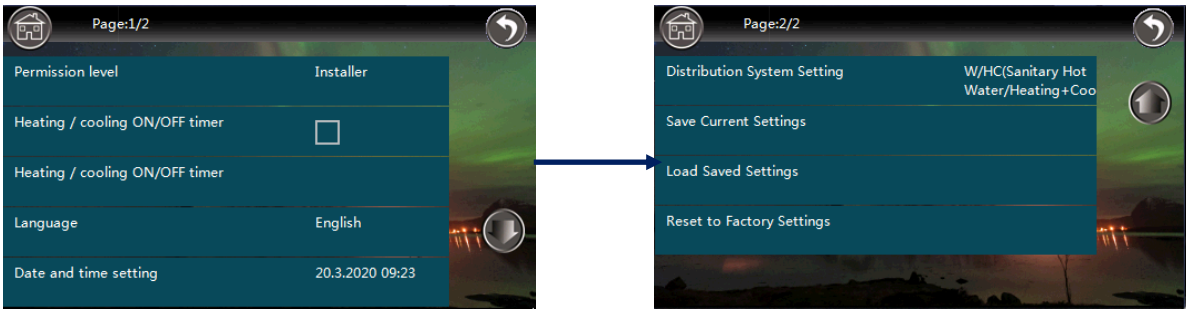
Vacation start date

Setting the start date of vacation.

Vacation finish date

Setting the finish date of vacation.

7.8 USER



Permission level

Enter the service password to enter the service / installer level.

Installer code: ***87654321***

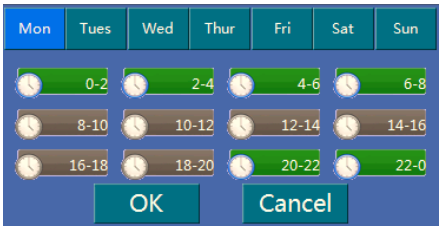
Heating / cooling ON/OFF timer

Enabled	The heat pump will heat and cool only according to the setting of a timer. In the other time, it will be only in Antifreeze protection mode.
Disabled	Normal operation

Note:

This function has no influence on the DHW mode.

SETTING THE TIMER:



Green fields mean that heating/cooling depending on the outdoor temperature is on.

Gray fields mean that heating/cooling depending on the outdoor temperature is blocked.

Language

Setting the language of the interface.

Date and time setting

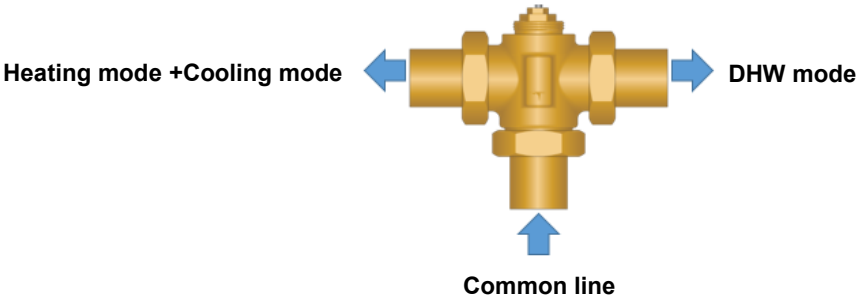
Setting the time and date.

Distribution system setting

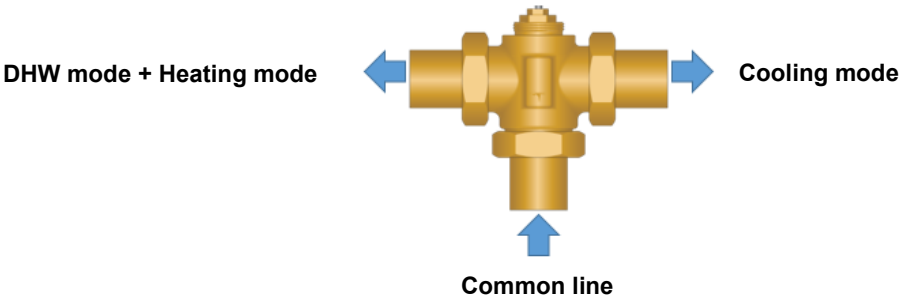
This is to determine the working logic of the Diverting Valve, which way the water will flow in heating mode, cooling mode and DHW mode.

Two possible settings

W / HC (Sanitary Hot Water / Heating + Cooling)



WH / C (hot water + heating / cooling)



Note: TC will take the temperature reading of TW when set to W / HC (Sanitary Hot Water / Heating + Cooling)!

Save current settings

Saving all the settings at the end of a Start-Up. By saving this setting, the end customer can recall them by pressing ″Load saved settings″, meaning all settings will reset to the settings saved during Start-Up.

Load saved settings

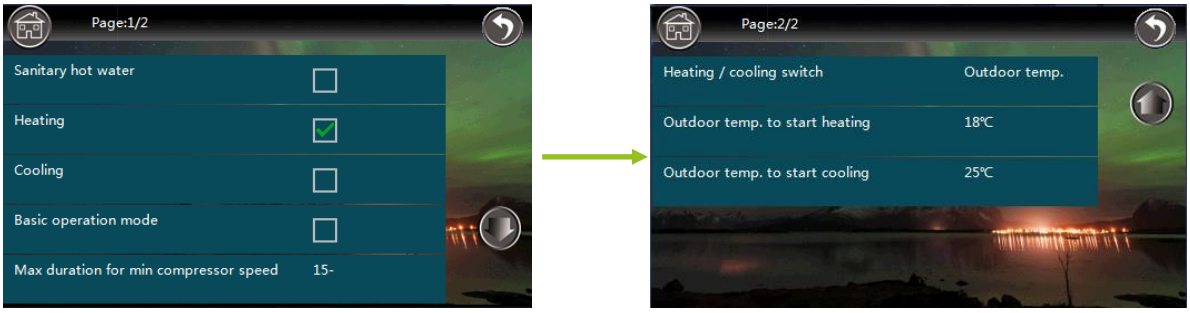
Reset all settings to “Install settings”.

All settings are reset to the settings stored during the last intervention by an authorized service person.

Switch to factory settings

Unit will reset to the factory settings.

7.9 WORKING MODE



Sanitary hot water

Enabled	Unit will produce sanitary hot water (DHW) if demanded from the system.
Disabled	Unit will not work for sanitary hot water mode

Heating

Enabled	Unit will produce hot water for the heating system and if needed control the heating circuits.
Disabled	Unit will not work for heating.

Cooling

Enabled	Unit will produce cold water for the colling system and if needed control the cooling circuits.
Disabled	Unit will not work for cooling.

Basic operation modes

This function is not ready yet!

DO NOT ENABLE THIS FUNCTION! It may cause damage to the system and the Unit tself if enabled!

Max. duration for min. compressor speed

5 - 19	Setting of the max working time (in minutes) of the compressor in min. compressor speed.

20 ≤	The unit will work in min. compressor speed until setting of ˝Heating / cooling stops based on water ΔT˝ is reached – see chapter 5.1

Heating / cooling switch

OFF	Unit will not automatically switch to heating or cooling. Only manual switching.
Outdoor temp.	Unit switches automatically from heating mode and cooling mode according to the average outdoor temperature.
External signal control	The unit will not consider the outdoor temperature setting for heating and cooling switch! It will judge based on a signal received to contacts HS - COM (heating signal) and CS – COM (cooling signal). A potential free signal must be used! No voltage must be present! Note: if signal for heating in high outdoor temperatures (when heating is not anymore needed) is present, the heat pump will run in heating mode!
External Signal Control + Outdoor Temp	This setting means that the unit will work only for heating and cooling with signal (HS – COM or CS – COM) but will take into account the outdoor temperature.

Please note, that this function does not influence the working of the DHW mode.

Outdoor temp. to start heating

Setting the outdoor temperature to start heating mode.

Default setting is 18°C.

Example:

The set temperature to start heating is 18 °C.

The heat pump will heat the facility depending on the set values (heating curve or constant space heating water temperature, depending on the settings), if the outdoor temperature drops below 18 °C.

When the outdoor temperature rises above 18 °C, the heat pump will automatically stop heating the facility.

It will resume heating when the outdoor temperature drops below 18 °C.

Note:

To prevent too frequent switches between operation and non-operation, the control unit monitors the current temperature and temperature within a certain period and decides based on this whether heating should be activated or blocked.

Outdoor temp. to start cooling

Setting the activation/start of cooling at a certain Outdoor temperature.

The factory setting is 25 °C.

Example:

The set temperature to start cooling is 25 °C.

Heat pump will cool the facility depending on the set values if the outdoor temperature rises above 25 °C.

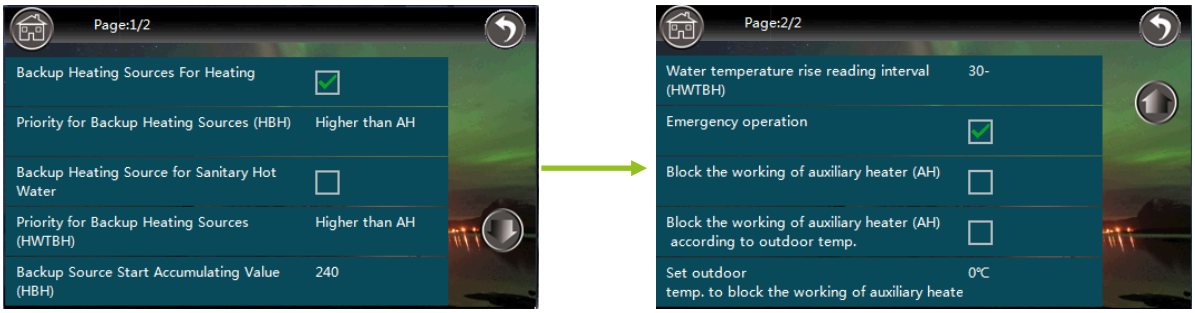
When the outdoor temperature drops below 25 °C, the heat pump will automatically stop cooling.

It will resume cooling when the outdoor temperature rises above 25 °C.

Note:

To prevent too frequent switches between operation and non-operation, the control unit monitors the current temperature and temperature within a certain period and decides based on this whether heating should be activated or blocked.

7.10 BACK-UP



In the “Backup Heating” menu you can set the backup heating sources. By factory default, these heating sources are two-stage, that can be with a different heating source (el. heaters, pellet burning furnace, oil burning furnace etc.). In this case, the heat pump regulates the switching on/off the furnace.

AH	Common for both heat and hot water.
HBH (Heating Backup Heater)	Backup heating only for heating system.
HWTBH (Hot water backup heater)	Backup heating only for DHW (sanitary hot water).

Note:

In some models, AH and HBH are integrated in the unit (electrical heaters), see technical specification.

For installations with separate tanks for heating and hot water, keep in mind that AH is common to both and can therefore not be placed in one of the tanks, but before the diverting valve.

Backup heating sources for heating

Enabled	The heat pump connects two additional heat sources in two stages (AH + HBH).
Disabled	The heat pump uses only AH for backup.

Priority for backup heating sources (HBH)

Setting of which relays RK1 and RK2 (AH and HBH) are to be connected as the first step.

Lower than AH	First stage AH (RK1) and second stage HBH (RK2)
Higher than AH	First stage HBH (RK2) and second stage AH (RK1).

Backup heating source for sanitary hot water

Enabled	The heat pump uses two additional heat sources in two stages (AH + HWTBH).
Disabled	The heat pump uses only AH as a backup heating source.

Priority for backup heating sources (HWTBH)

Setting of which relays RK1 and RK2 (AH and HWTBH) are to be connected as the first step.

Lower than AH	First step AH (RK1) and second step HWTBH (RK3).
Higher than AH	First step HWTBH (RK3) and second step AH (RK1).

Heating source start accumulating value (HBH)

Default setting: 200.

Setting to tell the heat pump when to start backup heating source for heating mode.

This is a specially designed logic, which takes the $\Delta T_{(Tset - Tactual)}$ of the heating water and the temperature rising time for judging if backup heating is needed.

Setting range is from 0 to 600.

If the number is low, the backup heating will start sooner than if the number is set high.

Note:

At cold start-up the backup heaters will switch on fast, because of the high difference of the set temperature and actual temperature ($\Delta T_{(Tset - Tactual)}$).

Water temperature rise reading interval (HWTBH)

Default setting: 30.

The units are minutes.

Setting how long will it take that the backup starts in case that the temperature in the DHW tank doesn't rise for 1°C.

Emergency Operation

Enabled	If there is a fault on the Heat Pump, so that the compressor cannot start, the Heat pump will switch to emergency operation and start heating with Backup heating sources. Note: When emergency operation is active, all set values will drop automatically by 7°C.
Disabled	If there is a fault on the Heat Pump, so that the compressor cannot start, the Heat pump **will not** switch to emergency operation, but it will just stop working until the fault is canceled. In this case, the house and the DHW may cool too much.

Block the working of auxiliary heater (AH)

Enabled	Blocking the working of the AH.
Disabled	Normal operation of AH backup heating source.

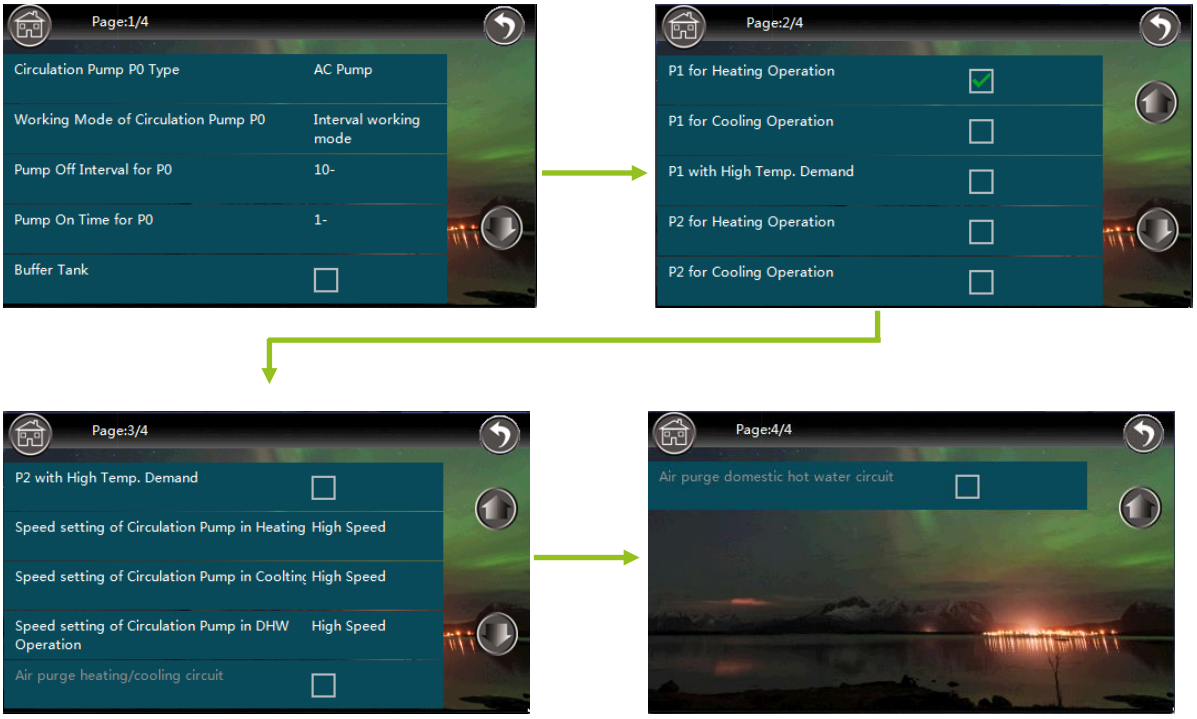
Block the working of auxiliary heater (AH) according to outdoor temp.

Enabled	Blocking the AH working according to the outdoor temp setting.
Disabled	Working of the AH according to other settings

Set outdoor temp. to block the working of auxiliary heater

Set the outdoor temperature for blocking the AH.

7.11 WATER PUMP SETTINGS



The heat pump can control 3 circulation pumps.

P0	Integrated main circulation pump. Common for heating, cooling and hot water.
P1	Heating / cooling circuit 1 – ZONE1 (after buffer)
P2	Heating / cooling circuit 2 – ZONE2 (after buffer)

Circulation pump P0 type

Control setting of the P0 circulation pump

DC Variable speed pump	PWM control – speed controlled
AC Pump	ON/OFF control

Working Mode of Circulation Pump P0

Interval working mode	When the heat pump is not running (all the temperatures are achieved), circulation pump P0 is running according to parameters Pump Off Interval for P0 and Pump on time for P0.
ON constantly	Running constantly when unit is in heating mode.
OFF with compressor	Circulation pump P0 works only when compressor is running.

Pump Off Interval for P0

Time for Interval working mode parameter where circulation pump P0 is deactivated. Default setting is 10.

Pump On time for P0

Time for Interval working mode parameter where circulation pump P0 is activated. Default setting is 1.

Buffer tank

Enabled	Buffer tank installed in the hydraulic system.
Disabled	No buffer tank in the hydraulic system.

P1 for heating operation

Enabled	P1 used for heating circuit 1 – ZONE 1
Disabled	P1 not used for heating circuit 1 – ZONE 1. During heating mode it will be OFF.

