

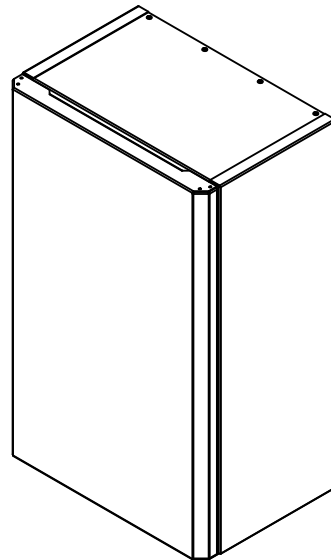


AQUA UNIT

AUBV V2

AUCV V2

AUDV V2



Indoor unit - Inverter split air to water heat pump

Unità interna - Pompa di calore split Inverter aria / acqua

Unité intérieure - Pompe à chaleur split Inverter air / eau

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REGULATION (EU) No. 517/2014 - F-GAS

The unit contains R410A, a fluorinated greenhouse gas with a global warming potential (GWP) of 2087.50. Do not release R410A into the atmosphere.

Power Supply:

220 - 240 V ~ 50 Hz

IMPORTANT!**Please read before installation**

Installation of these products must be carried out by qualified personnel in accordance with European regulations 303/2008 and 517/2014.

This system meets strict safety and operating standards.

For the installer or service person, it is important to install or service the system so that it operates safely and efficiently.

To begin the warranty, the product must be started by a service center Argoclima S.p.A.

Recommendations

- The personnel responsible for receiving the unit must conduct a visual inspection in order to identify all damage to which the unit may have been subjected during transport: refrigerating circuit, electrical cabinet, chassis and cabinet.
- During installation, troubleshooting and maintenance operations, never use the pipes as a step: under the stress, the pipes may break and the refrigerant may cause serious burns.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state and national electrical (and safety) codes.
- Pay close attention to all warning and caution notices given in this manual.
- Supply the unit with a dedicated electrical line.
- Make install the unit by qualified personnel, in possession of license F-GAS.
- Before installation, check that the voltage of the electric supply in your home or office is the same as the voltage shown on the nameplate.

**WARNING**

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

**CAUTION**

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If necessary, get help

These instructions are all you need for most installation sites and maintenance conditions.

If you require help for a special problem, contact our sale/service outlet or your certified dealer for additional instructions.

In case of improper installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

- During installation, connect before the hydraulic and refrigerant system and then the wiring one; proceed in the reverse order when removing the unit.

**WARNING****When wiring**

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

ONLY QUALIFIED, EXPERIENCED ELECTRICIANS SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked, to ensure the grounding.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring.
Improper connections and inadequate grounding can cause accidental injury and death.
- **Ground the unit** following local electrical codes.
- The Yellow/Green wire cannot be used for any connection different from the ground connection.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Do not allow wiring to touch the refrigerant tubing.
- Do not use multicore cable when wiring the power supply and control lines. Use separate cables for each type of line.

When transporting

Be careful when picking up and moving the unit. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminium fins on the unit can cut your fingers.

When installing**... In a room**

Properly insulate any tubing run inside a room to prevent “sweating”, which can cause dripping and water damage to walls and floors.

... In a wall or floor

Make sure they are strong enough to hold the unit weight. It may be necessary to build a strong wooden or metal frame to provide added support.

... In moist or uneven locations

Use a raised concrete base to provide a solid level foundation for the unit.

This prevents damage and abnormal vibrations.

... In area with strong winds

Securely anchor the unit down with bolts and a metal frame. Provide a suitable air baffle.

... In a snowy area

Install the unit on a raised platform that is higher than drifting snow. Provide snow vents.

When connecting refrigerant tubing of Emix / Emix-Tank

- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them; screw by hand and then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting.
- Insulate the tubes with foamed polyethylene (min. thickness 8mm).

When connecting hydraulic tubing

- Keep all tubing runs as short as possible.
- Insulate the tubing.
- Check carefully for leaks before starting.

When servicing

- Turn the power OFF at the main power board before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after the work, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- Ventilate the room during the installation or testing the refrigeration system; make sure that, after the installation, no gas leaks are present, because this could produce toxic gas and dangerous if in contact with flames or heat-sources.

1 - GENERALITIES

OPERATING CONDITIONS

Water system pressure

Minimum: 1,5 bar

Maximum: 2,0 bar

Water temperature

The maximum allowable water inlet temperature of the heat pump is 75 ° C

Water volume of the system (to be compulsorily checked)

Minimum: **AUBV V2:** 40 litres (*)

AUCV V2: 80 litres (*)

AUDV V2: 80 litres (*)

Maximum: dimension the expansion vessel according to the maximum volume of water, the maximum water temperature and the plant static height.

(*) If the water volume of the system (plant and product) is below the minimum, a buffer tank must be installed.

For the minimum water volume, consider the volume continuously connected to the heat pump (don't consider the volumes which could be isolated by automatic valves).

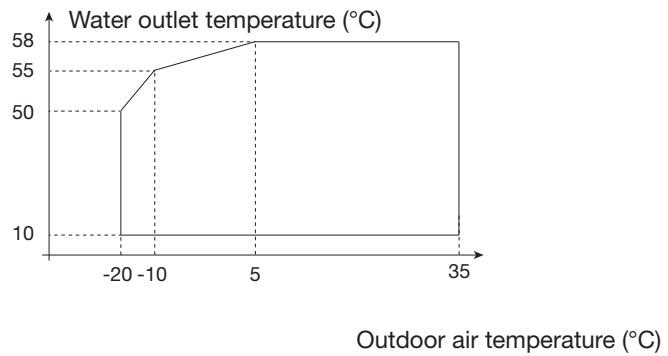
Operating limits

Outdoor ambient temperature

Heating: -20°C / +35°C

Cooling: +10°C / +47°C

Maximum temperature of water outlet

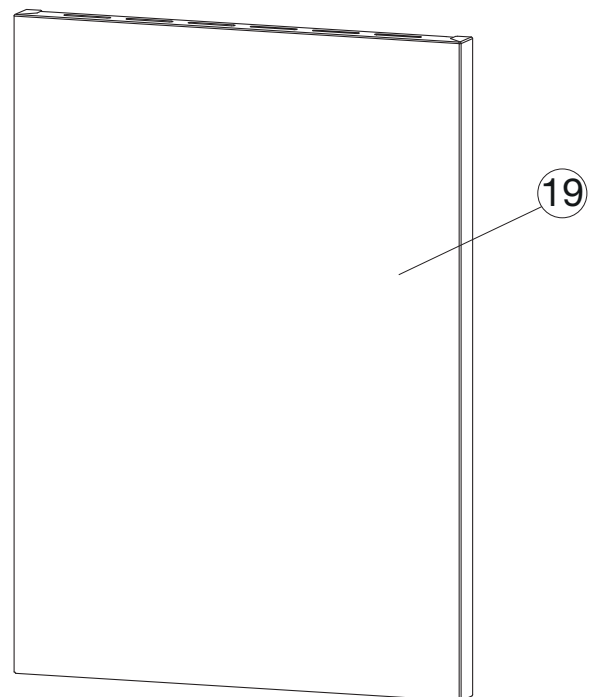
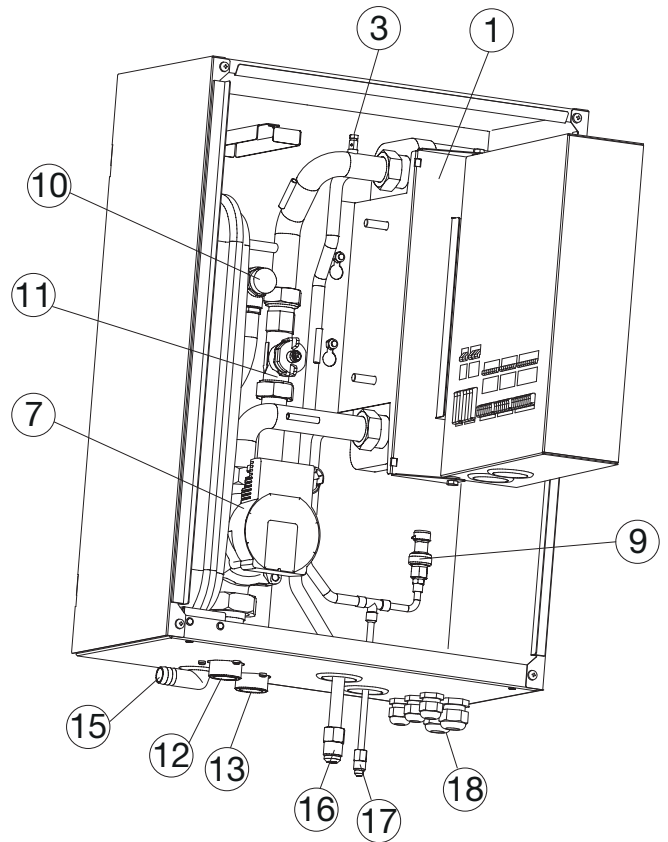
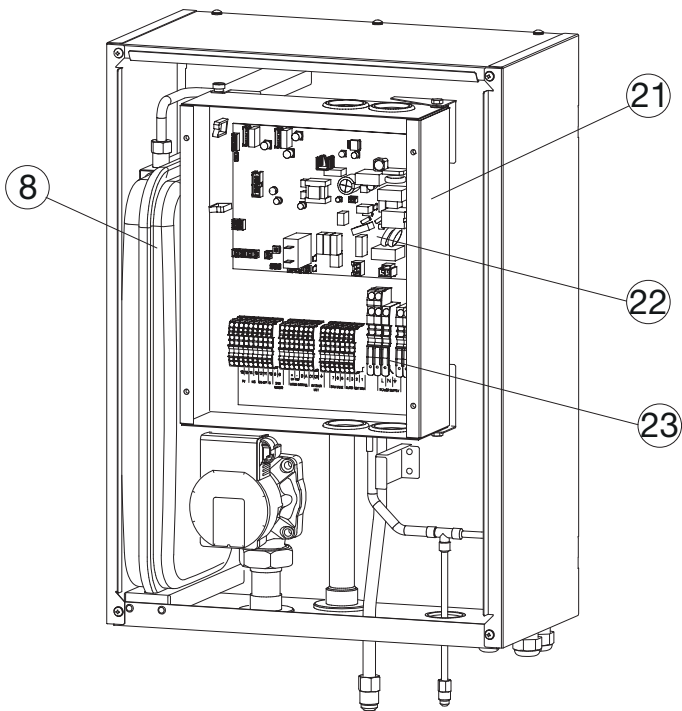