P1 for cooling operation

Enabled	P1 used for cooling circuit 1 – ZONE 1
Disabled	P1 not used for cooling circuit 1 – ZONE 1. During cooling mode it will be OFF.

P1 with high temp. demand

Enabled	P1 will work only with external signal to TH and COM.
Disabled	Function not in use.

Example:

Enable if you use a Room thermostat for heating system for **ZONE 1**. Circulation pump P1 only works when the signal from a Room thermostat is present. Room thermostat is connected to COM and TH connectors with a **non-voltage** contact.

P2 for heating operation

Enabled	P2 used for heating circuit 2 – ZONE 2
Disabled	P2 not used for heating circuit 2 – ZONE 2. During heating mode it will be OFF.

P2 for cooling operation

Enabled	P2 used for cooling circuit 2 – ZONE 2
Disabled	P2 not used for cooling circuit 2 – ZONE 2. During cooling mode it will be OFF.

P2 with high temp. demand

Enabled	P2 will work only with external signal to TH and COM.
Disabled	Function not in use.

Example:

Check this box if you use a room thermostat for heating system for **ZONE 2**. Circulation pump P2 only works when the signal from a room thermostat is present. Room thermostat is connected to COM and TH connectors with a **non-voltage** contact.

NOTE:

Only one contact (COM and TH) is used for both High Temp. Demands. For this reason, use only one at a time.

Speed setting of circulating pump in heating

High speed	Circulation pump P0 will run in high speed during heating operation.
Middle speed	Circulation pump P0 will run in middle speed during heating operation.
Low speed	Circulation pump P0 will run in low speed during heating operation.

Note: Valued only if type of P0 is set to DC variable speed pump (PWM control).

Speed setting of circulating pump in cooling

High speed	Circulation pump P0 will run in high speed during cooling operation.
Middle speed	Circulation pump P0 will run in middle speed during cooling operation.
Low speed	Circulation pump P0 will run in low speed during cooling operation.

Note: Valued only if type of P0 is set to DC variable speed pump (PWM control).

Speed setting of circulating pump in DHW operation

High speed	Circulation pump P0 will run in high speed during DHW operation.
Middle speed	Circulation pump P0 will run in middle speed during DHW operation.
Low speed	Circulation pump P0 will run in low speed during DHW operation.

Note: Valued only if type of P0 is set to DC variable speed pump (PWM control).

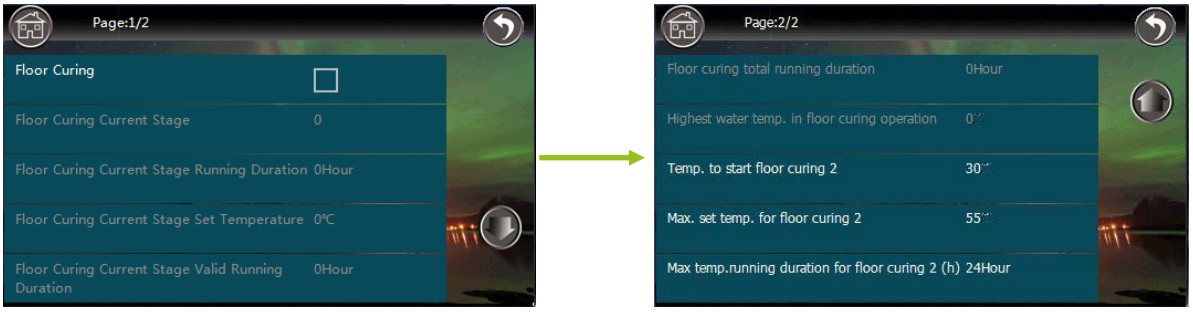
Air purge heating / cooling circuit

Automatic air purging of the heating/cooling system. **Function not in use!**

Air purge domestic hot water circuit

Automatic air purging of the sanitary hot water system. **Function not in use!**

7.12 FLOOR CURING



Floor curing function is for thermal treatment of screeds.

Floor curing

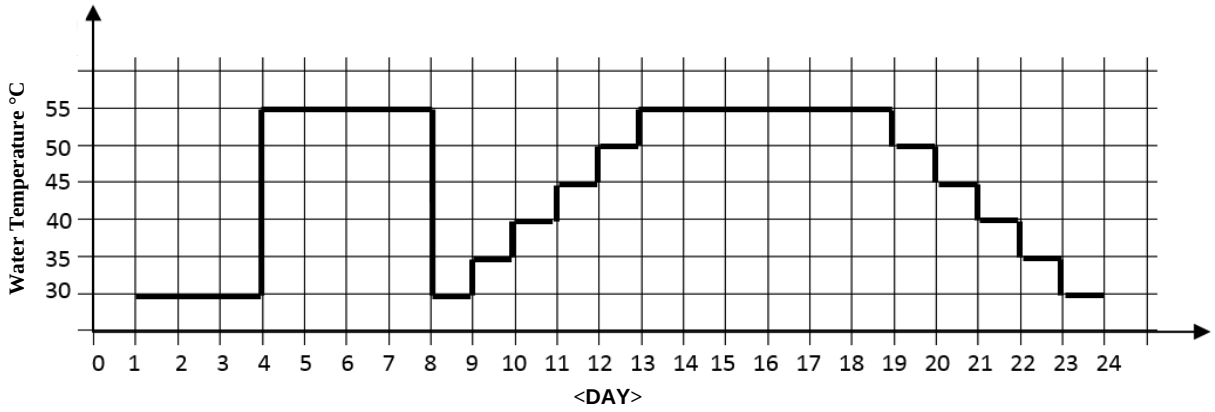
Enabled	Floor curing function is ON.
Disabled	Normal operation of the heat pump.

It is a fully automatic function. During the duration of this function DHW mode will be automatically disabled.

The duration of the function depends on the outdoor temperatures and moisture in the screed. Minimum duration is 30 days.

There are two main cycles of the function, which are divided in 24 steps – see graph below.

After the function is finished, the Heat pump returns to normal operation.



Floor curing current stage

Shows the correct working stage of the floor curing function.

Floor curing current stage running duration

Shows the running duration of the correct working stage, meaning how long is the total running time of this stage.

Floor curing current stage set temperature

Shows the set temperature of the correct working stage.

Floor curing current stage valid running duration

Shows the correct working stage running time in the desired water temperature.

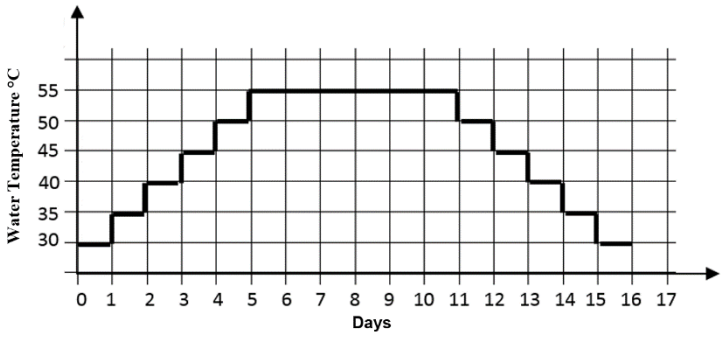
Floor current total running duration

Total running time of the function.

Highest water temp. in floor curing operation

Highest reached water temperature during floor curing operation.

Floor curing 2 is a shorter floor curing function. It will run only the second half of the main floor curing function, meaning heat up the water for 5°C each day until it reaches the set ″Max. Set temp. for floor curing 2″ temperature and will keep this temperature for the time set (in hours) in parameter ″Max temp. running duration for floor curing 2 (h)″. After that time it will each day lower the water temp for 5°C until it reaches the starting point. When finished it will return to normal operation.



Temp. to start floor curing 2

Setting at which temperature the function should start.

Example: If set to 30°C the heat pump will first heat up the water to 30°C and then start the floor curing 2 function accordingly.

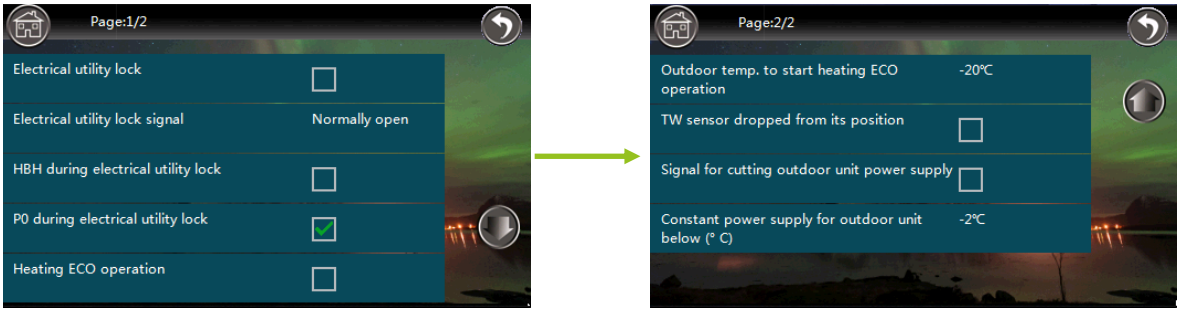
Max. Set temp. for floor curing 2

Setting the max temperature for floor curing 2 function.

Max temp. running duration for floor curing 2 (h)

Setting how long will the heat pump keep the max temperature before start to decrease the temperature for 5°C each day. Setting is done in hours.

7.13 ELECTRIC LOCK



Electrical utility lock

Electrical Utility Lock or EUL is used in some countries, where the Industry has a high demand on electrical power one or multiple times a day. The electricity distribution companies send a signal to Households that stops all high power electrical consumption systems. The heat pump belongs to this group, meaning it needs to stop during this time. If there is an additional heating source that is not in this EUL group, it can be automatically switched on during this period.

A potential free contact is used and connected to the terminals ES and COM.

Enabled	If a signal comes to ES and COME, the compressor stops for heating mode, DHW mode and Cooling mode. Mixing valves and circulation pumps P1&P2 operate normal.
Disabled	Function not valid.

Note:

For systems with enabled Electrical Utility Lock a buffer is recommended, so that the heat stored in the buffer can be used for heating the house.

Operation signal for electrical utility lock

Signal type can be selected according to the signal provided by the distribution system.

Normally Open	Function will be active when ES and COM are short-circuited.
Normally Closed	Function will be active when ES and COM are open.

HBH during electrical utility lock

The additional heat source HBH can be activated during electrical utility lock.

Enabled	During EUL active, the HBH (RK2) will switch ON as a substitute heating.
Disabled	No additional heating sources will switch ON.

P0 during electrical utility lock

Enabled	P0 will work during EUL is active.
Disabled	P0 will STOP during EUL is active.

Heating eco operation 

Heating ECO Function (Bivalent function) is for switching an additional heating source that can be switched ON during the coldest days.

Enabled	According to the temperature setting ″Outdoor temp. to start heating ECO operation″ an additional heating source (HBH) is switched ON for heating the building and the compressor is switched OFF during this time.
Disabled	Function not valid.

Example:

The Heating ECO Operation is enabled and the temperature to start the Heat ECO operation is set to -20°C. A Gas boiler is connected to the system as an additional heating source, controlled by HBH (RK2):

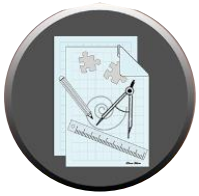
When the outdoor temperature falls below -20°C, the compressor will stop and the heat pump will activate HBH (RK2) to switch on the Gas boiler for heating the house. When the outdoor temperature rises again over -20°C, the Heat pump will stop the Gas boiler and switch on the heat pump for heating.

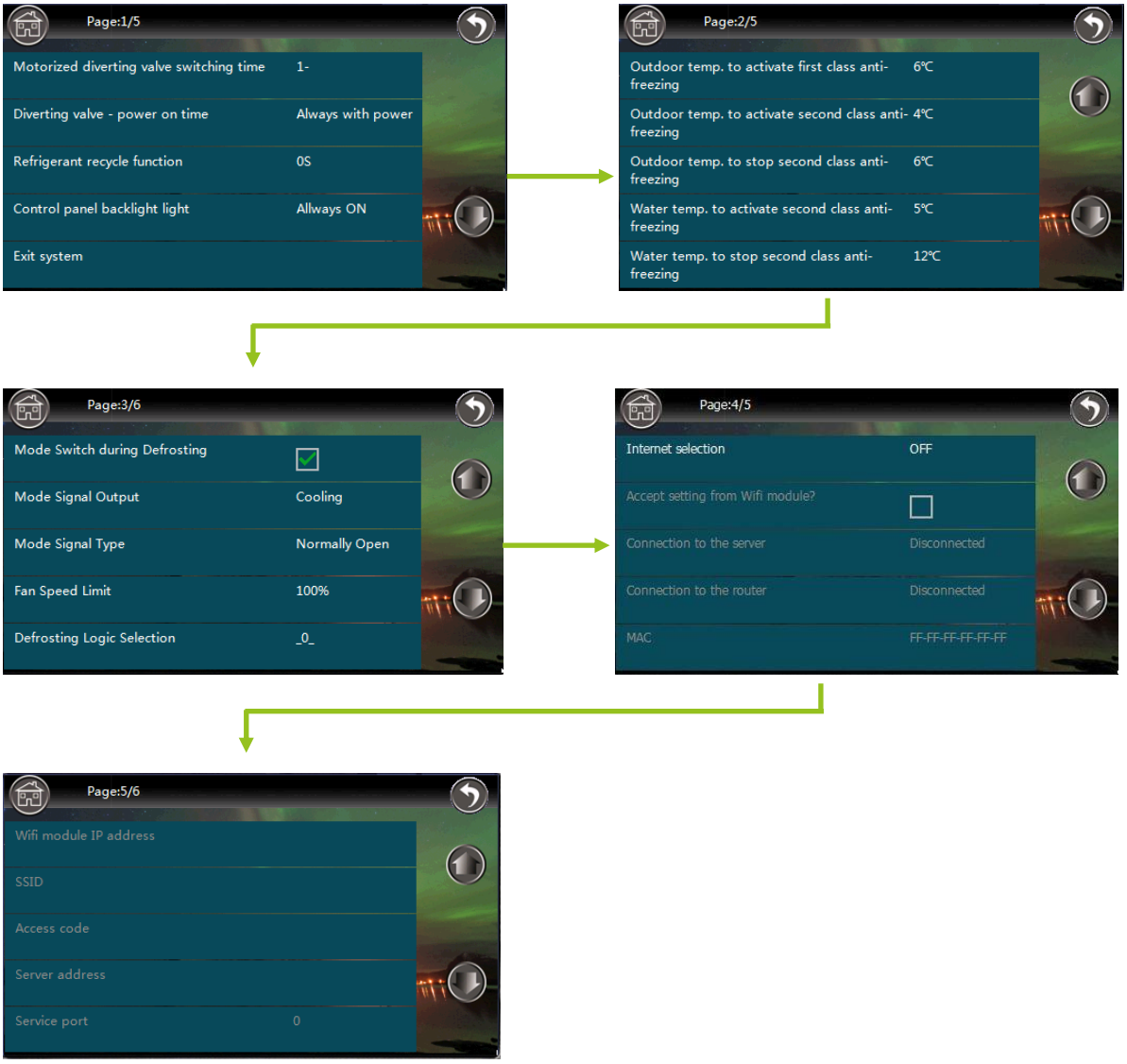
Note: this function doesn't affect the heating of the sanitary water.

Outdoor temp. to start heating eco operation

Setting the outdoor temperature for starting the Heat ECO Operation.

7.14 OTHER OPTIONS





Motorized diverting valve switching time

Setting the switching time of the diverting valve in minutes.

Diverting valve - power on time

It determines how long will the diverting valve have power in a particular mode.

Refrigerant recycle function

This is used for pumping the refrigerant back to outdoor unit. When turned on, it starts to count down the running time of this function (600s). When the **refrigerant recycle function** is active, all safety features are disabled. You can stop this function by tapping on it again.

Control panel backlight light

Always ON	Display always ON – recommended setting
3 min	After 3 minutes of inactivity, the display turns off
5 min	After 5 minutes of inactivity, the display turns off
10 min	After 10 minutes of inactivity, the display turns off

Exit system

The exit system button takes you to WinCE interface. This is used for special service purposes. It can be accessed also on the main screen when the service permission level is active.

Anti-freezing protection

Outdoor temp. to activate first class anti-freezing	If outdoor temperature falls below this value, the circulating pumps will start to operate.
Outdoor temp. to activate second class anti-freezing	If outdoor temperature falls below this value, the compressor and all additional heating sources will start to operate.
Outdoor temp. to Stop second class anti-freezing	If the outdoor temperature exceeds this value, first and second-class anti-freeze protection will stop to operate.
Water temp. to activate second class anti-freezing	If the water temperature falls below this value, the compressor and all additional heating sources will start to operate.
Water temp. to stop second class anti-freezing	If the water temperature exceeds this value, first and second-class anti-freeze protection will stop to operate.

Mode switch during defrosting 

Enabled	Unit will switch the working mode to the system that has water temperature higher than 23°C to make a safe defrost. After defrosting is done, the unit will switch back to required working mode. Switching mode during defrost will only happen if not enough energy (temperature) in the current working mode.
Disabled	Unit will start to defrost in the current working mode. If the water temperature is under 23°C, the unit will stop with error if there is not enough energy for safe defrost.