2.1 - DESCRIPTION OF THE PARTS

- 1 - Heat exchanger.
- 3 - Air vent valve.
- 7 - Water circulator.
- 8 - Expansion vessel.
- 9 - Refrigerant pressure transducer.
- 10 - Safety valve.
- 11 - Water flow sensor (flowmeter).
- 12 - Water inlet connection.
- 13 - Water outlet connection.
- 15 - Safety valve drain connection.
- 16 - Flare refrigerant gas connector.
- 17 - Flare refrigerant liquid connector.
- 18 - Electrical cable passages.
- 19 - Front panel.
- 21 - Electrical box.
- 22 - PCB.
- 23 - Terminal blocks.
- 24 - Wired controller (obligatory).

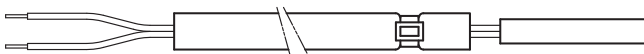
Materials:

- Copper piping.
- Stainless steel water heat exchanger.
- Painted sheet metal cabinet.

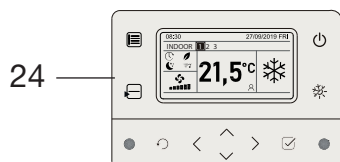


ACCESSORIES SUPPLIED WITH THE UNIT

DHW SENSOR



**WIRED CONTROLLER
(TO BE PURCHASED SEPARATELY)**

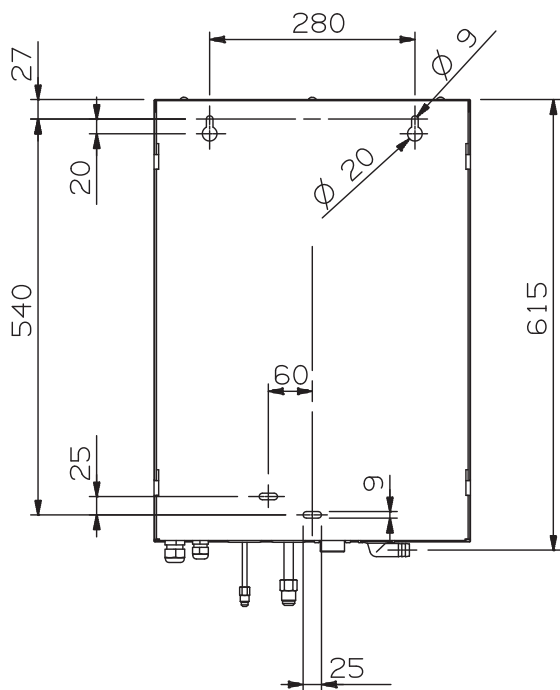
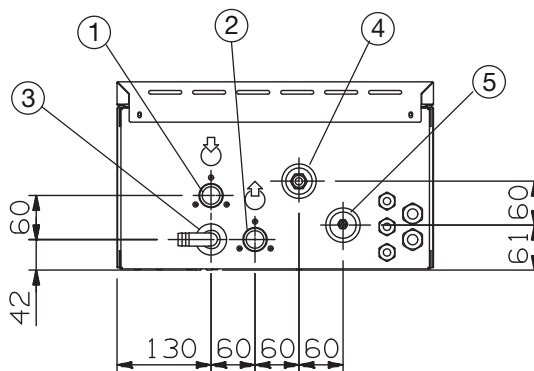


2.2 - DIMENSIONS AND WEIGHT

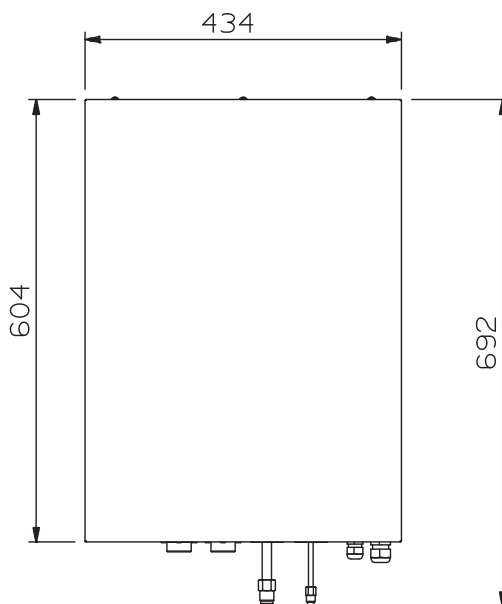
		AUBV V2	AUCV V2	AUDV V2
1	Water inlet connection	1" M	1" M	1" M
2	Water outlet connection	1" M	1" M	1" M
3	Condensate drain connection	ø 16mm	ø 16mm	ø 16mm
4	Gas refrigerant connection	1/2"	1/2"	5/8"
5	Liquid refrigerant connection	1/4"	1/4"	3/8"
6	Holes for electric cables	-	-	-

Model	Weight (kg)
AUBV V2	25
AUCV V2	27
AUDV V2	28

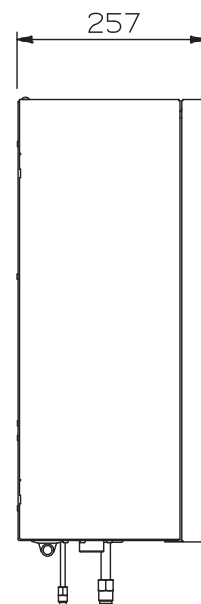
BOTTOM VIEW



REAR VIEW



FRONT VIEW



SIDE VIEW

2.3 - ADDITIONAL MATERIAL REQUIRED FOR INSTALLATION (NOT SUPPLIED)

- Deoxidized annealed copper tube for refrigerant tubing connecting Emix; it has to be insulated with foamed polyethylene (min. thickness 8mm).
- Anti-freeze oil for flare connections (about 30g.)
- Electric wire: use insulated copper wires of size and length as shown at paragraph "SYSTEM WIRING DIAGRAMS".
- Tubes for water.

Tools required for installation (not supplied)

- | | |
|------------------------------|-------------------------------|
| 1. Standard screwdriver | 9. Hammer |
| 2. Phillips head screwdriver | 10. Drill |
| 3. Knife or wire stripper | 11. Tube cutter |
| 4. Tape measure | 12. Tube flaring tool |
| 5. Level | 13. Torque wrench |
| 6. Sabre saw or key hole saw | 14. Adjustable wrench |
| 7. Hacksaw | 15. Reamer (for
reburring) |
| 8. Core bits $\varnothing 5$ | 16. Hex. key |

3 - INSTALLAZIONE

3.1 - INSTALLATION LOCATION

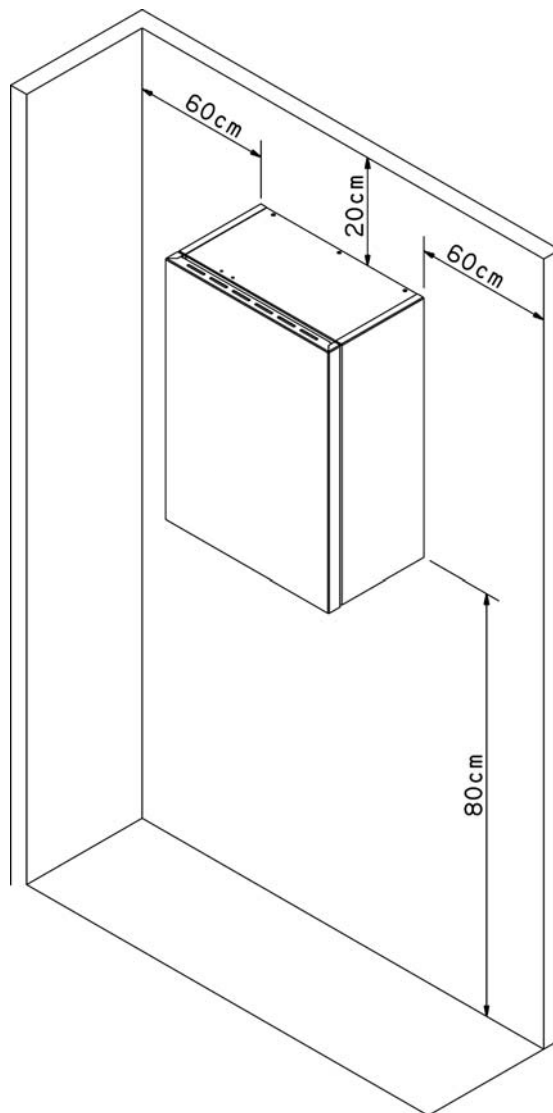
The unit must be installed in a closed location.

AVOID

- Proximity to heat sources, exhaust fans.
- Proximity to combustible materials.
- Direct sunlight.
- Locations where the unit could be splashed with water or affected by dampness or humidity (i.e. in laundries).
- Unsteady locations that will cause noise or possible waterleakage.
- To make holes in areas where electrical wiring or conduits are located.

IMPORTANT NOTES

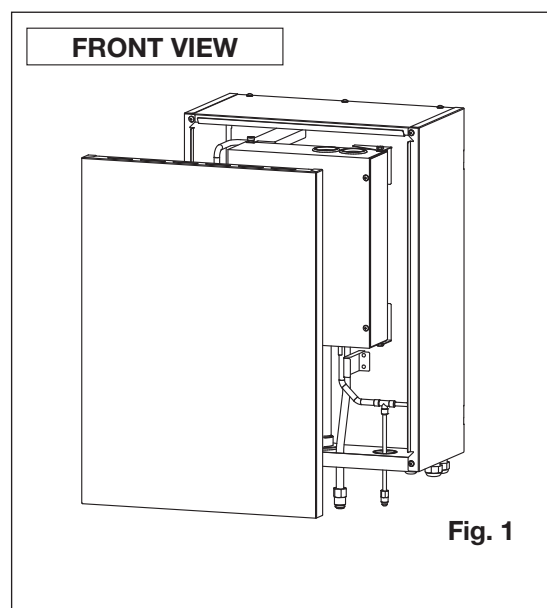
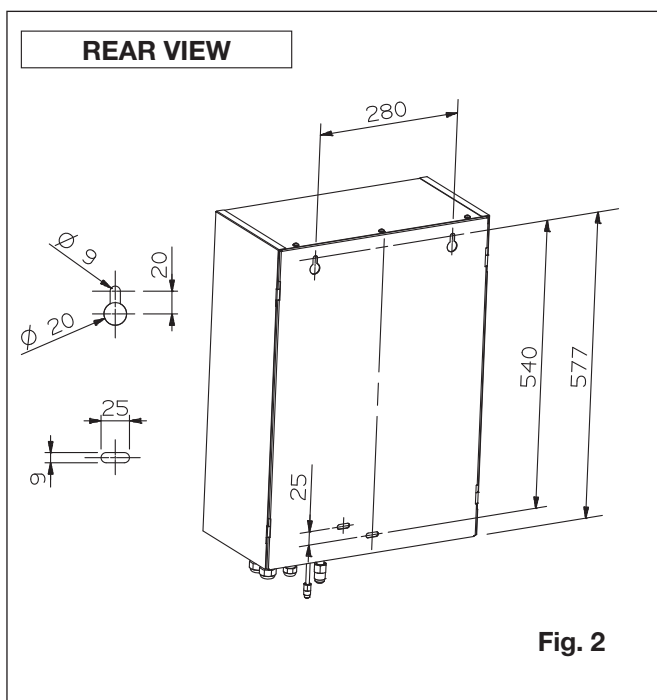
- Select a sufficiently strong location/wall to support the weight of the unit.
- Leave a minimum operation and maintenance area around the unit. (See figure).



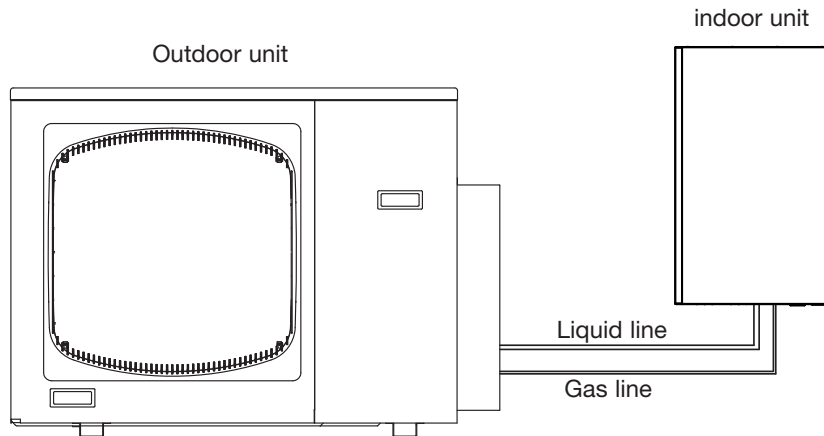
3.2 - HOW TO INSTALL THE UNIT

INSTALLATION TO THE WALL

- Remove the front panel from the unit, pulling towards you (**fig. 1**).
- Make 3/4 holes in the wall (**fig. 2**).
Use pins and screws (not supplied) that are appropriate to the weight of the unit and the type of wall.
- Hook and fix the unit.
- Replace the front panel



4.1 - REFRIGERANT CONNECTION



	AUBV V2	AUCV V2	AUDV V2
Connection to the refrigerant circuit of outdoor unit *	Circuit A	Circuit A	Circuit A **
∅ Liquid tube (narrow)	1/4" (6,35 mm)	1/4" (6,35 mm)	3/8" (9,52 mm)
∅ Gas tube (large)	1/2" (12,7 mm)	1/2" (12,7 mm)	5/8" (15,88 mm)
Minimum pipe length	3 m	3 m	3 m
Maximum pipe length without additional refrigerant	SEE INSTALLATION INSTRUCTIONS OF OUTDOOR UNIT		
Maximum pipe length with additional refrigerant			
Additional charge per meter			

*** IMPORTANT!**
Connect EXCLUSIVELY to the circuit «A» of the outdoor unit.

**** For AUDV V2**
Check in particular the outdoor unit installation instructions.

NOTES

- For the connecting pipes, use the flare nuts provided with the unit or nuts intended for the R 410 A.
- Minimum pipe thickness: 1mm.
- Utilise, if necessary, the adapters supplied with the outdoor unit.
- Connect the units with the connecting tubes in accordance with the above table.

4.2 - HYDRAULIC CONNECTION

4.2.1 - WATER INLET AND OUTLET CONNECTION

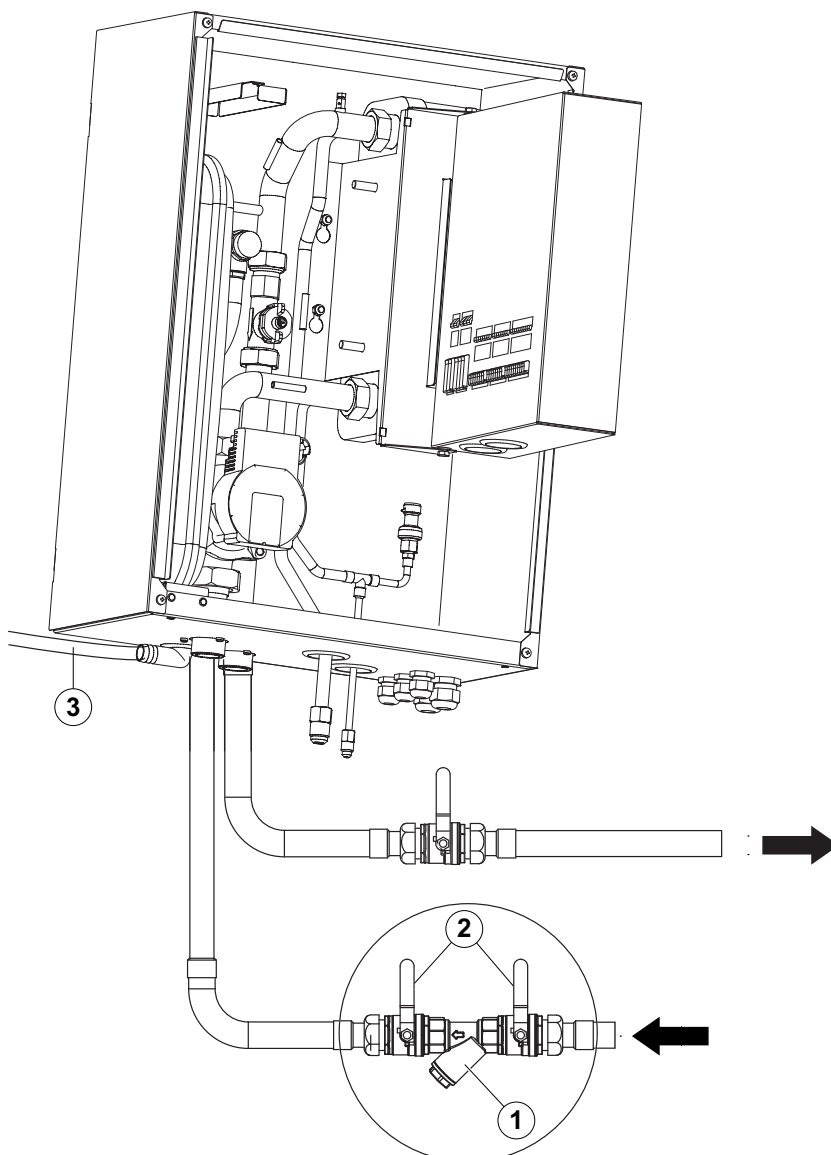
- Connect the water pipes to the corresponding connections (for diameters and position, see page 6).
- It is mandatory to install a hydraulic filter **(1)** (not supplied) on the water intake. Connect it using two on-off valves **(2)** (not supplied) for cleaning purposes.
- It is recommended to install anti-vibration flexible hoses (not supplied), for the hydraulic connections.