Mode signal output

With this function, you can determine when the MS contact will be active. You can select the activation during:

Cooling	When the unit goes to cooling mode, MS gives signal according to selected Mode Signal Type.
Heating	When the unit goes to heating mode, MS gives signal according to selected Mode Signal Type.

Mode signal type

Normally open	When Mode Signal Output becomes active, 230 V will be present on MS contact. When Mode Signal Output deactivates, no voltage will be present on MS contact.
Normally closed	When Mode Signal Output becomes active, no voltage will be present on MS contact. When Mode Signal output deactivates, 230 V will be present on MS contact.

Fan speed limit

Limiting the maximum fan speed – outside unit (90, 95, 100%).

We do not recommend changing this value because it can lover COP and heating capacity and it can cause improper operation of defrost.

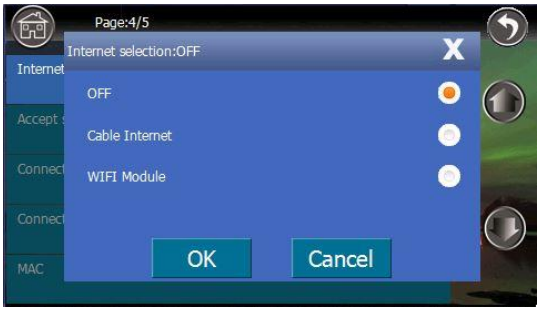
Defrosting logic selection

0	Smart defrost logic
1	Fix interval defrost logic – 45 minutes
2	Test defrost logic

This function should only be used on the advice of ES technical support. Changed defrosting logic can damage the unit and affect the warranty!

Internet selection

OFF	Unit not connected to the internet for remote access.
Cable internet	Unit connected to the internet via LAN cable connected on the back of the controller.
WiFi module	Unit connected to the internet via WiFi module.



Accept setting from Wi-Fi module?

Enabled	Remote control of the unit
Disabled	No remote control of the unit, only read data option.

Connection to the server

Connected	WI-FI module is connected to the ES Web server.
Disconnected	WI-FI module is not connected to the ES Web server.

Connection to the router

Connected	WI-FI module is connected to the WI-FI router.
Disconnected	WI-FI module is not connected to the WI-FI router.

MAC

MAC address is the identity of the unit. If the address is 00-00-00-00-00-00, please check the LAN cable connection or the connection from the unit to the WI-FI module.

Note: MAC address is different if connected via LAN cable or WiFi module.

WI-FI module IP address

IP address of the house router internet connection.

SSID

Name of the house router internet connection server to which is connected.

Password

SSID password (only if connected via the WiFi module. Password is shown only with the service permission level enabled.

Server address

Server address must be www.myheatpump.com.

Note: if a WiFi module is used this setting must be done manually on the Wi-Fi module during installation.

Service port

Service port must be **18899**.

Note: if a WiFi module is used this setting must be done manually on the Wi-Fi module during installation.

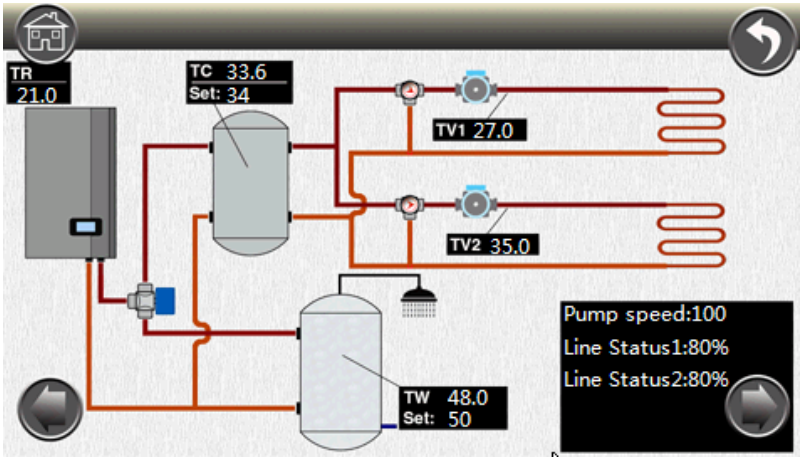
7.15 REAL TIME DATA

Software version No.	Shows the software number of the controller – Touch display.
Database version	Shows the database version.
Heat exchanger water outlet temperature – indoor – Tuo	Outlet water temperature on the plate heat exchanger.
Heat exchanger water return temperature – indoor – Tui	Inlet water temperature on the plate heat exchanger.
Indoor coil temp. – Tup	Liquid line temperature.
Sanitary hot water temp. - TW	DHW temperature.
Cooling/heating water temp. TC	Heating / cooling water temperature.
Water flow rate	Running speed of the P0 circulation pump. Not actual flow rate!
Compressor working speed	Running speed of the compressor.
EEV opening	Electronic expansion valve opening (in steps)
Average outdoor temp. in 1 hour	Average outdoor temp. in 1 hour
Average outdoor temp. in 4 hours	Average outdoor temp. in 4 hours
Average outdoor temp. in 24 hours	Average outdoor temp. in 24 hours
High pressure – Pd	High pressure detected by the high pressure sensor.
Low pressure - Ps	Low pressure detected by the low pressure sensor.
Discharge temp. – Td	Hot gas temperature of the compressor.
Suction temp. – Ts	Suction temperature of the compressor.
Outdoor coil temp. Tp	Evaporator temperature.
Heat pump accumulated operation time	Heat pump accumulated operation time.
Preserved	Preserved
Fan speed 1	Fan 1 running speed.
Fan speed 2	Fan 2 running speed.
Outdoor unit working current	Outdoor unit current (in Amp)
Voltage	Voltage measured on the outdoor unit.
Eeprom version No.	Eeprom version number.

8 INFO PAGE

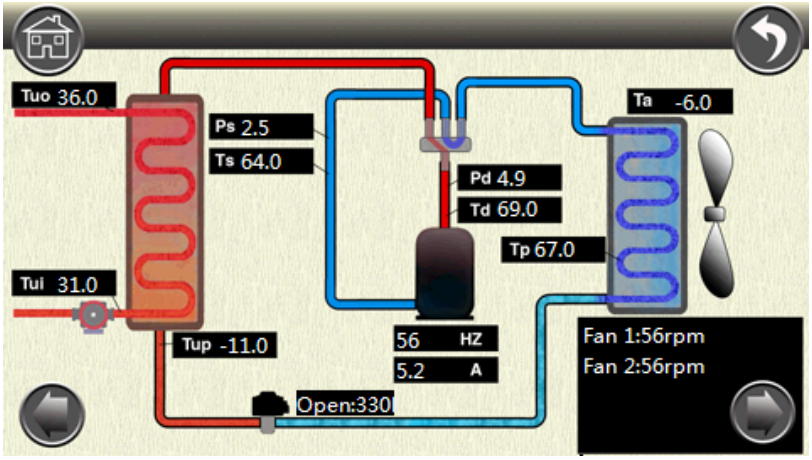
By pressing the and then takes you to the info page. First thing that is displayed is the hydraulic scheme with temperature readings from all the sensors.

Hydraulic scheme



TC	Heating / Cooling (direct circuit or Buffer Tank)
TW	DHW Temperature
TV1	Mixing Circuit 1
TV2	Mixing Circuit 2
TR	Room Temperature
Line status 1	Communication – Touch Screen controller to the Indoor PCB 90 – 100 % = normal communication
Line status 2	Communication – Touch Screen controller to the Outdoor PCB 90 – 100 % = normal communication
Pump speed	100 = Pump P0 Activated 0 = Pump P0 Deactivated

Refrigerant scheme



Ta	Outdoor Temperature Sensor
Tui	Condenser Inlet Temperature Sensor
Tuo	Condenser Outlet Temperature Sensor
Tup	Liquid Refrigerant Temperature Sensor
Ts	Suction Temperature (Compressor) Sensor
Td	Discharge Temperature (Compressor) Sensor – Hot Gas Temperature
Tp	Evaporation Temperature Sensor
Ps	Low pressure – Suction pressure
Pd	High pressure – Discharge pressure
Fan 1,2	Fan speed for Fan 1 and Fan 2

9 ERROR CODES

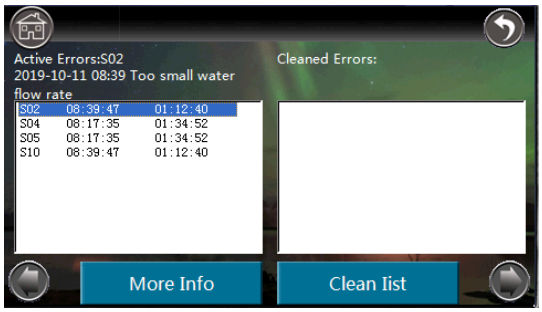
If some faults happen and some errors appear, it is not always because of the heat pump itself. The most errors happen due to the hydraulics system and especially in the first heating season (water pressure falls, air in the system, dirt in the piping…).

9.1 ERROR CODES SHOWN ON THE DISPLAY

The error codes will be shown on the Main display and in the error code menu.

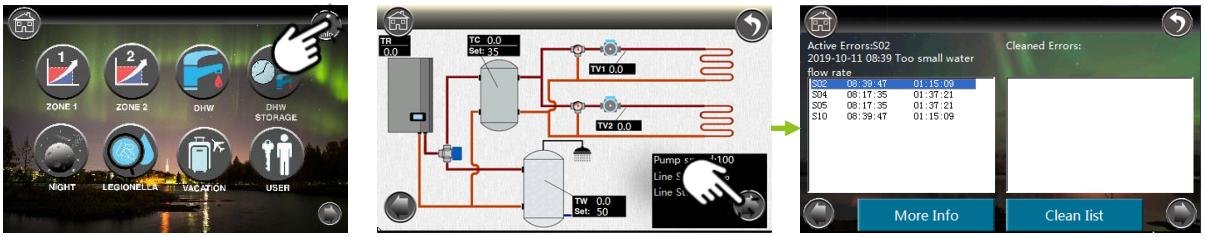
Main display

Error code menu



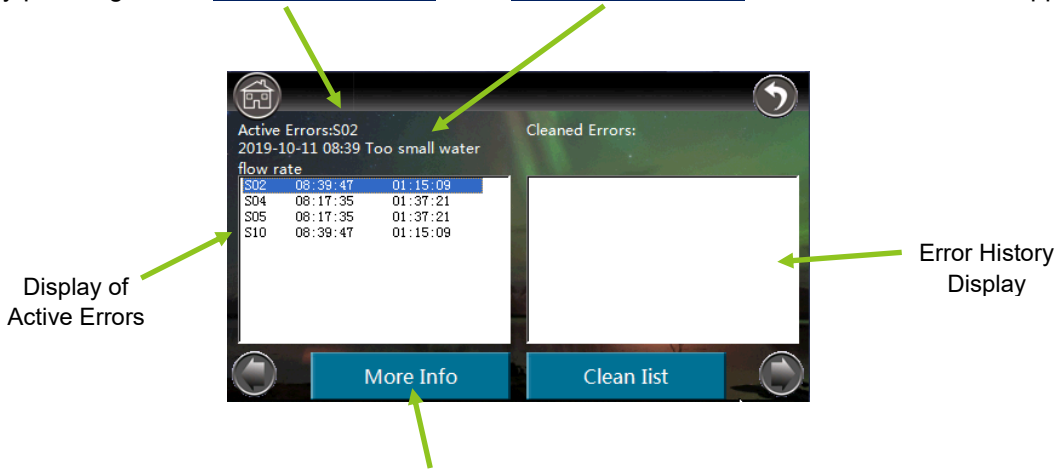
9.2 ERROR CODE MENU

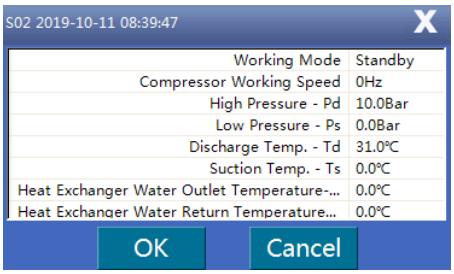
ACCESSING THE ERROR CODE MENU



INFORMATIONS IN THE ERROR CODE MENU

By pressing on the Error code number more detailed information for this Error code will appear on



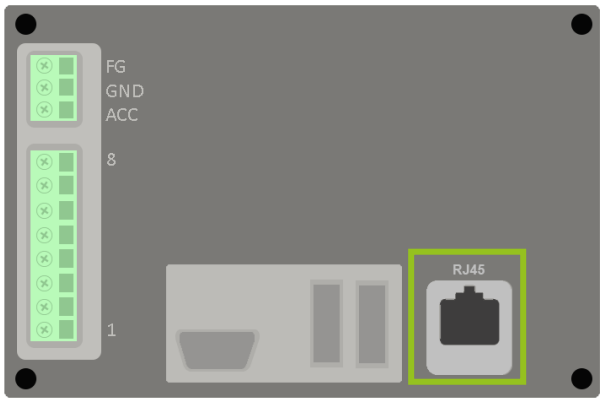


By selecting an Error code and pressing **More info** button, unit displays additional info regarding the status of the heat pump at the time when the error happened.

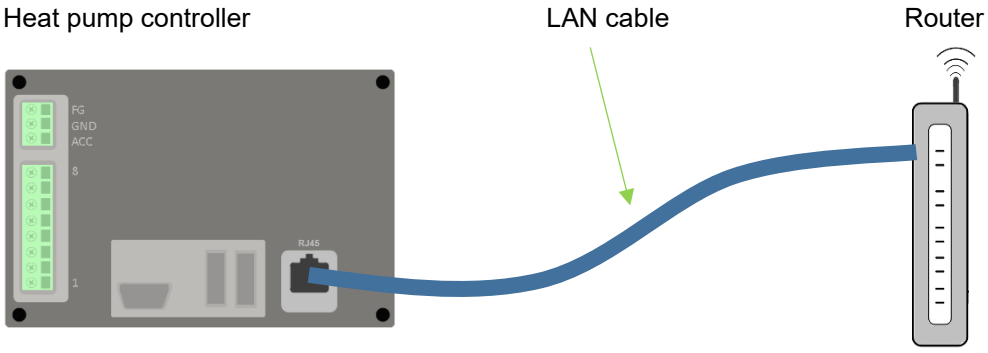
Internet connection

All units come equipped with an internet connection. This will provide a 24/7 monitoring and control of the heat pump.

The unit is connected to the internet via a LAN cable (RJ45) on the back of the controller.

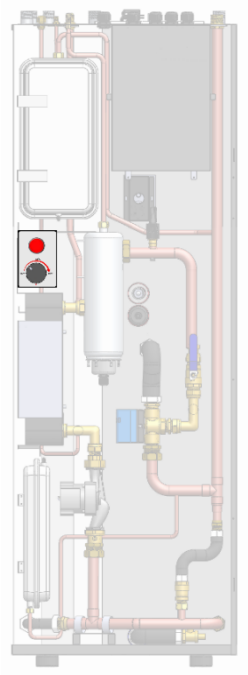
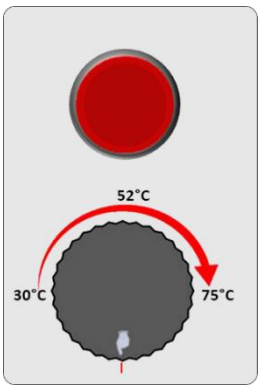
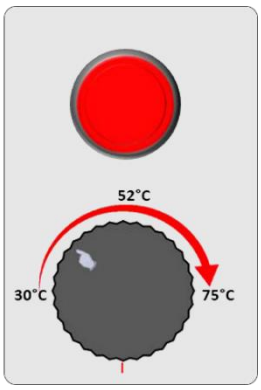


9.3 Connecting directly to the Router



10 Emergency switch AWT6/12-R32-M

The heat pump has automatic emergency operation that is activated if the compressor stops (applies to all models with back up heaters), with reduced temperature settings for heating and sanitary hot water. However, if a serious fault occurs so that the heat pump still does not produce heat even if there is a need, there is an emergency switch you can turn on while waiting for service technicians. Behind the front of the unit is a red button along with a thermostat. Press the red button and set the desired temperature, between 30°C - 75°C, for the water to the heating system with the thermostat. The heat pump then uses the integrated electrical heaters to heat the water.

Front view	Switched OFF	Switched ON
		
	Normal operation of the heat pump.	Manual emergency heating activated. Sett the desired temperature for the heating system. Electrical heater and circulation pump P0 will start to work according to the setting of the thermostat. NOTE: Be sure not to exceed the normal temperatures of the heating system!

11 Digital thermostat AWT6/12-R32-M

AWT-R32-M units have and integrated 0,5 kW electrical heater for sanitary hot water, that is controlled directly by a digital thermostat.

Button	Setting
SET	Press for changing the desired temperature
△	Press to rise the desired temperature (after few seconds the display will return to the actual temperature)
▽	Press to lower the desired temperature (after few seconds the display will return to the actual temperature)

Symbols	Meaning	Note
OUT	Electrical heater - OFF	
OUT ■	Electrical heater - ON	
HH	Temperature out of range – to high	Temperature in the flow heater ≥ 120°C. Short circuit of the temp. sensor. Temp. sensor broken.
LL	Temperature out of range – to low	Temp. detected on the sensor ≤ -45°C. Open circuit of the temp. sensor (bad contact or disconnected). Temp. sensor broken.