4.2.2 - WATER FILLING / DRAINAGE CONNECTION

- Provide at the lowest point of the hydraulic circuit, outside the unit, a circuit fill / discharge fitting.

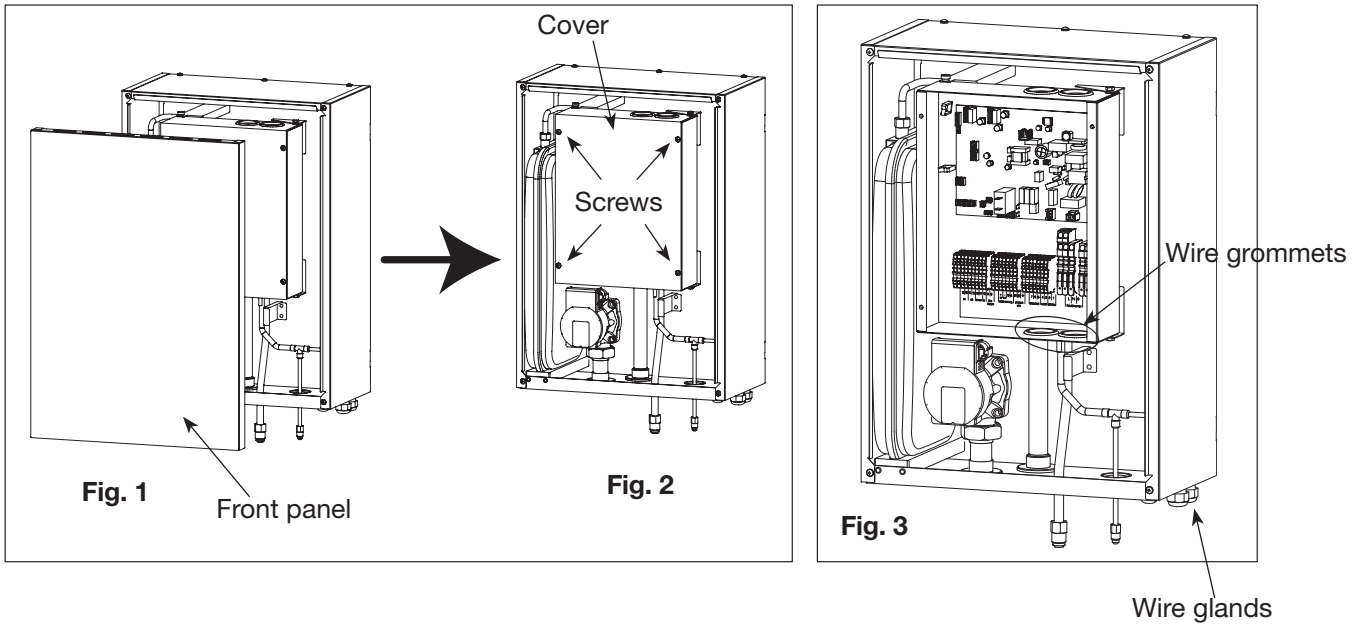
4.2.3 - SAFETY VALVE CONNECTION

- The safety valve opens if the pressure of the hydraulic system exceeds 3 bar.
- A flexible hose **(3)** (not supplied) can be connected to the condensate drain connection (connection outside \varnothing : 18 mm).

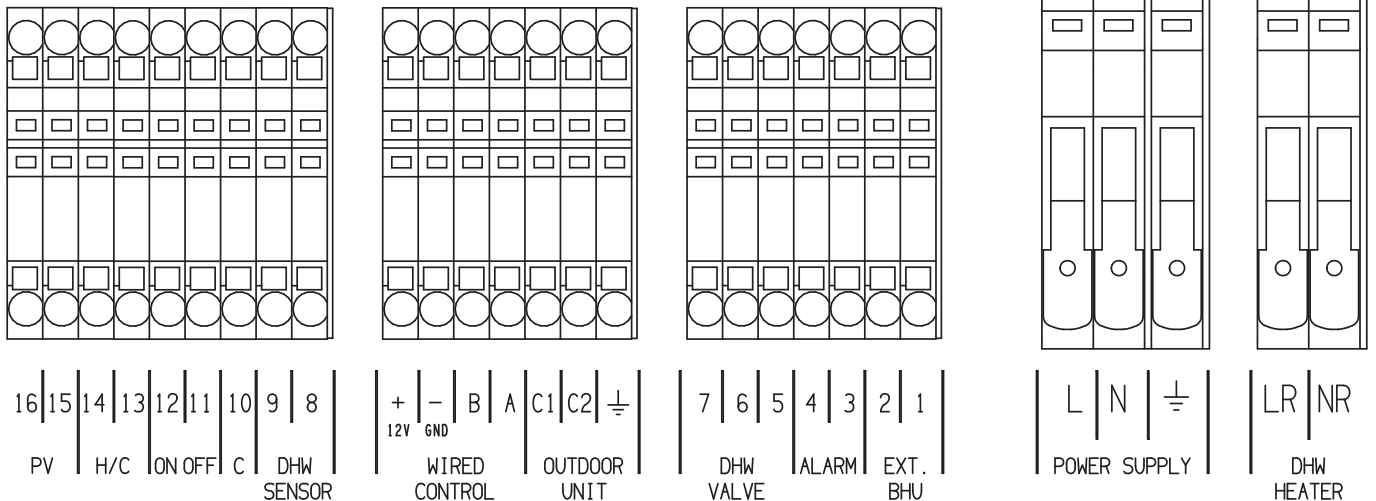


4.3 - ELECTRICAL CONNECTION

- Remove the front panel (fig.1).
- Unscrew the four screws (fig. 2).
- Remove the cover to access the terminal blocks (fig. 3).
- Let the electrical wires pass first in the wire glands placed on the bottom of the unit and then in the wire grommets placed on the bottom of the electrical panel (fig. 3).
- Connect the power line and interconnecting wires to the unit and secure them with the wire glands. Leave a surplus such as to allow rotation of the electrical panel.
- Close the cover by carrying out the operations in reverse.




TERMINAL BLOCKS



5 - SYSTEM WIRING DIAGRAMS

LENGTH, SIZE WIRES AND DELAYED FUSE

	Wires' size (mm ²)			
	A	B	C	
Without DHW electrical heater	1,5	0,75	0,75	2 A
With DHW electrical heater	4			20 A

Supply power wire A:

Multipolar electric wire; the size of the suggested electric wire is shown on table. The wire must be Mod. H07RN-F (according to CEI 20-19 CENELEC HD 22). Make sure the length of the conductors between the fixing point and the terminals allows the straining of the conductors L, N before that of the grounding.

Connecting wire B (SHIELDED):

Bipolar electric shielded wire; the size of the suggested electric wire is shown on table. The wires have not to be lighter than Mod. H05VVC4V5-K (according to CEI 20-20 CENELEC HD21).

Connecting wire C:

Multipolar electric wire; the size of the suggested electric wire is shown on table. The wires have not to be lighter than Mod. H07RN-F.

WIRING DIAGRAMS' SYMBOLS



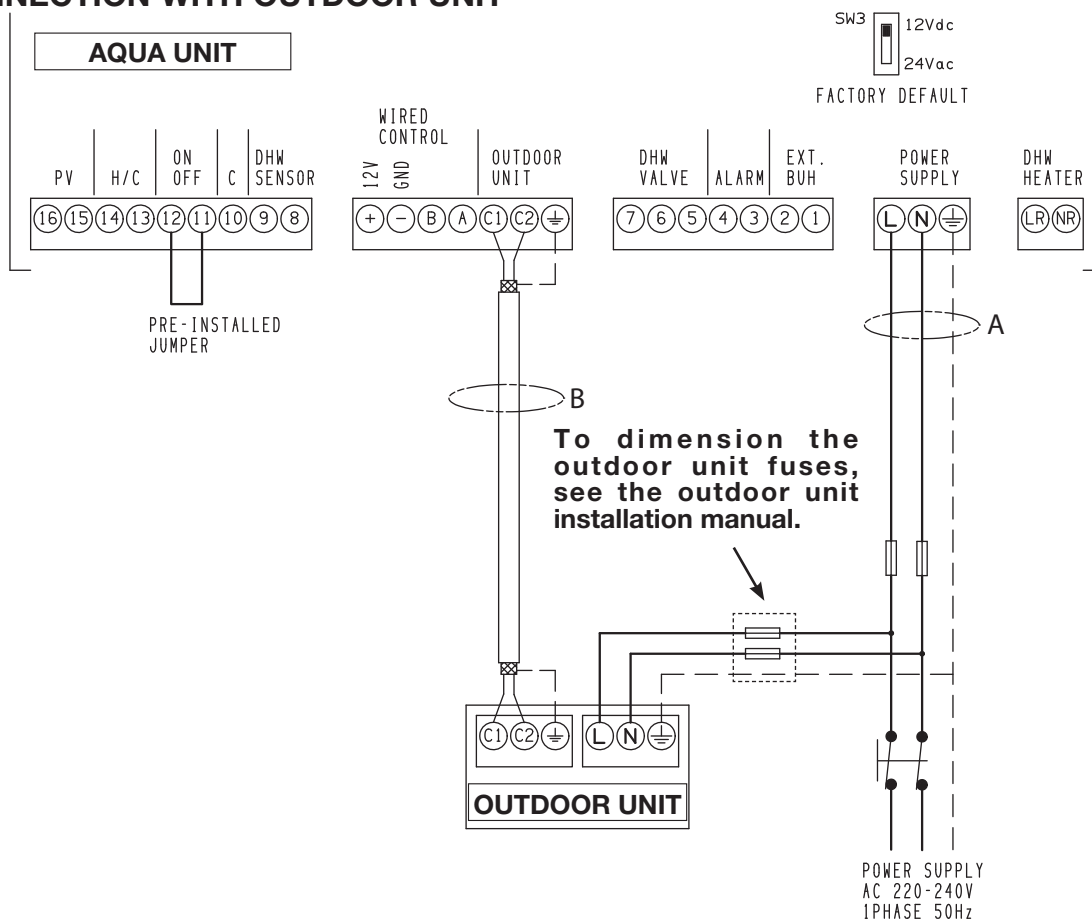
DELAYED FUSE

220 - 240 V ~ 50 Hz



Main switch for disconnection from the supply line must have a contact separation in all poles that provides full disconnection under category III overvoltage conditions.