12 Analog back-up AWST6/15-R32-M

Applies only for AWST models!

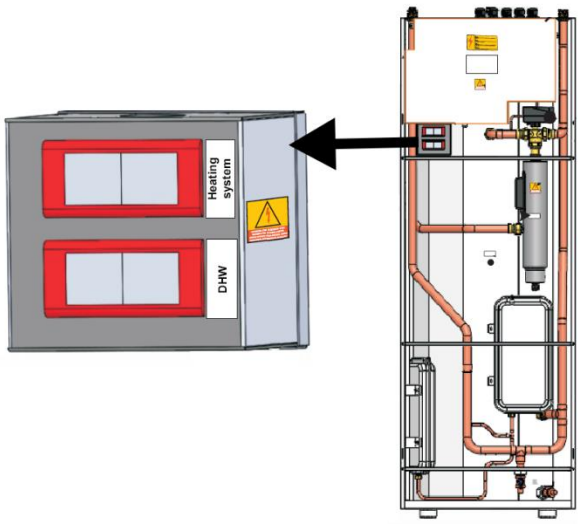
Analog back-up is a function that will kick in as the last reserve, meaning if the unit has a fatal failure.

All circulation pumps will start to run and the integrated electric heater will work for heating and DHW via the two digital thermostats.

Upper thermostat is for heating.

Lower thermostat is for DHW.

The thermostats will control the 3-way valve to heat up the sanitary water according to the setting on the thermostat.



Important: during installation / start-up of the unit the installer must set the digital thermostats accordingly to match the system. To disable the Analog back-up set the temperatures to 10°C which means that if there is a major failure the thermostats will work only to prevent the water from freezing.

12.1 Digital thermostat

SET	Press to change the temperature setting. Temperature starts blinking.
△	Press to increase the temperature. Display will return on its own and save the last setting automatically.
▽	Press to decrease the temperature. Display will return on its own and save the last setting automatically.
OUT	Electrical heater is OFF.
OUT ■	Electrical heater is ON (a dot appears).

Thermostat failures

Failure on display	Possible causes	State of electrical flow heater
	• Temp. detected on the sensor ≥ 120°C • Short circuit of the temp. sensor • Temp. sensor broken	STOP
	• Temp. detected on the sensor ≤ - 45°C • Open circuit of the temp. sensor (bad contact or disconnected) • Temp. sensor broken	STOP

13 Anti-freeze protection – all units

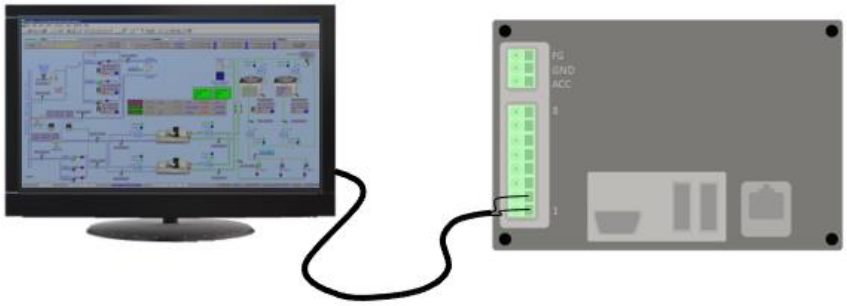
All AW-R32-M units have besides the automatic anti-freeze protection an additional back-up anti-freeze protection system, independent from the main control system. It is controlled by a mechanical thermostat located in the outdoor unit, that activates an electrical heater placed on the plate heat exchanger and piping, if the temperature on the plate heat exchanger falls below the set temperature. Default setting of the thermostat is 7°C.

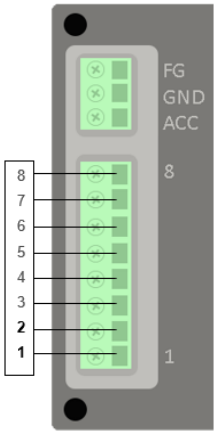
14 Modbus compatibility

All AW-R32-M units can all be controlled by an external device using a standard Modbus protoicol connection.

BMS System

ES Heat Pump operation panel





8 - Heat pump internal communication – A
7 - Heat pump internal communication – B
6 - Blank
5 - Wi-Fi module port 5
4 - Wi-Fi module port 4
3 - Wi-Fi module port 3
2 - ModBus communication – R-
1 - ModBus communication – T+

14.1 ModBus protocol

Real setting address = address in protocol - 1

Baud rate: 19200

Word: 8

Parit: EVEN

Stop: 1

Remark

*** Real value = Displayed value / 10**

Settings

Address	Type	Default	Min. value	Max. value	Name	Remark
1	03|06|16	1	0	1	System ON/OFF,0--OFF,1--ON	
4	03|06|16	4	1	4	Current working modfe,0--Standby,1--Heating,2--Cooling,3--DHW,4--Auto	
6	03|06|16	1			DHW mode,0--Invalid,1--Valid	
7	03|06|16	1			Heating mode,0--Invalid,1--Valid	
8	03|06|16	0			Cooling mode,0--Invalid,1--Valid	
11	03|06|16	18			Ambient temp to start heating, Value:-10~25℃	
12	03|06|16	25			Ambient temp to start cooling, Value:20~53℃	
14	03|06|16	60			Max. heating set temp, 37-60℃	
15	03|06|16	20			Min. heating set temp, 20-37℃	
16	03|06|16	25			Max. cooling set temp, 18-30℃	
17	03|06|16	7			Min. cooling set temp,7-20℃	
27	03|06|16	2			Delta T to stop HP, Value:1~3℃	
28	03|06|16	2			Delta T to restart HP, Value:1-10℃	*
29	03|06|16	2	1	10	Delta T to lower compressor speed, Value:1-10℃	*
30	03|06|16	24	7	25	Cooling set point ZONE 1	*
31	03|06|16	1	0	1	Heating curve, 0--OFF,1--ON	*
32	03|06|16	-25			Ambient temp 1, Value: -25~35℃	*
33	03|06|16	-15			Ambient temp 2, Value: -25~35℃	*
34	03|06|16	-5			Ambient temp 3, Value: -25~35℃	*

35	03|06|16	5			Ambient temp 4, Value: -25~35℃	*
36	03|06|16	10			Ambient temp 5, Value:-25~35℃	*
37	03|06|16	40			ZONE 1, Set point 1, Value: 25~55℃	*
38	03|06|16	37			ZONE 1, Set point 2, Value: 25~55℃	*
39	03|06|16	33			ZONE 1, Set point 3, Value: 25~55℃	*
40	03|06|16	29			ZONE 1, Set point 4, Value: 25~55℃	*
41	03|06|16	25			ZONE 1, Set point 5, Value: 25~55℃	*
43	03|06|16	21			Ideal room temp. for heating, Value: 15~35℃	*
44	03|06|16	24			Ideal room temp. for cooling, Value: 15~35℃	*
45	03|06|16	35	25	55	Heating set point ZONE 1 (without heating curve), Value:25~55℃	
46	03|06|16	40			ZONE 1 max. set point	*
47	03|06|16	18			ZONE 1 min. set point	*
48	03|06|16	0			Antilegionella mode, 0--OFF,1--ON	
50	03|06|16	70			Set point of antilegionella mode: 60~80℃	
51	03|06|16	20			Duration of antilegionella mode, 5~60min	
52	03|06|16	120			Max. duration of antilegionella mode, 10~240min	
58	03|06|16	0			HBH- Heating backup heater, 0--OFF,1--ON	
59	03|06|16	1			Priority between AH and HBH,0--Lower than AH,1--Higher than AH	
60	03|06|16	0			HWTBH- Hot water tank backup heater,0--OFF,1--ON	
61	03|06|16	1			Priority between AH and HWTBH,0--Lower than AH,1--Higher than AH	
62	03|06|16	240			Setting to activate AH and HBH in heating mode, 0~400	
63	03|06|16	10			Degree/minutes to activate HWTBH in DHW mode, 5~120min	
64	03|06|16	0			Heating emergency mode, 0--OFF,1--ON	
65	03|06|16	50	25	75	DHW set point, 25~75℃	
66	03|06|16	5	2	15	DHW restart delta T, 2~15℃	
91	03|06|16	0			Heating/cooling circuit 2, 0--OFF,1--ON	

92	03|06|16	24	Cooling set point ZONE 2
93	03|06|16	1	Heating curve 2, 0--OFF,1--ON
94	03|06|16	40	ZONE 2, Set point 1, Value: 20~75℃
95	03|06|16	37	ZONE 2, Set point 2, Value: 20~75℃
96	03|06|16	33	ZONE 2, Set point 3, Value: 20~75℃
97	03|06|16	29	ZONE 2, Set point 4, Value: 20~75℃
98	03|06|16	25	ZONE 2, Set point 5, Value: 20~75℃
99	03|06|16	35	Heating set point ZONE 2 (without heating curve), Value:25~55℃
100	03|06|16	55	ZONE 2, System 2 max. set point
101	03|06|16	18	ZONE 2, System 2 min. set point
102	03|06|16	0	Sleep mode, 0--OFF,1--ON
103	03|06|16	5	Delta T for sleeop mode, 2~10℃
111	03|06|16	0	Low noise mode, 0--OFF,1--ON
112	03|06|16	8	Delta T for low noise mode,2~10℃
127	03|06|16	0	Backlight, 0--Always ON,1--In 3min,2--In 5min,3--In 10min
128	03|06|16	3	Baud rate,0--1200,1--4800,2--9600,3--19200
129	03|06|16	8	Word, 6~9
130	03|06|16	2	Parit, 0--NONE,1--ODD,2--EVEN
131	03|06|16	1	Stop, 1--1,2--2
134	03|06|16	-20	Ambient to start DHW ECO mode, -20~43℃
135	03|06|16	-20	Ambient to start heating ECO mode, -20~43℃
136	03|06|16	0	Ambient to start DHW ECO mode, 0--Invalid,1--Valid
137	03|06|16	0	Ambient to start heating ECO mode, 0--Invalid,1--Valid
138	03|06|16	0	Water pump,0--DC,1--AC
140	03|06|16	0	Pump working mode,0--Interval,1--Always ON,2--Stop with compressor
141	03|06|16	6	Pump off in interval mode, 5~60min
142	03|06|16	1	Pump on in interval mode, 1~10min

143	03|06|16	0		Buffer tank, 0--NO,1--YES
144	03|06|16	0		Mixing valve 1: 0--OFF,1--ON
145	03|06|16	0		Mixing valve 2, 0--OFF,1--ON
176	03|06|16	1		3-way valve switching time, 0~16min (0 means immediately)
177	03|06|16	0		3-way valve powering time, 0~16min (0 means always)
215	03|06|16	0		Pump speed in heating, 0--high,1--medium,2--low
216	03|06|16	0		Pump speed in cooling, 0--high,1--medium,2--low
217	03|06|16	0		Pump speed in DHW, 0--high,1--medium,2--low

Real time data (Read)

Address	Type	Default	Min. value	Max. value	Name	Remark
500	03|06|16	0			HP current working mode b0--DHW, b1--heating, b2--cooling, b3--DHW in process, b4--heating in process, b5--cooling in process, b6--timer in process	
502	03|06|16	0			Software version	
503	03|06|16	0			Database version	
504	03|06|16	0			EEPROM version	
505	03|06|16	0			Water outlet temp - Tuo	
506	03|06|16	0			Water inlet temp - Tui	*
507	03|06|16	0			Indoor coil temp - Tup	*
508	03|06|16	0			DHW water temp - TW	*
509	03|06|16	0			Heating/cooling water temp - TC	*
510	03|06|16	0			Mixing valve 1 water temp - TV1	*
511	03|06|16	0			Mixing valve 2 water temp - TV2	*
515	03|06|16	0			Compressor speed (Hz)	
516	03|06|16	0			EEV opening (steps)	
517	03|06|16	0			Ambient temp - Ta	*
518	03|06|16	0			1h average ambient temp	*

519	03|06|16	0	4h average ambient temp	*
520	03|06|16	0	24h average ambient temp	*
521	03|06|16	0	High pressure - Pd	*
522	03|06|16	0	Low pressure - Ps	*
523	03|06|16	0	Evaporating temp	*
524	03|06|16	0	Condensing temp	*
525	03|06|16	0	Compressor discharge temp - Td	*
526	03|06|16	0	Compressor suction temp - Ts	*
527	03|06|16	0	Outdoor coil temp - Tp	*
528	03|06|16	0	Fan 1 RPM	
529	03|06|16	0	Fan 2 RPM	
530	03|06|16	0	Running current, (A)	*
531	03|06|16	0	Supply voltage, (V)	
532	03|06|16	0	Defrost status	
533	03|06|16	0	Room temp - TR	*
536	03|06|16	0	Cooling external signal (CS) - On/Off	
537	03|06|16	0	Heating external signal (HS) - On/Off	
538	03|06|16	0	High demand control signal - On/Off	
539	03|06|16	0	PWM signal	*
540	03|06|16	0	Mixing valve 1 output, 0-10V signal	*
541	03|06|16	0	Mixing valve 2 output, 0-10V signal	*

Protection / Error codes (Read)

Address	Type	Default	Name
542	03|06|16	0	BIT0:Running current protection,0--OFF,1--ON BIT1: Compressor phase protection (phase missing),0--OFF,1--ON BIT2:IPM modular group protection,0--OFF,1--ON BIT3: Compressor oil retunr,0--OFF,1--ON BIT4: High pressure protection,0--OFF,1--ON BIT5: Compressor speed down @ pressure too high,0--OFF,1--ON BIT6: Compressor preheating,0--OFF,1--ON BIT7: Compressor discharge sensor failure,0--OFF,1--ON BIT8: Outdoor coil temp sensor failure,0--OFF,1--ON BIT9: Supply voltage too high/ too low, 0--OFF,1--ON BIT10: Compressor speed limit @ ambient temp too high/low,0--OFF,1--ON BIT11:Compressor speed limit because of ambient temp too high/too low,0--OFF,1--ON BIT12: Low pressure protection,0--OFF,1--ON BIT13: Communication failure between WINCE and indoor PCB,0--OFF,1--ON BIT14: Communication failure between outdoor PCB and compressor driver,0--OFF,1--ON BIT15: Compressor phase protection (open or short-circuit),0--OFF,1--ON
543	03|06|16	0	BIT0: Compressor working current failure (too high),0--OFF,1--ON BIT1: Compressor driver failure,0--OFF,1--ON BIT2: Compressor driver VDC supply voltage failure,0--OFF,1--ON BIT3:AC current failure,0--OFF,1--ON BIT4: EEPROM failure,0--OFF,1--ON BIT5: Ambient temp sensor failure,0--OFF,1--ON BIT6: Outdoor coil temp sensor failure,0--OFF,1--ON BIT7: Compressor discharge temp sensor failure,0--OFF,1--ON BIT8: Compressor suction temp sensor failure,0--OFF,1--ON BIT9: Low pressure sensor failure,0--OFF,1--ON BIT10: High pressure sensor failure,0--OFF,1--ON BIT11: High pressure switch failure,0--OFF,1--ON BIT12: Flow switch failure,0--OFF,1--ON BIT13: DC fan motor A failure,0--OFF,1--ON BIT14: DC fan motor B failure,,0--OFF,1--ON BIT15: Evaporating pressure failure,0--OFF,1--ON
544	03|06|16	0	BIT0: High pressure failure,0--OFF,1--ON BIT1: Room temp sensor failure,0--OFF,1--ON BIT2: Tw sensor failure,0--OFF,1--ON BIT3: Tc sensor failure,0--OFF,1--ON BIT4: Water outlet sensor failure,0--OFF,1--ON BIT5: Water inlet sensor failure,0--OFF,1--ON BIT6: Indoor coil sensor failure,0--OFF,1--ON BIT7: 3-way valve 1 sensor failure,0--OFF,1--ON BIT8: 3-way valve 2 sensor failure,0--OFF,1--ON BIT9: Communication failure between WINCE and indoor PCB,0--OFF,1--ON BIT10: Indoor EEPROM failure,0--OFF,1--ON BIT11: PWM signal failure,0--OFF,1--ON BIT12: 3-way valve 1 failure,0--OFF,1--ON BIT13: 3-way valve 2 failure,0--OFF,1--ON BIT14: Cooling anti-freezing protection (indoor coil temp),0--OFF,1--ON BIT15: Flow switch protection,0--OFF,1--ON
545	03|06|16	0	BIT0: Flow switch failure,0--OFF,1--ON BIT1: Indoor communication failure,0--OFF,1--ON BIT2: Outdoor communication failure,0--OFF,1--ON BIT3: Water outlet temp too low in cooling,0--OFF,1--ON BIT4: Water outlet temp too high in heating,0--OFF,1--ON BIT5: Defrost failure (3 times),0--OFF,1--ON BIT6: Water outlet temp too low in heating/DHW,0--OFF,1--ON BIT7: Flow switch failure (3 times),0--OFF,1--ON BIT8: Coil temp protection failure,0--OFF,1--ON BIT9: Preheating failure,0--OFF,1--ON