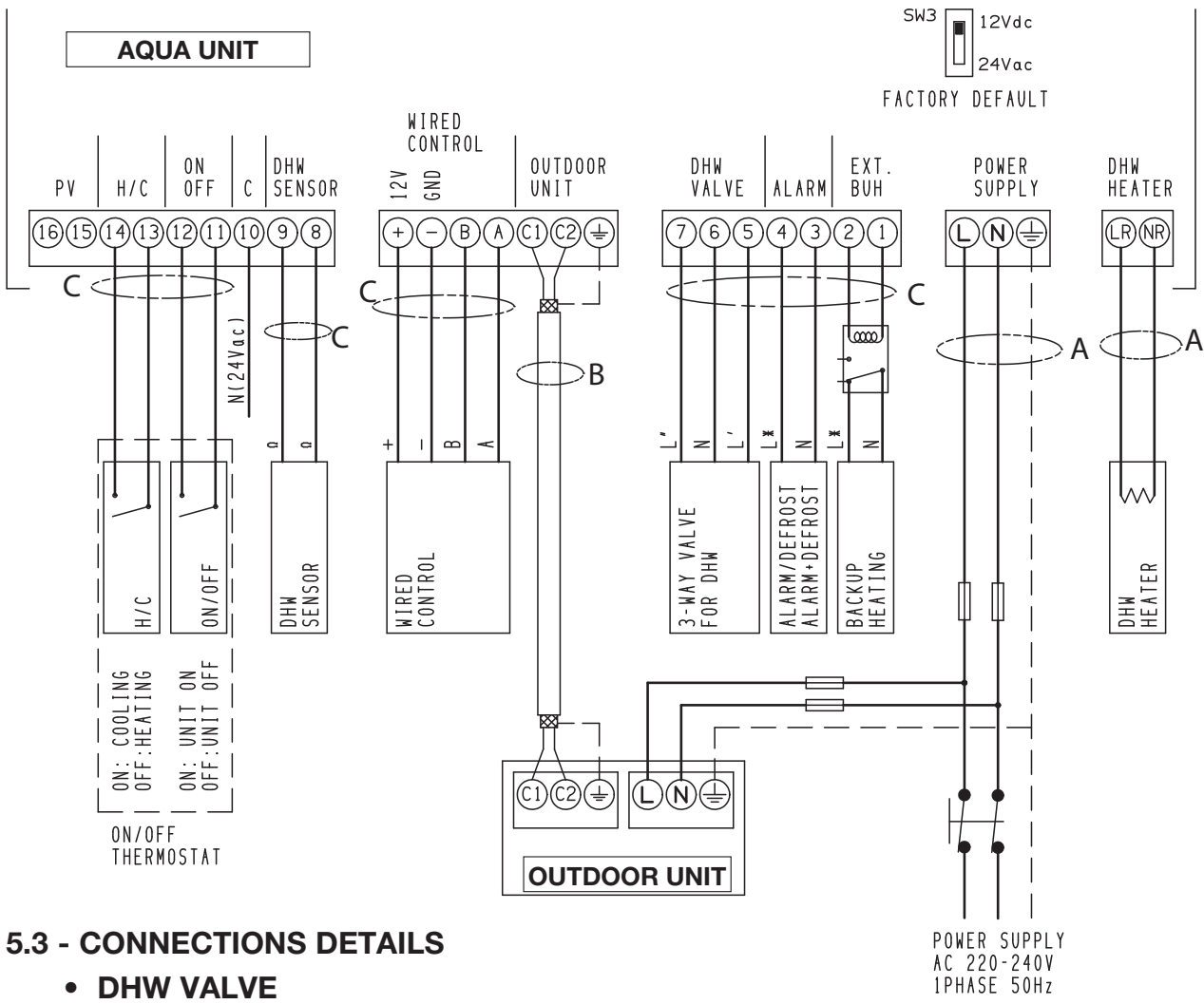
5.1 - CONNECTION WITH OUTDOOR UNIT



NOTES

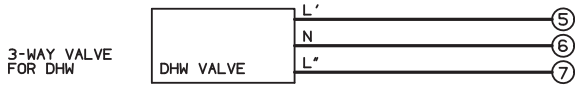
- Do not connect the power supply of Aqua Unit on the terminal block of outdoor unit.
- Connect the power supply under the same circuit breaker of outdoor unit.
- Check out maximum power input on circuit breaker (outdoor unit + Aqua Unit).
- Use the ON/OFF button on the control panel to switch off the unit.
- Aqua Unit must always be powered on, to allow internal protections (eg. anti-freeze) to be activated.

5.2 - FULL CONFIGURATION



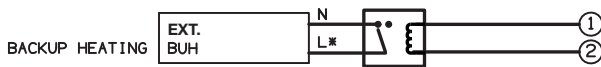
5.3 - CONNECTIONS DETAILS

• **DHW VALVE**



- (5): DHW valve closing command. Phase output 230 Vac / 20 W max.
- (6): Neutral
- (7): DHW valve opening command. Phase output 230 Vac / 20 W max.

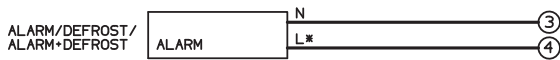
• **EXTERNAL BACKUP HEATING**



- (1): Neutral
- (2): Backup heating activation command. Phase output 230 Vac / 20 W max.

It is necessary to insert an external backup heating pilot relay (boiler, resistance, etc.).

• **ALARM / DEFROST**



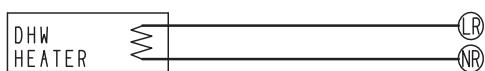
- (3): Neutral
- (4): Alarm / defrost signaling. Phase output 230 Vac / 20 W max.

• **DHW SENSOR**



- (8)-(9): DHW sensor (supplied with the unit)
- The sensor cable can be extended up to a maximum of 10m. To enable DHW management, make sure you have set switch SW1 correctly (see 6.2)

• **DHW ELECTRICAL HEATER**



- (LR) : DHW Electrical heater activation. Phase output 230Vac /4kW MAX.
(NR): Neutral.
To enable DHW management, check that switch SW1 has been set correctly (see 6.2)



WARNING

Connect a maximum power heater of 4kW equipped with both an automatic reset protection device and a manual reset one.

• **THERMOSTAT ON/OFF**



- If switch SW3 (see page 19) of main board is set on 12 Vdc, connect thermostat dry contact between poles (11) and (12):
(9): Low voltage input
(10): 12 Vdc

Closed contact: heating / cooling request

Open contact: unit in standby

- If switch SW3 (see page 19) of main board is set on 24 Vac, connect neutral of power supply 24 Vac to terminal (10) and output 24 Vac of thermostat to terminal (11):
(10): Neutral 24 Vac
(11): Phase input 24 Vac
(12): Not connected

Powered input: heating / cooling request

Not powered input: unit in standby

NOTE: On the terminals (11) and (12) a jumper is preinstalled (factory default). Remove the jumper before connecting the thermostat.

• **THERMOSTAT H/C**



- If switch SW3 (see page 19) of main board is set on 12 Vdc, connect thermostat dry contact between poles (13) and (14):
(13): Low voltage input
(14): 12 Vdc

Closed contact: cooling mode selected

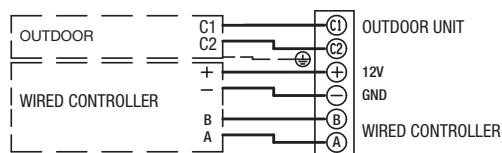
Open contact: heating mode selected

- If switch SW3 (see page 19) of main board is set on 24 Vac, connect neutral of power supply 24 Vac to terminal (10) and output 24 Vac of thermostat to terminal (13):
(10): Neutral 24 Vac
(13): Phase input 24 Vac
(14): Not connected

Powered input: cooling mode selected

Not powered input: heating mode selected

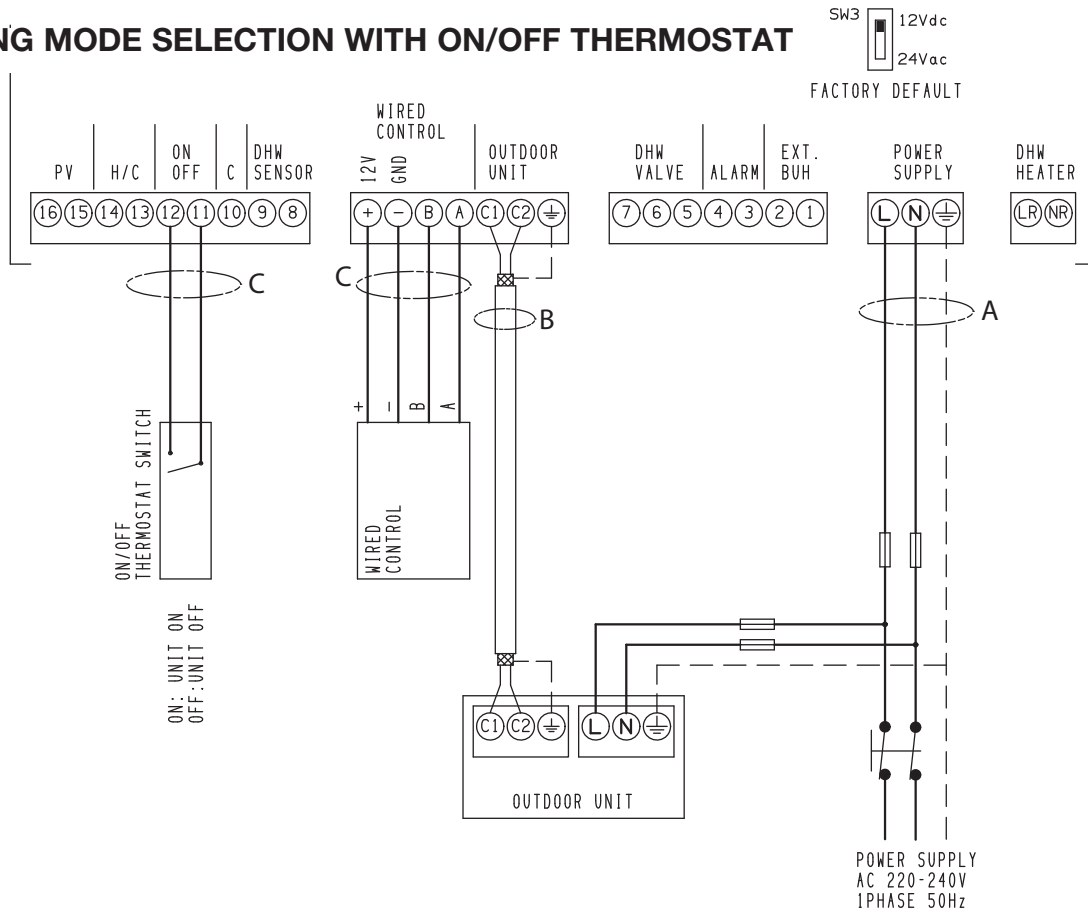
• **OUTDOOR / WIRED CONTROLLER**



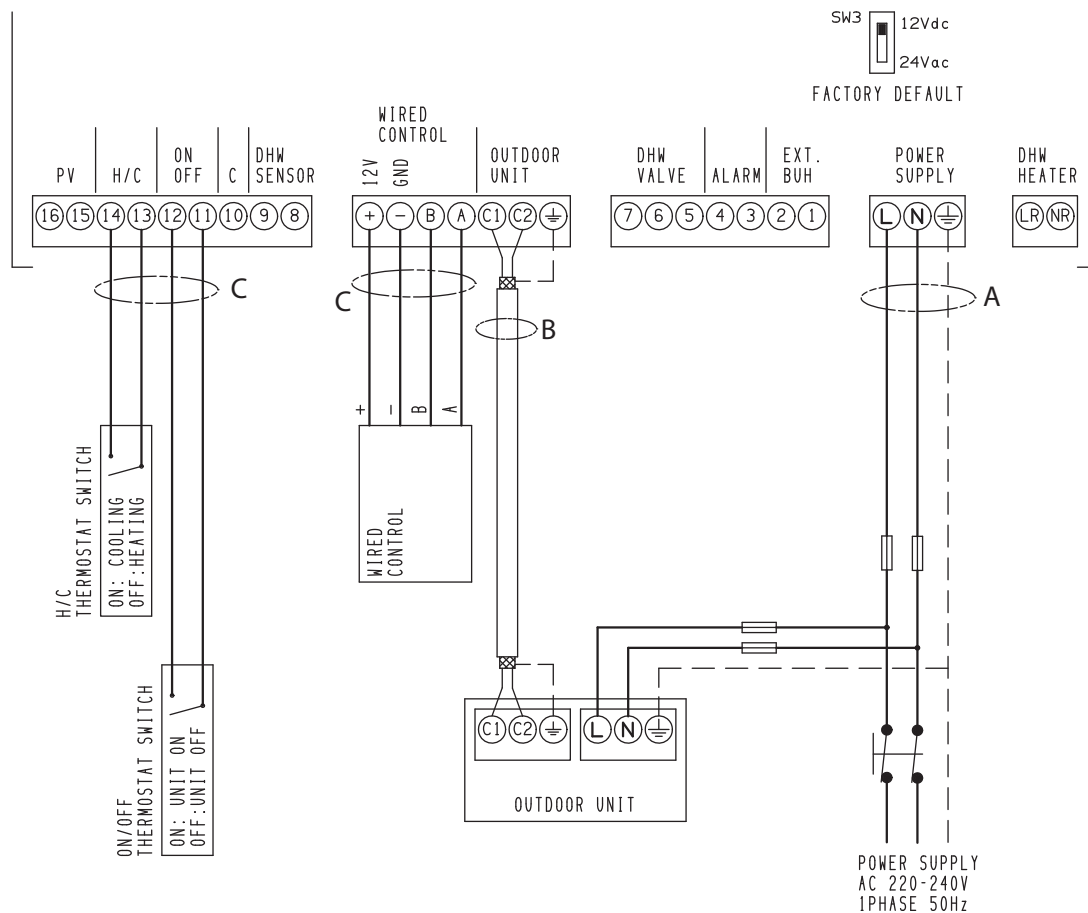
Connect terminals (C1) and (C2) to the corresponding terminals (C1) and (C2) of the outdoor unit, terminals (+) (-) (B) (A) to the corresponding terminals (+) (-) (B) (A) of the wired controller.
Connect the shield of the communication wire to the corresponding ground wire.

5.4 - CONNECTION EXAMPLES

WORKING MODE SELECTION WITH ON/OFF THERMOSTAT

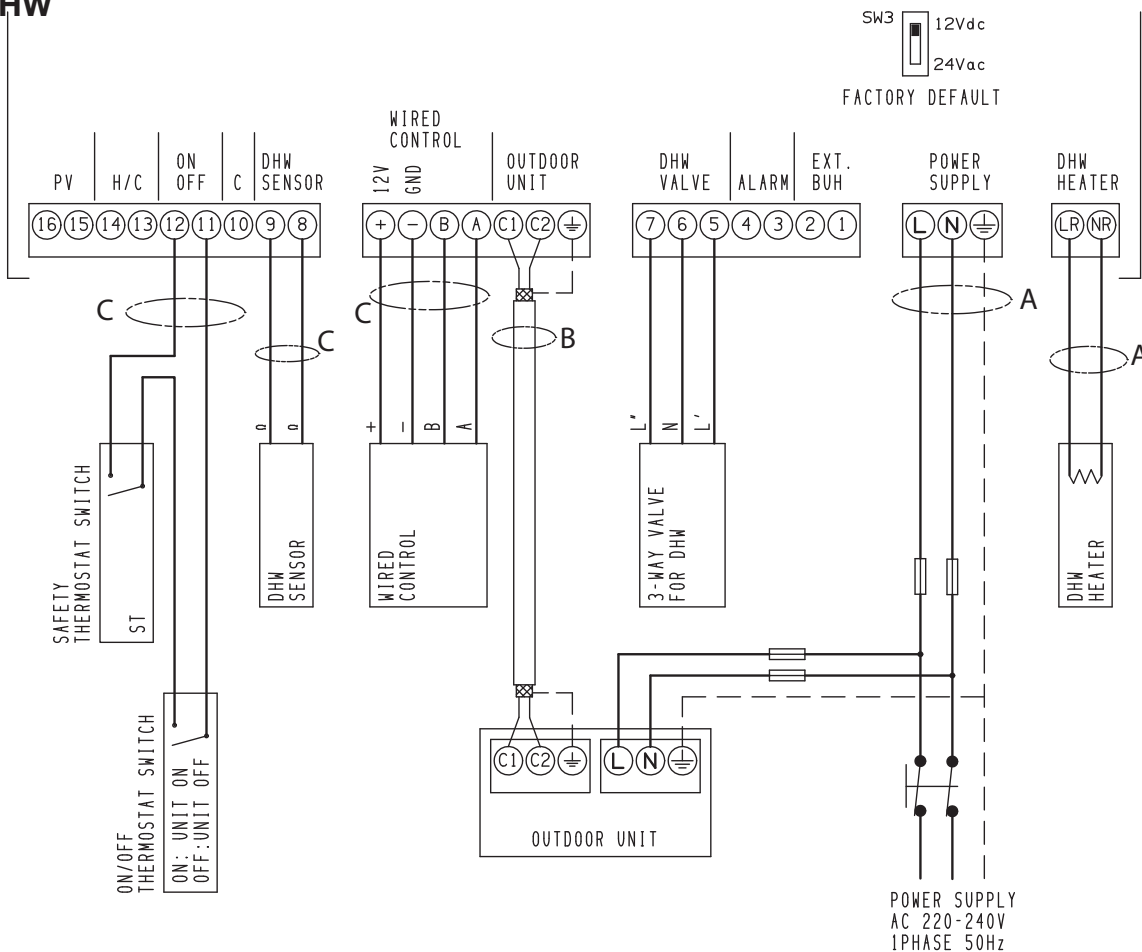


WORKING MODE SELECTION WITH ON/OFF THERMOSTAT AND HEAT/COOLING (H/C)