15 ERROR CODE LIST

Code	Name	Heat pump status	Possible reasons and solutions
P01	Main line current protection	Compressor stops	Input current is too high or too low or the system works in over-load condition. Unit recovers automatically after 5 minutes when it happened the first time. If same failure happens 3 times in a certain period of time, unit stops until repowered. Check unit input current. Check if the fan motor and circulation pump is working OK; Check if condenser is blocked; Check if the water temperature is too high and if the water temperature difference between inlet & outlet is too big (should not be bigger than 8℃)
P02	Compressor phase current protection	Compressor stops	Compressor input current is too high or too low or the system works in over-load condition. Check compressor input current. Check if the fan motor and circulation pump are working OK; Check if the condenser is blocked; Check if the water temperature is too high and if the water temperature difference between inlet & outlet is too big (should not be bigger than 8℃)
P03	IPM module protection	Compressor stops	Compressor drive failure. Check whether cable is broken or loosen. Check whether compressor driver PCB or compressor is broken.
P04	Compressor oil return protection	Compressor speed up	If unit has been continuously working in low speed for certain period of time, unit starts this protection to suck compressor oil back into compressor. This is a normal protection and doesn't need any treatment.
P05	Compressor shut down due to high/low pressure switch open caused by abnormal high/low pressure	Compressor stops	If system pressure is too high or too low, it activates this protection. Unit recovers automatically after 5 minutes when it happened the first time. If same failure happens 3 times in a certain period of time, unit stops until repowered. Check if the fan motor and circulation pump are working OK; Check if the condenser is blocked; Check if the water temperature is too high and if the water temperature difference between inlet & outlet is too big (should not be bigger than 8℃).
P06	Compressor speed down due to abnormal high pressure detected by condensing pressure sensor	Compressor speed down	This protection happens when system pressure is higher than the set compressor speed-down pressure point. If the pressure is still higher than the protection point after slowing down the compressor speed, compressor stops. Check if the water temperature set value is too high; Check if the system water flow rate is too small; Check if EEV works normally; Check if air circulates fluently in cooling mode; Check if temperature difference between water inlet & outlet is too big (should not be bigger than 8℃).
P07	Compressor preheating	Standard function, doesn't need any treatment.	This is a normal protection and doesn't need any treatment. When compressor did not work for long time and outdoor temperature is low, compressor crankcase heater work for certain period of time before compressor start to warm up the compressor.
P08	Compressor discharge temp. too high protection	Compressor stops	Check if the water temperature set value is too high, especially when outdoor temperature is low; Check if the water flow rate too small; Check if the system is lacking enough refrigerant.
P09	Outdoor evaporator coil temp. sensor protection	Compressor stops	Check if air circulates fluently in outdoor unit.
P10	AC over high/low voltage protection	Compressor stops	Unit input voltage too high or too low. Check the voltage of unit power supply.
P11	Compressor shut down due to too high/low outdoor temperature	Compressor stops	Outdoor temperature is too high or too low for unit to work.
P12	Compressor speed limited due to too high/low ambient temperature	Compressor speed down	Normal operation - no error

P14	Compressor speed limited due to low condensing pressure	Compressor speed down	Not enough refrigerant in the system, low inlet water temperature, Air flow on the evaporator restricted, EEV not working properly, broken cable to the EEV…
F01	Outdoor ambient temp. sensor failure - Ta	Compressor stops	Check if outdoor temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F02	Outdoor evaporator coil temp. sensor failure - Tp	Compressor stops	Check if outdoor coil temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F03	Compressor discharge temp. sensor failure - Td	Compressor stops	Check if compressor discharge temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F04	Outdoor Suction temp. sensor failure - Ts	Compressor stops	Check if outdoor suction temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F05	Evaporating pressure sensor failure - Ps	Compressor stops	Check the refrigerant charge. This failure can indicate a refrigerant leakage. Please note that if the pressures seem normal in standby mode, there can still be a high percentage of the refrigerant missing. Check if evaporating pressure sensor is open, short-circuited or broken. Replace it if necessary.
F06	Condensing pressure sensor failure - Pd	Compressor stops	Check if condensing pressure sensor is open, short-circuited or broken. Replace it if necessary.
F07	High/low pressure switch failure	Compressor stops	If pressure switch is in open position when unit is in standby state or 2 minutes after compressor stops, unit gives this failure. Check if high or low-pressure switch is broken or not well connected.
F09	DC fan failure (A)	Compressor speed down	Speed of DC fan (or one of the DC fans for dual fan system) can't reach the required value or no feedback signal. Please check whether the PCB or fan motor is broken.
F10	DC fan failure (B)	Compressor stops	Speed of both DC fans (for dual fan system) can't reach the required value or no feedback signal. Please check if the PCB or fan motor is broken.
F11	System evaporating pressure too low	Compressor stops	If system too low-pressure protection detected by evaporating pressure sensor happened 3 times in a certain period, it gives this failure code and unit can't be restarted until repowered. Check if the system has enough refrigerant or if there is a leakage inside (more likely it is not enough refrigerant that caused this abnormal evaporating pressure); Check if the fan motor and circulation pump are working OK; Check if condenser is blocked; Check if EEV works normally; Check if the water temperature is too low and if the water temperature difference between inlet & outlet is too big in cooling (should not be bigger than 8℃).
F12	System condensing pressure too high	Compressor stops	If system too high-pressure protection detected by condensing pressure sensor happened 3 times in a certain period of time, it gives this failure code and unit can't be restarted until repowered. Check if the water flow rate is not enough (more likely it is not enough water flow rate that caused system build up too high pressure); Check if the fan motor and circulation pump is working OK; Check if the condenser is blocked; Check if EEV works normally; Check if the water temperature is too high and if the water temperature difference is too big between inlet & outlet (should not be bigger than 8℃).
E01	Communication between operation panel and indoor PCB or outdoor PCB failure	Compressor stops	Communication failure between operation panel and the indoor or outdoor PCB. Check the cable connection in between. Check if the last three switches on outdoor power PCB are set to 001; Check the last three switches on indoor PCB are set to 001. Unit recovers when communication recovers.
E02	Outdoor power PCB and driver PCB communication failure	Compressor stops	Check the communication cable between outdoor power PCB and driver PCB. Check if the outdoor power PCB and driver PCB is broken.
E03	Compressor phase current failure	Compressor stops	Check if the power cable to the compressor is broken or short-circuited.

E04	Compressor phase current overload (over current)	Compressor stops	Check if the power cable to compressor is broken or short-circuited.
E05	Compressor driver failure	Compressor stops	Check if the compressor drive PCB is broken, or the cable to compressor is connected wrong.
E06	Module VDC over high/low voltage failure	Compressor stops	Input voltage too high or too low.
E07	AC current failure	Compressor stops	Check the current to outdoor unit and compare it with the unit current shown on the operation panel. If the difference is not big, check if the system has enough refrigerant (more likely it is not enough refrigerant that caused this abnormal low current). If the difference is big, outdoor power PCB is broken. Please replace it with a new one;
E08	EEPROM failure	Compressor stops	Cut the unit power and short-circuit JP404 port on outdoor power PCB, repower the unit, cut power again and cancel the short-circuit on JP404 port. If still not OK, replace the outdoor power PCB.
E10	Communication error	Unit stops	Check if the communication wires are loosened or not connected.
E11	Clock error	Unit stops	Change with new controller
E12	Ext. Memory error	Unit stops	Change with new controller
E13	High pressure protection	Unit stops	1. Too much refrigerant. Reclaim and vacuum and inject the correct amount. 2. There is air inside the refrigerant system. Vacuum again and inject refrigerant again. 3. Too low water flow. Check the water system and circulating pumps, increase water flow. 4. Condenser is dirty and is blocked inside. Wash it. 5. EEV does not work. Check its wiring and if its coil is ok or not.
E14	Low pressure protection	Unit stops	1. Filter in the refrigerant system is blocked, change a new one to clean the inside refrigerant system. 2. EEV does not work. Check its wiring and if its coil is OK or not. 3. EEV inside is blocking. Change the EEV and clean the refrigerant system. 4. Refrigerant leakage. Check and find the leakage point and fix it. Vacuum and inject new refrigerant.
E15	Power plus offline	Unit stops	Communication between CPP controller and driver is OFF. Check if the wiring is loosened or not.
E16	Power plus generic AL	Unit stops	Check if the 3-phase power for outdoor unit is OK or not. If it is OK, the Power plus driver is defective, replace the Power plus driver.
E17	EVO sensor error	Unit stops	Sensor wires are off or defective. Check if the wires are lose or if the sensor body resistance is OK or not. If the resistance is not OK, replace the sensor.
E18	Low superheat EVO	Unit stops	1. Too much refrigerant. Reclaim and vacuum and inject the correct amount. 2. Refrigerant system leakage, not enough refrigerant. Check and fix the leakage, vacuum and inject again. 3. Bad ventilation condition for outdoor unit fans. Check if there is an obstacle at the fan system. 4. Not enough evaporating area after the evaporator is frosted. Check if the defrost coil sensor is positioned correctly and if it can measure the temperature correctly.
E19	Lov evap. Temp. EVO	Unit stops	1. Not enough evaporating area after the evaporator is frosted. Check if the defrost coil sensor is positioned correctly and if it can measure the temperature correctly. 2. Refrigerant system leakage, not enough refrigerant. Check and fix the leakage, vacuum and inject again. 3. Filter of the refrigerant system is dirty and blocking, change a new one and clean the refrigerant system.
E20	High evap. Temp. EVO	Unit stops	1. Bad ventilation condition for outdoor unit fans. Check if there is an obstacle at the fan system. 2. Not enough water flow leads to low heat exchange in condenser. Check the water system and Discharge inside air, make sure pumps 1 and 2 are powerful enough to run the water system. 3. Sensor is defective or bad connection. If it is connected correctly, check its wiring, if the wiring is OK, replace the sensor. 4. The suction temp. sensor is loosened. Plug it back to its position and make sure the heat preservation is good. 5. Refrigerant leakage. Find and fix the leakage, vacuum and inject refrigerant again. 6. Sensors of main EEV and EVI EEV mix each other. Check the both sensors according to wiring scheme.

E21	Low suction temp. EVO	Unit stops	1. Too much refrigerant. Reclaim and vacuum and inject the correct amount. 2. Filter if the refrigerant system is dirty and blocking, change a new one and clean the refrigerant system. 3. Bad ventilation condition for outdoor unit fans. Check if there is an obstacle at the fan system. 4. Not enough evaporating area after the evaporator is frosted. Check if the defrost coil sensor is positioned correctly and if it can measure the temperature correctly.
E22	Comp. Start failure	Unit stops	Hardware failure, compressor or driver has a problem. Change the compressor or change the driver.
E23	Envelop error	Unit stops	Compressor envelope out of range.
E24	Low press. Differential error	Unit stops	Pressure difference to low during start.
E25	High discharge temp.	Unit stops	There is air inside the refrigerant system. Vacuum again and inject new refrigerant. Not enough water flow leads to low heat exchange in condenser. Check the water system and Discharge inside air, make sure pump 1 and 2 are powerful enough to run the water system. Plate heat exchanger condenser is dirty and blocking at water side. Wash it. Filter if the refrigerant system is dirty and blocking, change a new one and clean the refrigerant system. Refrigerant leakage.
E26	Amb. temp. probe fault(B1)	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E27	Outdoor unit alarm: Evap. coil temp. probe fault (B2)	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E28	Outdoor unit alarm Suction temp. probe fault	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E29	Outdoor unit alarm Comp. discharge probe	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E30	B5 temp. prob faul	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E31	Outdoor unit alarm Suction pressure sensor	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E32	Outdoor unit alarm: Discharge pressure sensor fault (B7)	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E33	Outdoor unit alarm: Defrost time too long	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E34	Outdoor unit alarm： Gas Pressure differ. too high at Comp. Start	Unit stops	Only displayed on outdoor software interface. This alarm normally would happen after the unit stops and before re-start.
E35	Outdoor unit alarm： EVI Sunction temp probe fault (B8)	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E36	Outdoor unit alarm： EVI suction pressure probe fault (B11)	Unit stops	Sensor wiring is loosened, or sensor is defective. Check the wiring, if wiring is ok, check the sensors resistance. If resistance is not OK, replace the sensor.
E37	High press. switch defect	Unit stops	1. Too much refrigerant. Reclaim and vacuum and inject the correct amount. 2. There is air inside the refrigerant system. Vacuum again and inject new refrigerant. 3. Not enough water flow leads to low heat exchange in condenser. Check the water system and discharge inside air, make sure pumps 1 and 2 are powerful enough to run the water system. 4. Plate heat exchanger condenser is dirty and blocking at waterside. Wash it. 5. EEV does not work. Check its wiring or if its coil is OK or not. 6. The check valves at the outdoor unit are not opened.

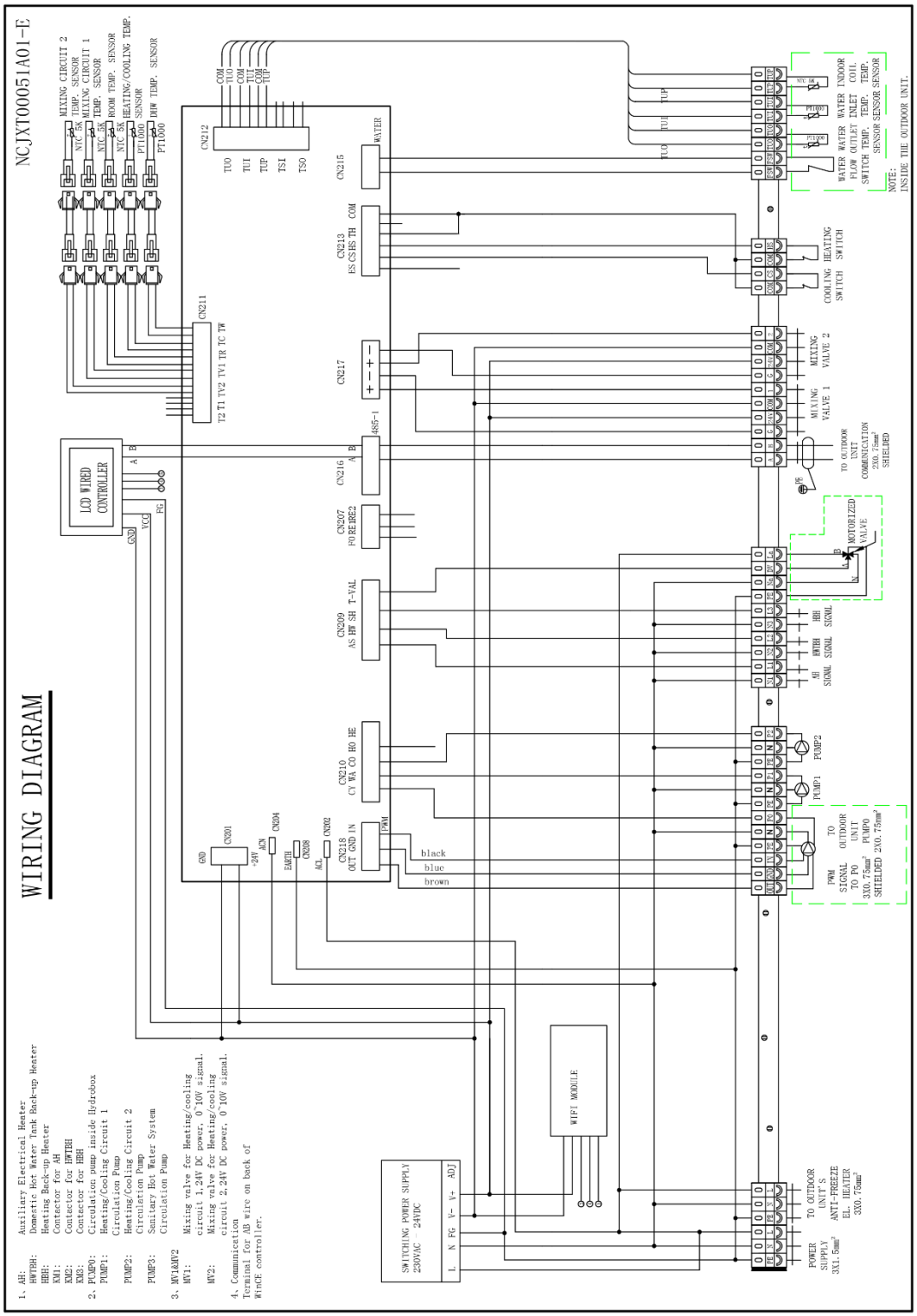
E38	Low press. switch defect	Unit stops	1. Too much refrigerant. Reclaim and vacuum and inject the correct amount. 2. Filter if the refrigerant system is dirty and blocking, change a new one and clean the refrigerant system. 3. Bad ventilation condition for outdoor unit fans. Check whether there is obstacle at the fan system. 4. Not enough evaporating area after the eavaporator is frosted. Check if the defrost coil sensor is positioned correctly and if it can measure the temperature correctly.
E39	EVI Low superheat	Unit stops	
E40	EVI low evap. Temp.	Unit stops	
E41	EVI high evap. Temp.	Unit stops	
E42	Outdoor unit alarm： Amb. Temp. out of HP working range	Unit stops	Too high/low outdoor temperature. Check whether the outdoor sensor is installed correctly or not.
E43	Outdoor unit alarm: Outlet water temp. Too low	Unit stops	Avoid too low water outlet temperature in cooling mode, protect the plate heat exchanger. This Alarm can be cleared only after power is cut off.
F13	Room temp. sensor failure	Unit stops	Check if room temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F14	Sanitary hot water temp. sensor failure	Unit stops	Check if sanitary hot water temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F15	Cooling/heating water temp. sensor failure	Unit keeps on working, use "unit water inlet temperature" as reference.	Check if cooling/heating water temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F16	Unit water outlet temp. sensor failure	Unit keeps on working, use "unit water inlet temperature" as reference.	Check if unit water outlet temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F17	Unit water inlet temp. sensor failure	Unit keeps on working, use "unit water outlet temperature" as reference.	Check if unit water inlet temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F18	Indoor coil temp. sensor failure	Unit keeps on working, except cooling mode.	Check if indoor temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F21	Mixture valve 1 temperature sensor failure	Unit keep on working, mixture valve 1 output fixed to 0.	Check if TV1 temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F22	Mixture valve 2 temperature sensor failure	Unit keep on working, mixture valve 2 output fixed to 0.	Check if TV2 temperature sensor is open, short-circuited or value drifts too much. Replace it if necessary.
F25	Communication between operation panel and indoor PCB or outdoor PCB failure	Unit stops	Communication failure between operation panel and the indoor or outdoor PCB. Check the cable connection in between. Check if the last three switches on outdoor power PCB are set to 001; Check if the last three switches on indoor PCB are set to 001. Unit recovers when communication recovers.
F27	Indoor EEPROM failure	Unit keeps on working	Cut the unit power, connect CN213-5 and CN213-6 together, repower the unit and then cut the power and cancel the connection. If still not OK, replace the indoor PCB.
F28	Circulation pump PWM signal feedback failure	Unit keeps on working	Check the circulating pump cable connection; Check the power supply to the circulating pump; Check if the circulating pump is broken.
F29	Mixture valve 1 failure	Unit keep on working, mixture valve 1 output fixed to 0.	Check MV1 cable connection; Check the PCB output voltage signal; Check if the MV1 is broken.

F30	Mixture valve 2 failure	Unit keep on working, mixture valve 2 output fixed to 0.	Check MV2 cable connection; Check the PCB output voltage signal; Check if the MV2 is broken.
S01	Indoor anti-freezing protection in cooling	Compressor speed down or stop	Compressor speed down if coil temp. lower than 2°C; Compressor stops if coil Temp. lower than -1°C; Compressor restarts if coil Temp. higher than 6°C. Check if the set temperature for cooling is too low; Check if the system has too small water flow rate; Check the water system especially the filter. Check if the system has not enough refrigerant inside by measuring the evaporating pressure. Check if the outdoor temperature is lower than 15°C.
S02	Too small water flow rate	Compressor stops	System water flow rate is less than minimum allowable flow rate. Check the water system, especially the filter. Check the working statue of water pump.
S03	Water flow switch failure	Unit stops	Water flow switch failed to work. Flow switch detects flow when P0 is on Stand-by. Check if some flow in the system that is not produced by the heat pump. Check if the flow switch is broken or not well connected.
S04	Communication failure	Unit stops	Communication data lost too much. Check if the communication cable is longer than 30M; Check if there is a source of disturbance nearby the unit. Unit recovers when communication recovers.
S05	Serial port connect error	Unit stops	Communication failure between operation panel and the indoor or outdoor PCB. Check the cable connection in between. Check if the last three switches on outdoor power PCB are set to 001; Check if last three switches on indoor PCB are set to 001. Unit recovers when communication recovers.
S06	Water outlet Temp. too low protection in cooling	Compressor stops	Compressor stops if water outlet is lower than 5°C in cooling mode. Check if the temperature sensor Tc is OK and well connected; Check if the set water temperature too low Check if the system flow rate too small.
S07	Water outlet Temp. too high protection in heating/hot water	Compressor stops	Compressor stops if water outlet is higher than 57°C in heating or hot water mode. Check if the temperature sensors Tc and Tw is OK and well connected; Check if the set water temperature is too high; Check if the system flow rate is too small.
S08	Unit defrosting failure	Unit Stops and can only be restarted by repowering the unit	System water temperature is too low for defrosting. Please either set the temperature higher, have the back-up heating source connected or close some heating circuit to let the system enough high-water temperature for a safe defrosting.
S09	Water outlet Temp. too low protection in defrosting	Quit current defrosting operation	If water outlet temperature is lower than 15°C during defrosting, water may freeze up in the plate heat exchanger and cause damage, so unit will quit current defrosting mode. It will try again in next defrosting cycle but if it continuously failed to make the defrosting for 3 times, it shows S08 failure code and can only be restarted by repower the unit. Please either set the temperature higher, have the back-up heating source connected or close some heating circuit so to let the system has enough high-water temperature for a safe defrosting.
S10	Too small water flow rate failure	Compressor stops	If "too small water flow rate protection" happens over 3 times in certain period, it gives this failure code and unit stops until repower. This failure means the system water flow rate is less than minimum allowable flow rate. Check the water system, especially the filter; Check the working statue of water pump.
S11	Indoor anti-freezing failure in cooling	Compressor stops	If "indoor coil anti-freezing protection in cooling mode" happens over 3 times in certain period of time, it gives this failure code and unit stops until repower. Check whether set temperature for cooling is too low; whether system has too small water flow rate; check water system especially the filter. Check whether system has not enough refrigerant inside by measuring the evaporating pressure. Check whether outdoor temperature is lower than 15°C.
S12	Floor curing function failed to finish	Unit switch back to standard working mode with failure information shown on the screen	If floor curing function can't be finished in the maximum allowable time, it shows this information. Unit will go back to normal working mode, with failure information shown on the display. Failure information can only be erased until repower or start the floor curing function again.

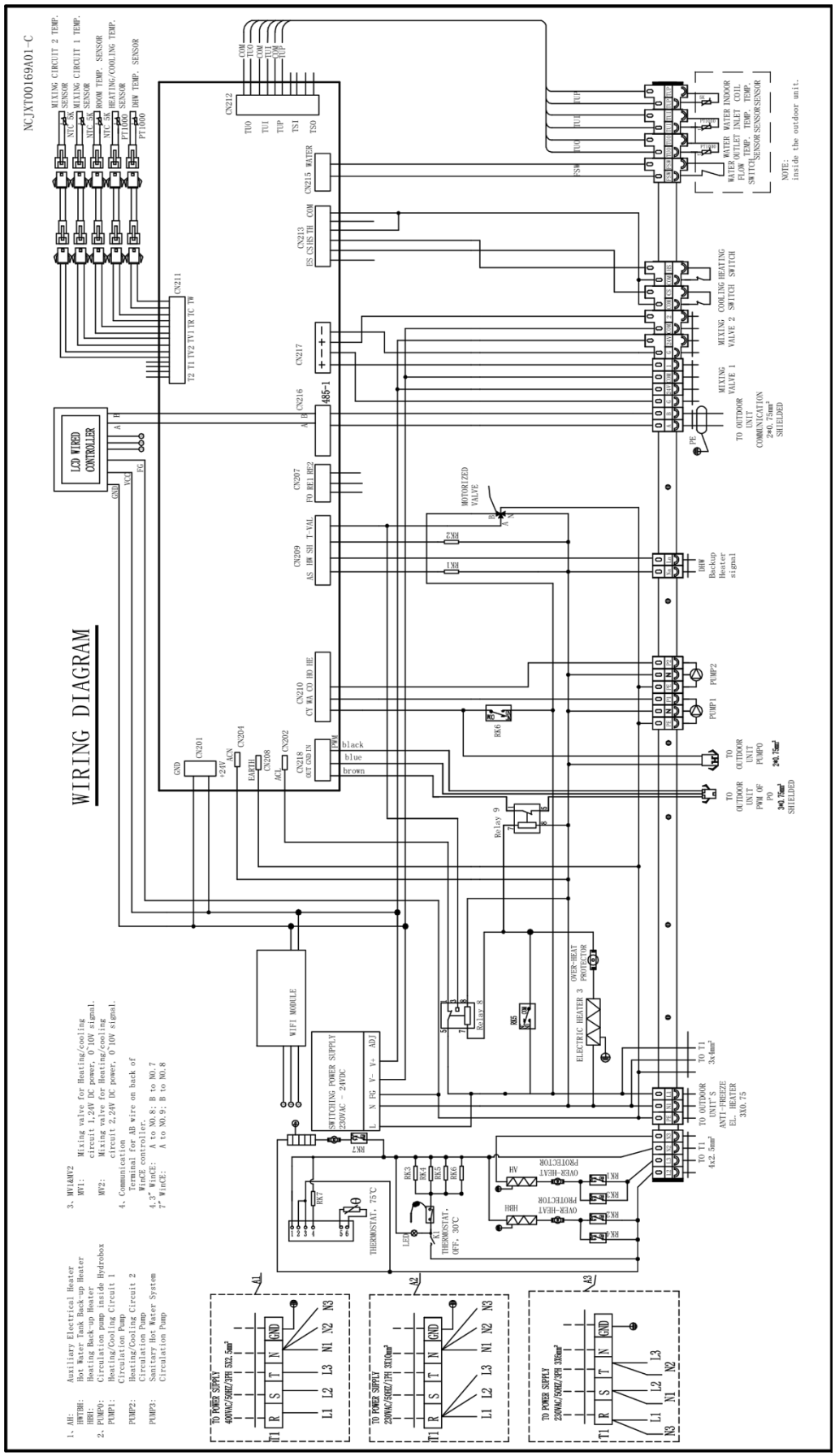
16 Wiring diagram

16.1 Indoor unit

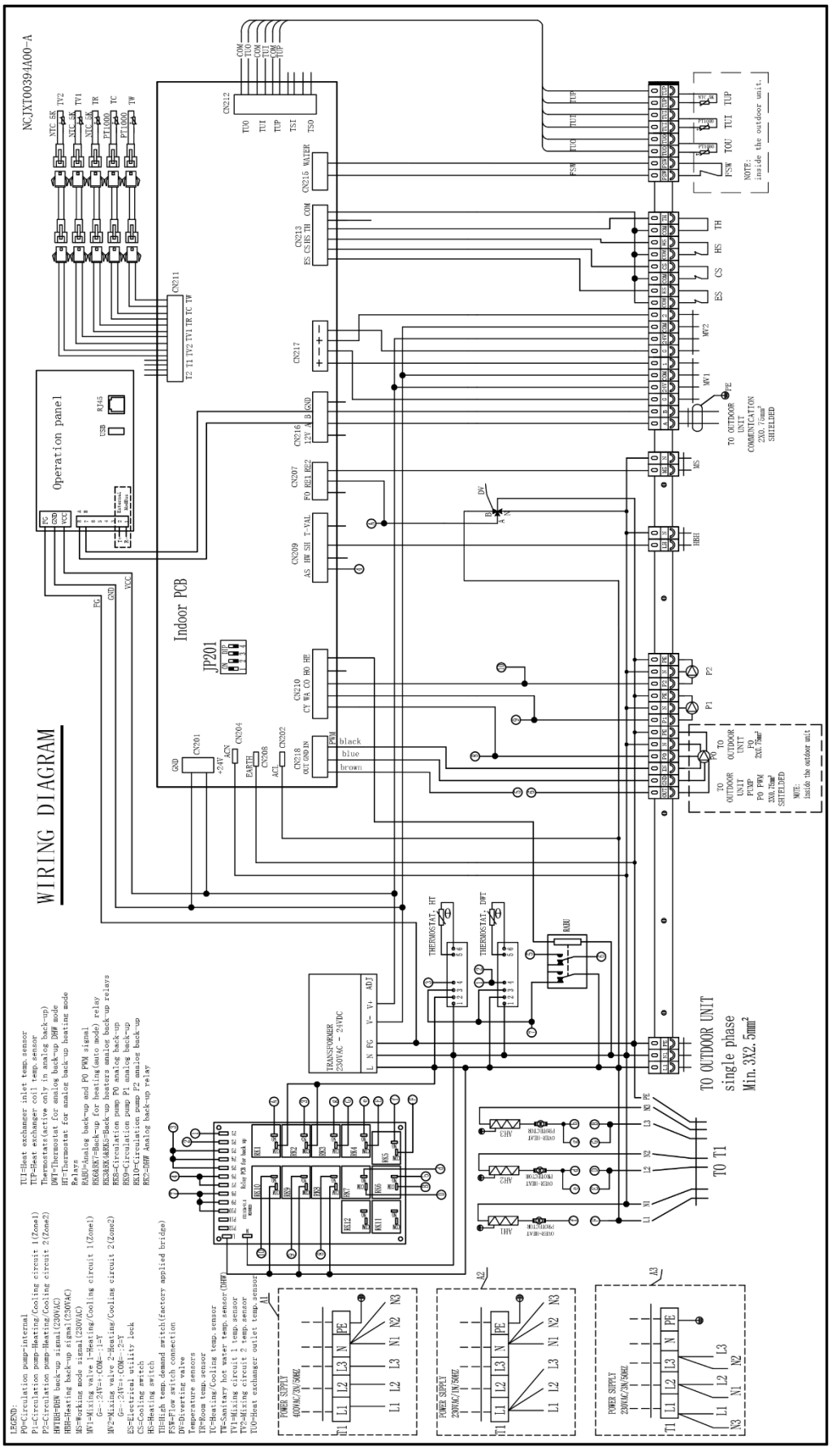
AWC6/19-R32-M



AWT6/12-R32-M

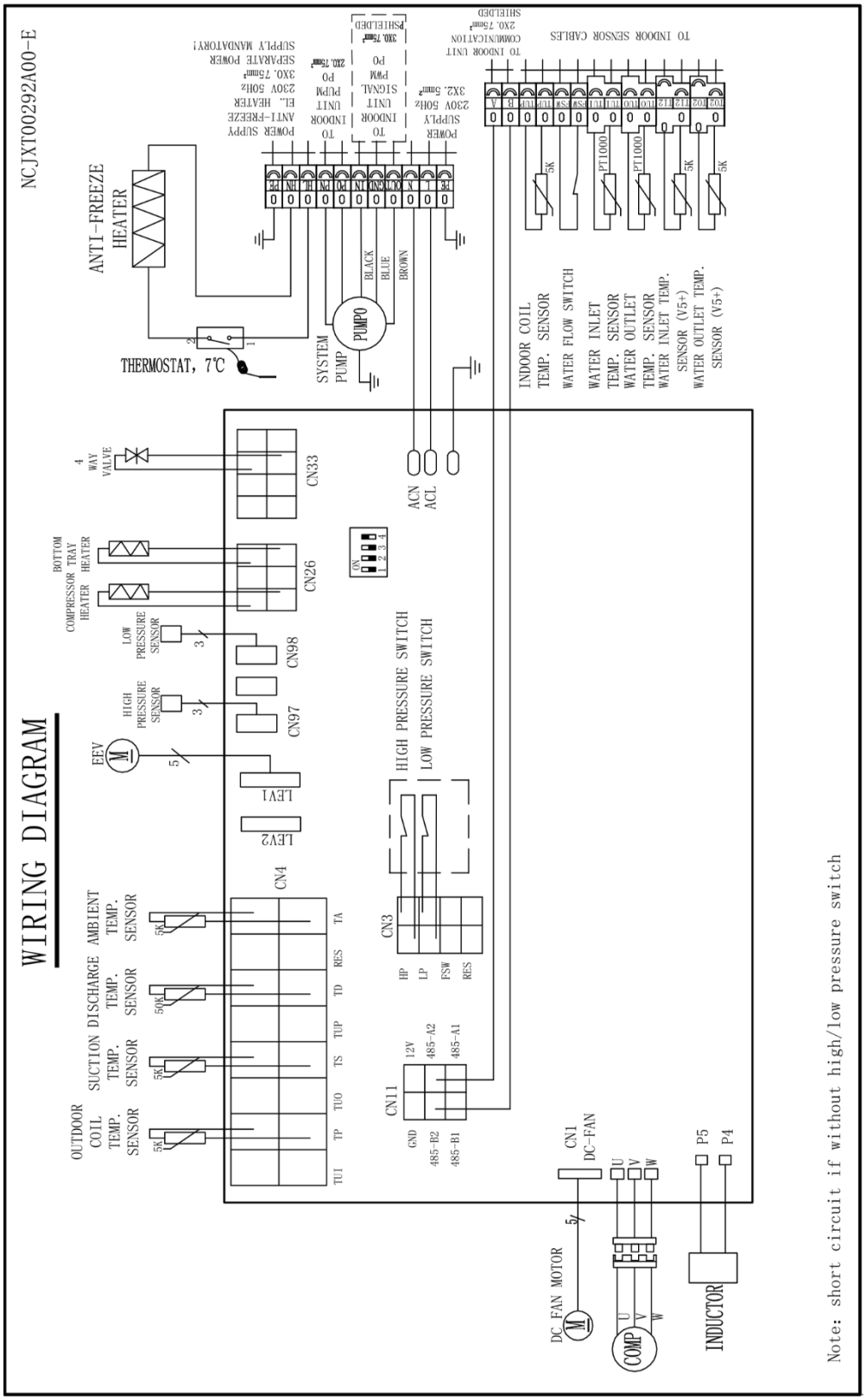

WIRING DIAGRAM
NCJXT00169A01-C
LCD WIRED CONTROLLER
WIFI MODULE
SWITCHING POWER SUPPLY
ELECTRIC HEATER 3
OVER-HEAT PROTECTOR
THERMOSTAT, 75°C
THERMOSTAT, OFF: 30°C
MOTORIZED VALVE
TO OUTDOOR UNIT COMMUNICATION 2*AWG.75mm² SHIELDED
TO OUTDOOR UNIT PUMP1 PUMP2
TO OUTDOOR UNIT PUMP0
TO OUTDOOR UNIT PUMP OUT 2*AWG.75mm² SHIELDED
TO OUTDOOR UNIT'S ANTI-FREEZE EL. HEATER 3X0.75
TO T1 3x4mm²
TO T1 4x2.5mm²
TO POWER SUPPLY 400VAC/50HZ/3PH 5X2.5mm²
TO POWER SUPPLY 230VAC/50HZ/1PH 3X10mm²
TO POWER SUPPLY 230VAC/50HZ/2PH 3X6mm²
MIXING VALVE 1
MIXING VALVE 2
COOLING SWITCH
HEATING SWITCH
WATER FLOW SWITCH
WATER OUTLET TEMP.
WATER INLET TEMP.
INDOOR AMBIENT TEMP.
ROOM TEMP. SENSOR
HEATING/COOLING SENSOR
HEATING/COOLING TEMP.
HHW TEMP. SENSOR
MIXING CIRCUIT 2 TEMP. SENSOR
MIXING CIRCUIT 1 TEMP. SENSOR
NOTE: inside the outdoor unit.
1、AH: Auxiliary Electrical Heater
HWTBH: Hot Water Tank Back-up Heater
HBH: Heating Back-up Heater
2、PUMP0: Circulation pump inside Hydrobox
PUMP1: Heating/Cooling Circuit 1 Circulation Pump
PUMP2: Heating/Cooling Circuit 2 Circulation Pump
PUMP3: Sanitary Hot Water System Circulation Pump
3、MV1&MV2
MV1: Mixing valve for Heating/cooling circuit 1,24V DC power, 0-10V signal.
MV2: Mixing valve for Heating/cooling circuit 2,24V DC power, 0-10V signal.
4、Communication Terminal for AB wire on back of WinCE controller.
4.3" WinCE: A to NO.8; B to NO.7
7" WinCE: A to NO.9; B to NO.8