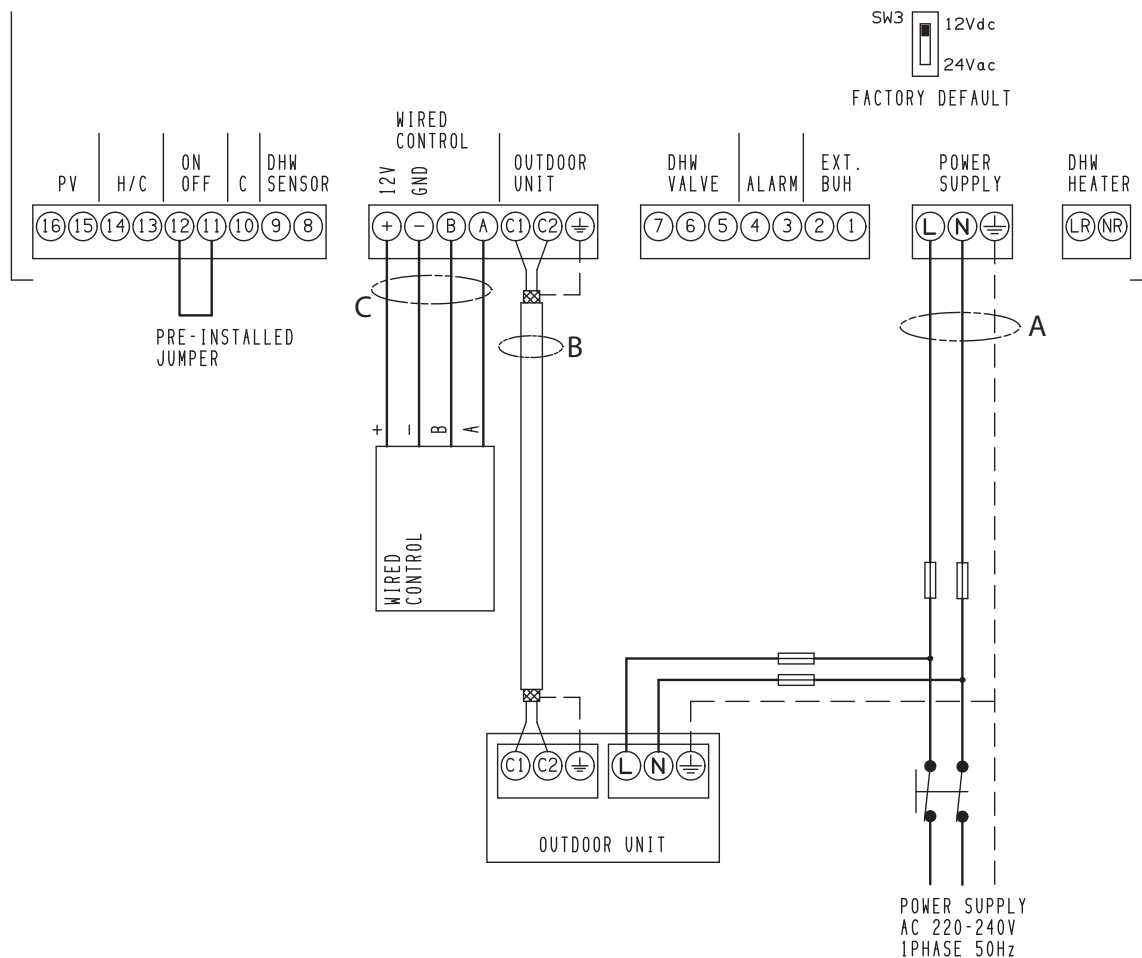


NOTE: see paragraph "STARTING" section "JUMPERS/SWITCH SETTING" - ENABLING COOLING MODE