AWST6/15-R32-M

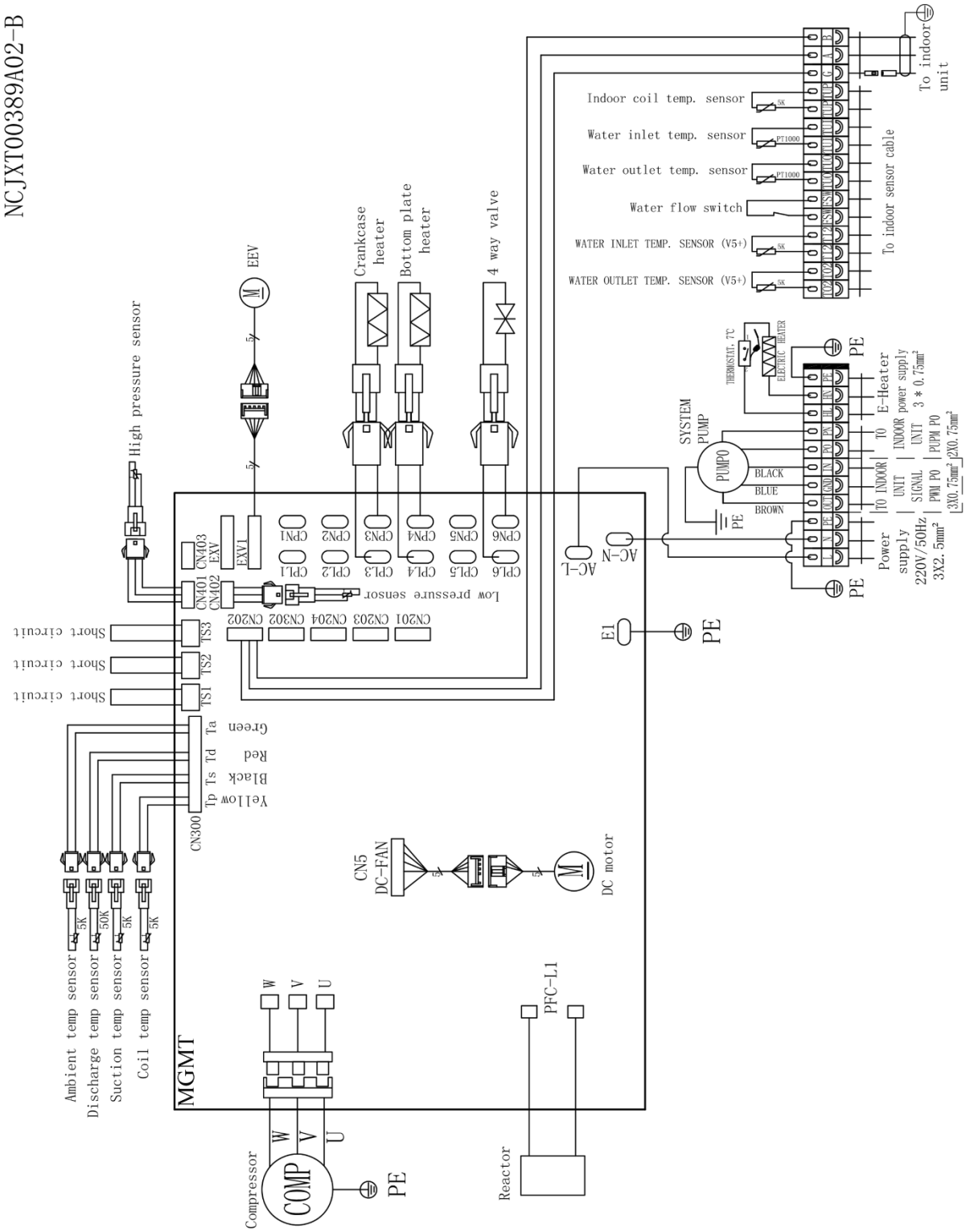


16.2 **Outdoor unit**

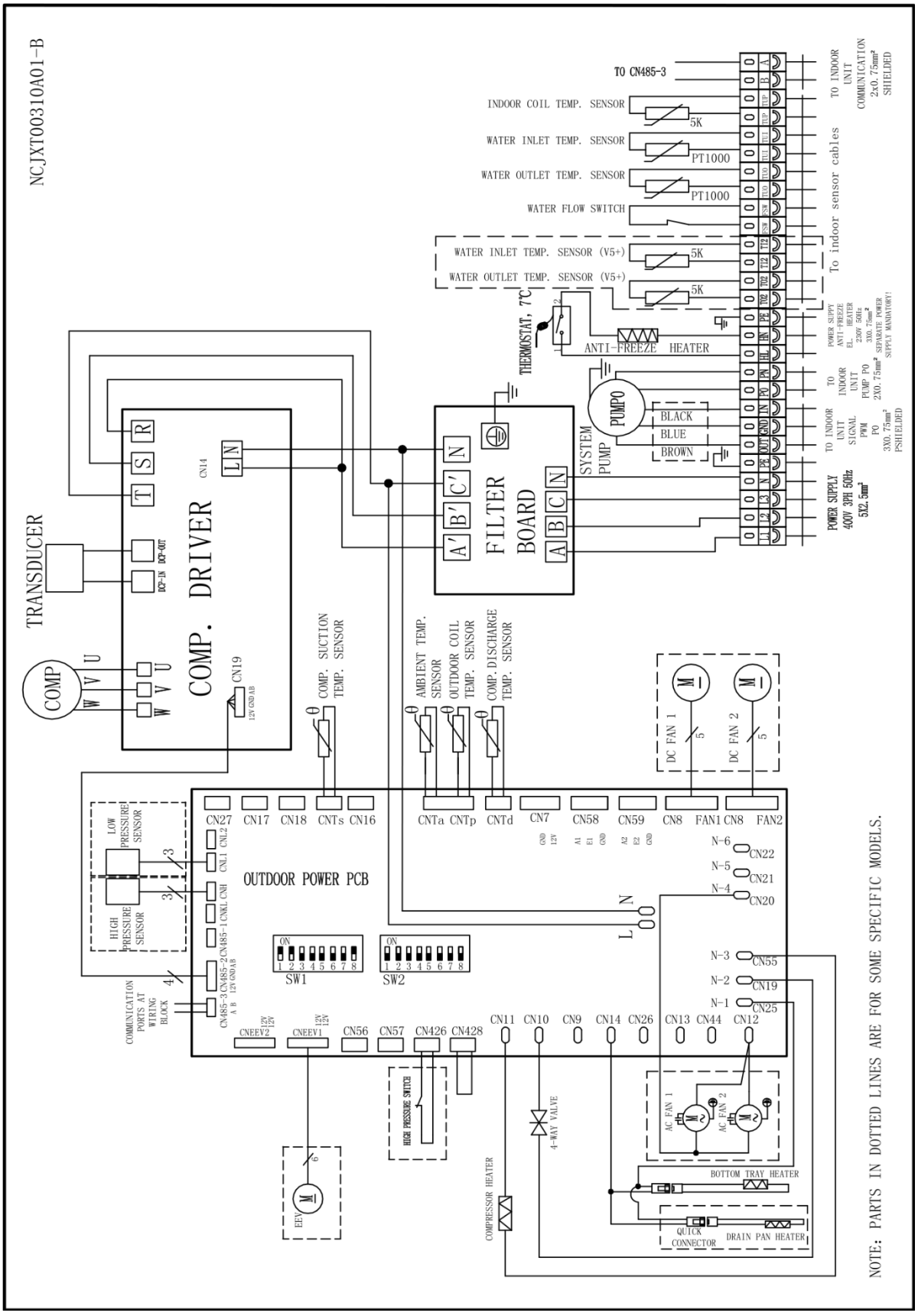
AW6/12-R32-M – RJ controller



AW6/12-R32-M – MGMT controller



AW15/19-R32-M


NCJXT00310A01-B
TRANSDUCER
COMP
COMP. DRIVER
CN14
CN19
FILTER BOARD
SYSTEM PUMP
PUMPO
THERMOSTAT, 7℃
ANTI-FREEZE HEATER
INDOOR COIL TEMP. SENSOR
WATER INLET TEMP. SENSOR
WATER OUTLET TEMP. SENSOR
WATER FLOW SWITCH
WATER INLET TEMP. SENSOR (V5+)
WATER OUTLET TEMP. SENSOR (V5+)
TO CN485-3
To indoor sensor cables
TO INDOOR UNIT COMMUNICATION 2x0.75mm² SHIELDED
POWER SUPPLY 400V 3PH 50Hz 5X2.5mm²
BLACK
BLUE
BROWN
COMP. SUCTION TEMP. SENSOR
AMBIENT TEMP. SENSOR
OUTDOOR COIL TEMP. SENSOR
COMP. DISCHARGE TEMP. SENSOR
DC FAN 1
DC FAN 2
OUTDOOR POWER PCB
LOW PRESSURE SENSOR
HIGH PRESSURE SENSOR
SW1
SW2
COMMUNICATION PORTS AT WIRING BLOCK
HIGH PRESSURE SWITCH
4-WAY VALVE
COMPRESSOR HEATER
AC FAN 1
AC FAN 2
BOTTOM TRAY HEATER
QUICK CONNECTOR
DRAIN PAN HEATER
EEV
NOTE: PARTS IN DOTTED LINES ARE FOR SOME SPECIFIC MODELS.

16.3 Dip switch default settings AW15/19-R32-M

Note: 0: OFF, 1: ON

Compressor drive PCB:

SW1: Compressor model selection

Compressor model no.	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
AW15-R32-M MVB33FBBMC	0	0	0	0	0	0	0	0
AW19-R32-M MVB42FCBMC-L	0	0	0	0	0	**1**	0	0

SW2: Reserved

SW3: Reserved

Main PCB (Power PCB):

SW1:

	Default Setting	Function
SW1-1	1	Fixed setting for 15/19KW model
SW1-2	1	
SW1-3	0	Reserved
SW1-4	0	Reserved
SW1-5	0	Reserved
SW1-6	0	Communication address selection for outdoor unit 000: Address 1 001: Address 2 (default) 010: Address 3 011: Address 4 100: Address 5 101: Address 6 110: Address 7 111: Address 8
SW1-7	0	
SW1-8	1	

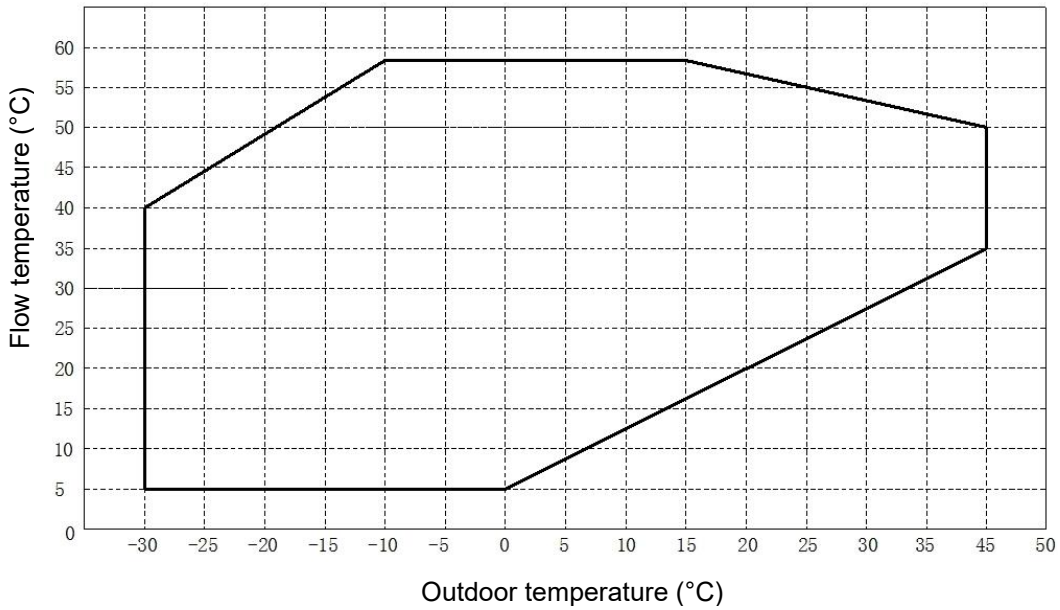
SW2:

SW2	Default Setting	Function
SW2-1	0	Reserved
SW2-2	0	Reserved
SW2-3	0	Reserved
SW2-4	0	Reserved
SW2-5	0	Reserved
SW2-6	0	Reserved
SW2-7	0	Reserved
SW2-8	0	If set to ″1″ it enables software update via USB.

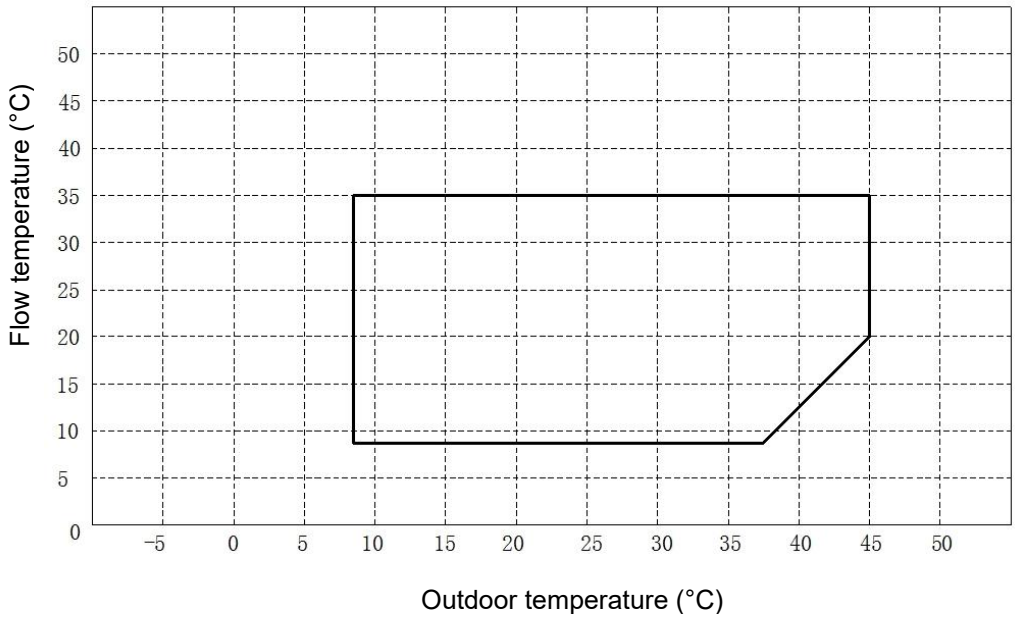
17 Working range

17.1 Heating mode working range

Note: Applies for heating and sanitary hot water preparation.



17.2 Cooling mode working range



18 Technical data

18.1 AWC-R32-M; 6 – 12 kW

Model		AWC6-R32-M	AWC9-R32-M	AWC12-R32-M
Article Number		120290 + 120295	120291 + 120295	120292 + 120295
IP rating (Indoor and Outdoor)	IPXX	IP34	IP34	IP34
Min/max heating capacity (1)	kW	3.5 / 6.5	4.3/9.2	5.5 / 11.6
El. heating power input min/max (1)	W	758 / 1410	927/2097	1107 / 2683
C.O.P min/max (1)	W/W	4.5 / 4.7	4.38/4.71	4.3 / 4.9
Min/max heating capacity (2)	kW	3.15 / 6	3.9/8.6	4.9 / 11.2
El. heating power input min/max (2)	W	943 / 1732	1162/2550	1401 / 3263
C.O.P min/max (2)	W/W	3.34 / 3.56	3.37/3.58	3.3 / 3.5
SCOP - Average climate, low temperature	W	4,74	4,73	4,71
Energy class		A+++	A+++	A+++
Min/max cooling capacity (3)	kW	6.22/7.45	6.7/9.5	- / 9.8
El. cooling power input min/max (3)	W	1400/1863	1679/2242	- / 2510
E.E.R. min/max (3)	W/W	4.05/4.45	4.0/4.6	- / 3.8
Min/max cooling capacity (4)	kW	3.5/4.5	4.9/7.2	4.9 / 6.5
El. cooling power input min/max (4)	W	1330/1680	1451/2366	1358 / 2444

E.E.R. min/max (4)		W/W	2.5/2.74	2.8/3.1	2.6 / 3.5
Sound power level	Outdoor unit	dB (A)	52	53	52
	Indoor unit	dB (A)	0	0	0
Water tank	Type			N/A	
	Volume	l		N/A	
Coil for sanitary water				N/A	
Expansion vessel – process water		l		N/A	
Ambient working temp. in heating mode		°C		-25～45	
Ambient working temp. in cooling mode		°C		12～65	
Max flow temp. in heating mode		°C		58	
Min flow temp. in heating mode		°C		20	
Min flow temp. in cooling mode		°C		7	
WiFi module integrated				yes	
Compressor pre-heat				yes	
Electronic expansion valve				yes	
Anti- Freeze el. Heater		V/Hz/		80W; 230V/1PH/50Hz	
Anti- Freeze el. heater - Fuse		A		6A	
Circulation pump - ErP approved				Wilo Para 25-130/9-87/IPWM1	
Compressor				Mitsubishi DC inverter (twin rotary)	
Fan	Quantity	pcs	1	1	1
	Airflow	m³/h	2500	3150	3150
	Rated power	W	34	45	45
	Blade diameter	mm	φ496	φ550	φ550
Plate heat exchanger	Manufacturer		SWEP	SWEP	SWEP
	Water press. drop	kPa	26	26	26
	Piping connection	Inch	G1"	G1"	G1"
Minimum water flow		m³/h - l/s	0,75	0,94	1,44
Nominal water flow		m³/h	1,04	1,55	2,05
Residual current device and overvoltage protection				Required	
Power supply Outdoor unit	Supply	V/Hz/Ph	230/50/1	230/50/1	230/50/1
	Fuse	A	10A/C	16A/C	16A/C
Power supply Indoor unit	Supply	V/Hz/Ph	230/50/1	230/50/1	230/50/1
	Fuse	A	10A	10A	10A
Electrical	Flow heater			N/A	

heater	Water tank heater			N/A	
	Fuse			N/A	
Refrigerant	Type			R 32	
	Charge	kg	0,9	1,4	1,8
Dimensions net (W x H x D)	Outdoor unit	mm	1010x735x370	1165 x 885 x 370	1165 x 885 x 370
	Indoor unit	mm		450x380x135	
Net weight	Outdoor unit	kg	67	80	85
	Indoor unit	kg		10	

(1) Heating condition: water inlet/outlet temperature: 30 °C/35°C, Ambient temperature: DB 7 °C /WB 6 °C

(2) Heating condition: water inlet/outlet temperature: 40°C/45°C, Ambient temperature: DB 7 °C /WB 6 °C

(3) Cooling condition: water inlet/outlet temperature: 23 °C/18°C, Ambient temperature: DB 35 °C /WB 34 °C

(4) Cooling condition: water inlet/outlet temperature: 12°C/7°C, Ambient temperature: DB 35 °C /WB 34 °C

18.2 **AWC-R32-M; 15 – 19 kW**

Model			**AWC15-R32-M**	**AWC19-R32-M**
Article No ES			120293 + 120295	120294 + 120295
IP rating (Indoor and Outdoor)		IPXX	IP34	IP34
Min/max heating capacity (1)		kW	6/15.3	9.2/18.5
El. heating power input min/max (1)		W	1223/3209	1834/4142
C.O.P min/max (1)		W/W	4.78/5.06	4.47/5.01
Min/max heating capacity (2)		kW	5.6/14.3	8.5/18.2
El. heating power input min/max (2)		W	1551/3914	2248/4998
C.O.P min/max (2)		W/W	3.6/3.82	3.6/3.82
SCOP - Average climate, low temperature		W	4,98	4,85
Energy class			A+++	A+++
Min/max cooling capacity (3)		kW	7.2/18.5	8.5/22.5
El. cooling power input min/max (3)		W	1334/4917	1660/6285
E.E.R. min/max (3)		W/W	3.78/5.42	3.58/5.12
Min/max cooling capacity (4) (A35/W7)		kW	4.5/13	5.5/16
El. cooling power input min/max (4)		W	2590/4390	2970/5510
E.E.R. min/max (4)		W/W	2.96/3.26	2.85/3.2
Sound power level	Outdoor unit	dB (A)	58	61

	Indoor unit	dB (A)	0	0
Water tank	Type		N/A	
	Volume	l	N/A	
Coil for sanitary water			N/A	
Expansion vessel – process water		l	N/A	
Ambient working temp. in heating mode		°C	-25～45	
Ambient working temp. in cooling mode		°C	12～65	
Max flow temp. in heating mode		°C	58	
Min flow temp. in heating mode		°C	20	
Min flow temp. in cooling mode		°C	7	
WiFi module integrated			yes	
Compressor pre-heat			yes	
Electronic expansion valve			yes	
Anti- Freeze el. Heater		V/Hz/	80W; 230V/1PH/50Hz	
Anti- Freeze el. heater - Fuse		A	6A	
Circulation pump - ErP approved			Wilo Para 25-130/9-87/IPWM1	
Compressor			Mitsubishi DC inverter (twin rotary)	
Fan	Quantity	pcs	2	2
	Airflow	m³/h	6200	7000
	Rated power	W	90	120
	Blade diameter	mm	φ550	φ550
Plate heat exchanger	Manufacturer		SWEP	SWEP
	Water press. drop	kPa	26	26
	Piping connection	Inch	G1-1/4"	G1-1/4"
Minimum water flow		m³/h	2,23	2,66
Nominal water flow		m³/h	2,62	3,3
Residual current device and overvoltage protection			Required	
Power supply Outdoor unit	Supply	V/Hz/Ph	400/50/3	400/50/3
	Fuse	A	3p/16A/C	3p/16A/C
Power supply Indoor unit	Supply	V/Hz/Ph	230/50/1	230/50/1
	Fuse	A	10A	10A
Electrical	Flow heater		N/A	

heater	Water tank heater		N/A	
	Fuse		N/A	
Refrigerant	Type		R32	
	Charge	kg	2,55	2,6
Dimensions net (W x H x D)	Outdoor unit	mm	1085 x 1450 x 390	1085 x 1450 x 390
	Indoor unit	mm	450x380x135	
Net weight	Outdoor unit	kg	120	140
	Indoor unit	kg	10	

(1) Heating condition: water inlet/outlet temperature: 30 °C/35°C, Ambient temperature: DB 7 °C /WB 6 °C

(2) Heating condition: water inlet/outlet temperature: 40°C/45°C, Ambient temperature: DB 7 °C /WB 6 °C

(3) Cooling condition: water inlet/outlet temperature: 23 °C/18°C, Ambient temperature: DB 35 °C /WB 34 °C

(4) Cooling condition: water inlet/outlet temperature: 12°C/7°C, Ambient temperature: DB 35 °C /WB 34 °C

18.3 **AWT-R32-M; 6 – 12 kW**

Model		**AWT6-R32-M**	**AWT9-R32-M**	**AWT12-R32-M**
Article Number		120290 + 120296	120291 + 120296	120292 + 120296
IP rating (Indoor and Outdoor)	IPXX	IP34	IP34	IP34
Min/max heating capacity (1)	kW	3.5 / 6.5	4.3/9.2	5.5 / 11.6
El. heating power input min/max (1)	W	758 / 1410	927/2097	1107 / 2683
C.O.P min/max (1)	W/W	4.5 / 4.7	4.38/4.71	4.3 / 4.9
Min/max heating capacity (2)	kW	3.15 / 6	3.9/8.6	4.9 / 11.2
El. heating power input min/max (2)	W	943 / 1732	1162/2550	1401 / 3263
C.O.P min/max (2)	W/W	3.34 / 3.56	3.37/3.58	3.3 / 3.5
SCOP - Average climate, low temperature	W	4,74	4,73	4,71
Energy class		A+++	A+++	A+++
Min/max cooling capacity (3)	kW	6.22/7.45	6.7/9.5	- / 9.8
El. cooling power input min/max (3)	W	1400/1863	1679/2242	- / 2510
E.E.R. min/max (3)	W/W	4.05/4.45	4.0/4.6	- / 3.8
Min/max cooling capacity (4)	kW	3.5/4.5	4.9/7.2	4.9 / 6.5
El. cooling power input min/max (4)	W	1330/1680	1451/2366	1358 / 2444
E.E.R. min/max (4)	W/W	2.5/2.74	2.8/3.1	2.6 / 3.5
Sound power level Outdoor unit	dB (A)	52	53	52

	Indoor unit	dB (A)	0	0	0
Water tank	Type		Stainless steel tank – fresh water system		
	Volume	l	250		
Coil for sanitary water			Φ28mm x 35m		
Expansion vessel – process water		l	11 (6 + 5)		
Ambient working temp. in heating mode		°C	-25～45		
Ambient working temp. in cooling mode		°C	12～65		
Max flow temp. in heating mode		°C	58		
Min flow temp. in heating mode		°C	20		
Min flow temp. in cooling mode		°C	7		
WiFi module integrated			yes		
Compressor pre-heat			yes		
Electronic expansion valve			yes		
Anti- Freeze el. Heater		V/Hz/	80W; 230V/1PH/50Hz		
Anti- Freeze el. heater - Fuse		A	6A		
Circulation pump - ErP approved			Wilo Para 25-130/9-87/IPWM1		
Compressor			Mitsubishi DC inverter (twin rotary)		
Fan	Quantity	pcs	1	1	1
	Airflow	m³/h	2500	3150	3150
	Rated power	W	34	45	45
	Blade diameter	mm	φ496	φ550	φ550
Plate heat exchanger	Manufacturer		SWEP	SWEP	SWEP
	Water press. drop	kPa	26	26	26
	Piping connection	Inch	G1"	G1"	G1"
Minimum water flow		m³/h - l/s	0,75	0,94	1,44
Nominal water flow		m³/h	1,04	1,55	2,05
Residual current device and overvoltage protection				Required	
Power supply Outdoor unit	Supply	V/Hz/Ph	230/50/1	230/50/1	230/50/1
	Fuse	A	10A/C	16A/C	16A/C
Power supply Indoor unit	Supply	V/Hz/Ph	230/50/1	230/50/1	230/50/1
	Fuse	A	10A	10A	10A
Electrical	Flow heater			9 kW (3x3)	

heater	Water tank heater			0,5 kW	
	Fuse			16A/C-400V or 25A/C-230V	
Refrigerant	Type			R 32	
	Charge	kg	0,9	1,4	1,8
Dimensions net (W x H x D)	Outdoor unit	mm	1010x735x370	1165 x 885 x 370	1165 x 885 x 370
	Indoor unit	mm		450x380x135	
Net weight	Outdoor unit	kg	67	80	85
	Indoor unit	kg		10	

(1) Heating condition: water inlet/outlet temperature: 30 °C/35°C, Ambient temperature: DB 7 °C /WB 6 °C

(2) Heating condition: water inlet/outlet temperature: 40°C/45°C, Ambient temperature: DB 7 °C /WB 6 °C

(3) Cooling condition: water inlet/outlet temperature: 23 °C/18°C, Ambient temperature: DB 35 °C /WB 34 °C

(4) Cooling condition: water inlet/outlet temperature: 12°C/7°C, Ambient temperature: DB 35 °C /WB 34 °C

18.4 **AWST-R32-M; 6-15 kW**

Model		**AWST6-R32-M**	**AWST9-R32-M**	**AWST12-R32-M**	**AWST15-R32-M**
Article Number		120290 + 120329	120291 + 120329	120292 + 120329	120293 + 120329
IP rating (Indoor and Outdoor)	IPX X	IP34	IP34	IP34	IP34
Min/max heating capacity (1)	kW	3.5 / 6.5	4.3/9.2	5.5 / 11.6	6/15.3
El. heating power input min/max (1)	W	758 / 1410	927/2097	1107 / 2683	1223/3209
C.O.P min/max (1)	W/ W	4.5 / 4.7	4.38/4.71	4.3 / 4.9	4.78/5.06
Min/max heating capacity (2)	kW	3.15 / 6	3.9/8.6	4.9 / 11.2	5.6/14.3
El. heating power input min/max (2)	W	943 / 1732	1162/2550	1401 / 3263	1551/3914
C.O.P min/max (2)	W/ W	3.34 / 3.56	3.37/3.58	3.3 / 3.5	3.6/3.82
SCOP - Average climate, low temperature	W	4,74	4,73	4,71	4,98
Energy class		A+++	A+++	A+++	A+++
Min/max cooling capacity (3)	kW	6.22/7.45	6.7/9.5	- / 9.8	7.2/18.5
El. cooling power input min/max (3)	W	1400/1863	1679/2242	- / 2510	1334/4917
E.E.R. min/max (3)	W/ W	4.05/4.45	4.0/4.6	- / 3.8	3.78/5.42
Min/max cooling capacity (4)	kW	3.5/4.5	4.9/7.2	4.9 / 6.5	4.5/13
El. cooling power input min/max (4)	W	1330/1680	1451/2366	1358 / 2444	2590/4390
E.E.R. min/max (4)	W/ W	2.5/2.74	2.8/3.1	2.6 / 3.5	2.96/3.26

Sound power level	Outdoor unit	dB (A)	52	53	52	58
	Indoor unit	dB (A)	44	44	44	44
Water tank	Type		Stainless steel tank – fresh water system			
	Volume	l	250			
Expansion vessel – process water		l	12 (6 + 6)			
Ambient working temp. in heating mode		°C	-25～45			
Ambient working temp. in cooling mode		°C	12～65			
Max flow temp. in heating mode		°C	58			
Min flow temp. in heating mode		°C	20			
Min flow temp. in cooling mode		°C	7			
Internet access integrated			yes			
Compressor pre-heat			yes			
Electronic expansion valve			yes			
Anti- Freeze el. Heater		V/Hz/	80W; 230V/1PH/50Hz			
Anti- Freeze el. heater - Fuse		A	6A			
Circulation pump - ErP approved			Wilo Para 25-130/9-87/IPWM1			
Compressor			Mitsubishi DC inverter (twin rotary)			
Fan	Quantity	pcs	1	1	1	2
	Airflow	m³/h	2500	3150	3150	6200
	Rated power	W	34	45	45	90
	Blade diameter	mm	φ496	φ550	φ550	φ550
Plate heat exchanger	Manufacturer		SWEP	SWEP	SWEP	2
	Water press. drop	kPa	26	26	26	26
	Piping connection	Inch	G1"	G1"	G1"	G1-1/4"
Minimum water flow		m³/h - l/s	0,75	0,94	1,44	2,23
Nominal water flow		m³/h	1,04	1,55	2,05	2,62
Residual current device and overvoltage protection			Required			
Power supply Outdoor unit	Supply	V/Hz/Ph	230/50/1	230/50/1	230/50/1	400/50/3
	Fuse	A	10A/C	16A/C	16A/C	3p/16A/C
Power supply Indoor unit	Supply	V/Hz/Ph	400/50/3	400/50/3	400/50/3	400/50/3

	Fuse	A	3 x 16A	3 x 16A	3 x 16A	3 x 16A
Electrical heater	Flow heater		9 kW (3x3)			
	Water tank heater		N/A			
Refrigerant	Type		R 32			
	Charge	kg	0,9	1,4	1,8	2,55
Dimensions net (W x H x D)	Outdoor unit	mm	1010x735x370	1165 x 885 x 370	1165 x 885 x 370	1085 x 1450 x 390
	Indoor unit	mm	600 x 715 x 1780			
Net weight	Outdoor unit	kg	67	80	85	120
	Indoor unit	kg	115			

(1) Heating condition: water inlet/outlet temperature: 30 °C/35°C, Ambient temperature: DB 7 °C /WB 6 °C

(2) Heating condition: water inlet/outlet temperature: 40°C/45°C, Ambient temperature: DB 7 °C /WB 6 °C

(3) Cooling condition: water inlet/outlet temperature: 23 °C/18°C, Ambient temperature: DB 35 °C /WB 34 °C

(4) Cooling condition: water inlet/outlet temperature: 12°C/7°C, Ambient temperature: DB 35 °C /WB 34 °C

NOTES:

ES-Manual-Installation-AW-R32-M-ENG-V5.1

Dear Customer!

We would like to thank you for reading this manual.
For more information, feel free to contact us.
Your ES team.

www.energysave.se

ES ENERGY SAVE