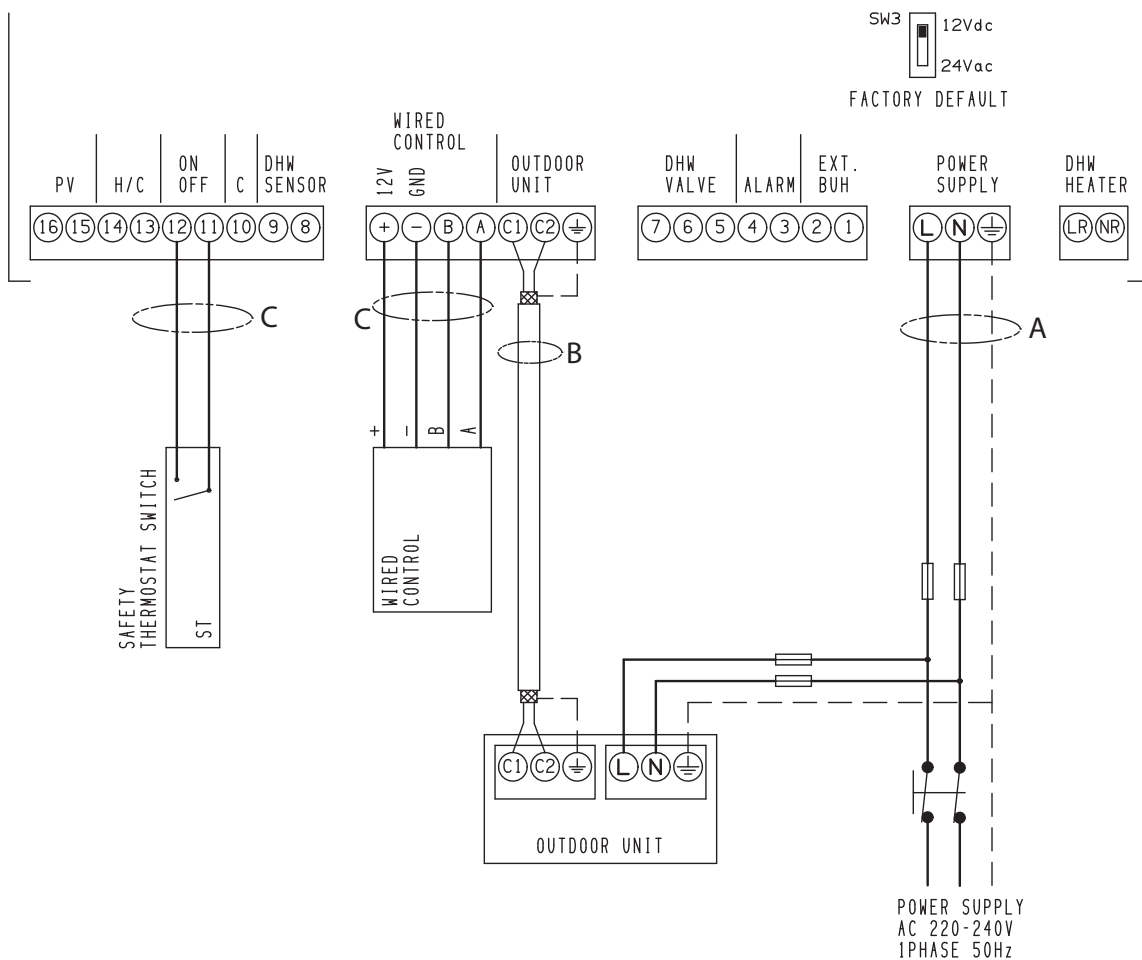
WORKING MODE SELECTION WITH ON/OFF THERMOSTAT, SAFETY THERMOSTAT AND DHW



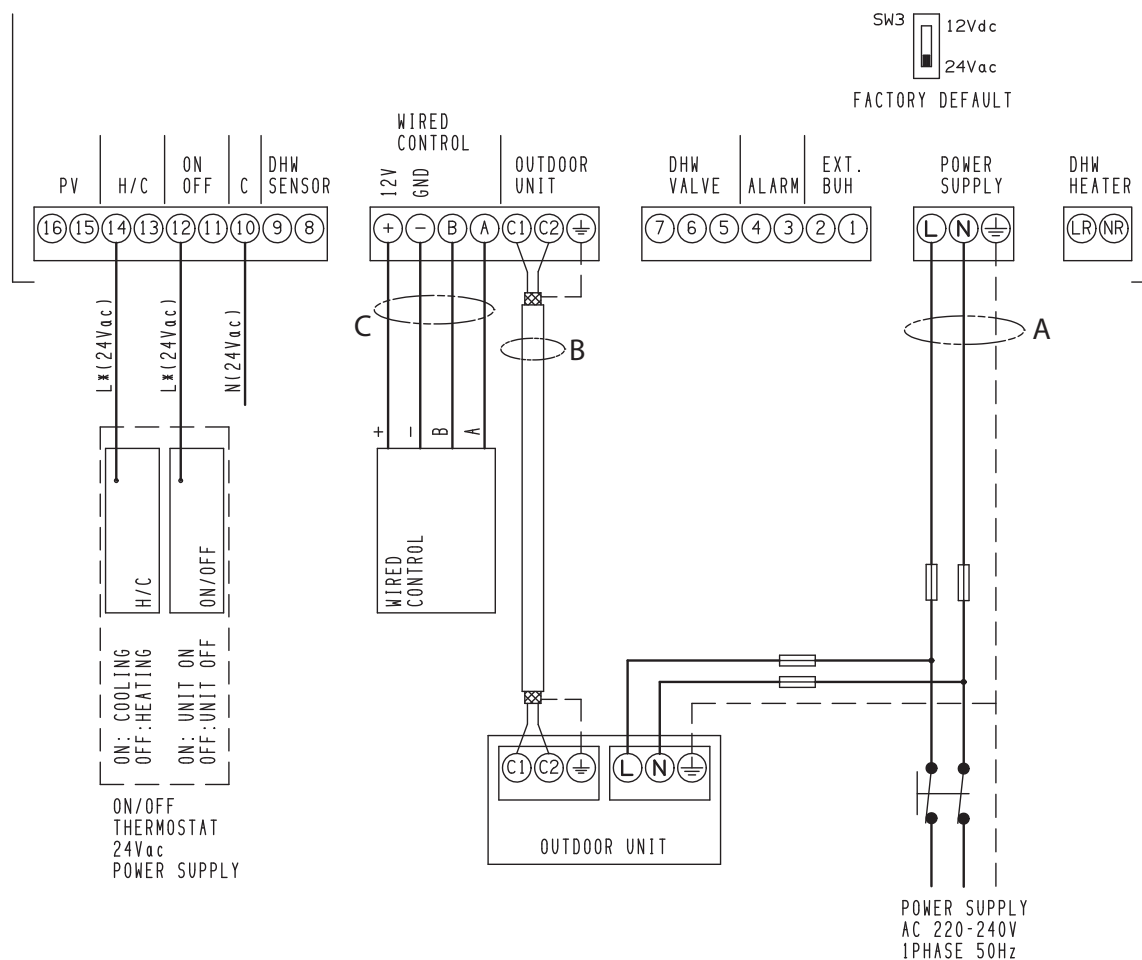
WORKING MODE SELECTION WITHOUT THERMOSTAT



WORKING MODE SELECTION WITHOUT THERMOSTAT + SAFETY SWITCH



WORKING MODE SELECTION WITH 24 Vac THERMOSTAT



IMPORTANT NOTE

Before carrying out any work on the installation, make sure that it is switched off and that access to it is prevented.

Any work must be carried out by personnel qualified and authorised to work on this type of unit.

6.1 - PRELIMINARY CHECKS**6.1.1 - HYDRAULIC CIRCUIT**

- Hydraulic couplings correctly tightened.
- Hydraulic circuit operating correct:
 - Air purge from circuits.
 - Position of valves.
 - Hydraulic pressure (1.5 to 2.0 bar).
- Water-tight hydraulic circuit.
- Water quality:
 - In order for the heat pump to operate under good conditions and provide optimum performance, it is essential to ensure that the system's water circuit is clean. If the water circuit becomes clogged, this will significantly affect the machine's performance. The circuit must therefore be cleaned with suitable products in compliance with current standards as soon as it is installed, both for new and renovation work.

We recommend the use of products which are compatible with all metals and synthetic materials and approved by official bodies.

The water must adhere to the following characteristics:

- pH: 7 to 9.
- TH: 10 to 20°F.
- Dry material in suspension: < 2 g/l.
- Granulometry: < 0.4 mm.
- Chloride: 50 mg/l maximum.
- Conductivity: 150 to 350 $\mu\text{S}/\text{cm}^2$.
- Fibre: no fibres.

Any disorder which may occur on our machines due to the poor quality of the fluid in the installation will not be covered by the warranty.

IMPORTANT:

If anti-freeze is added, use monopropylene glycol. A rate of 15 to 20% is required to avoid any risk of corrosion.

Note: The injection of antifreeze in the circuit must not be done at the pump suction of the unit and the pump must not be used as a mixer. This is to prevent chemical alterations of the pump due to antifreeze concentration.

6.1.2 - REFRIGERANT SYSTEM

- Check carefully for any leaks.

6.1.3 - ELECTRICAL SYSTEM

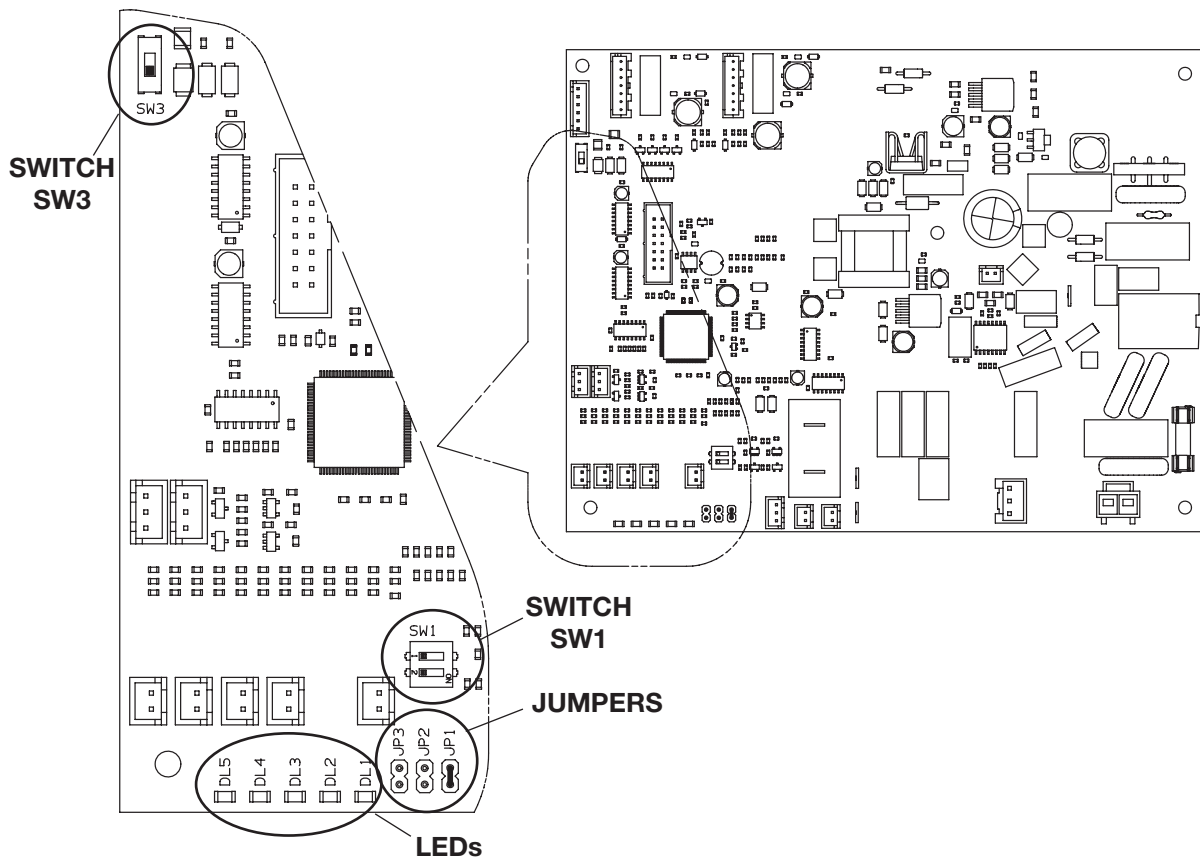
- The power cables are well fixed to their connection terminals. Terminals that are poorly tightened may cause overheating and malfunctions.
- The electric cables are well insulated from any sections of sheet metal or metal parts which could damage them.
- The power cables and the low voltage cables (thermostat, probes) are properly separated.
- The unit is earthed.

6.1.4 - OTHER

- Overall good condition of the unit.
- No tools or other foreign objects inside the unit.

6.2 - JUMPERS/SWITCH SETTING AND LEDs' MEANING

Jumper and switch settings must be made with the unit disconnected



JUMPERS

JP1 - ENABLING COOLING MODE

CLOSED: the unit will run in heating mode only (FACTORY SETTING).
 OPEN: the unit can run in heating and cooling mode.

JP2 - DEFROST TYPE SELECTION

Internal use. Do not change factory setting (OPEN). If changed, the unit will not run properly.

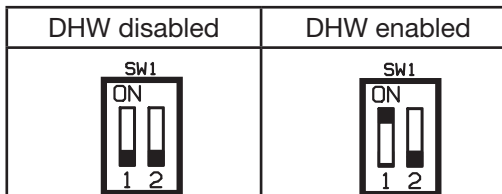
JP3 - ENABLING COOLING MODE

Internal use. Do not change factory setting (OPEN). If changed, the unit will not run properly.

SWITCH

SW1

Enabling DHW management:
 1=OFF: DHW disabled
 1=ON: DHW enabled
 2: OFF: do not change



SW3 - THERMOSTAT TYPE SELECTION

12 Vdc: Dry contacts (DEFAULT)
24 Vac: Contacts 24 Vac

LEDs

- DL1 :** ON: presence of mains voltage.
 OFF: absence of mains voltage or defective board.
- DL2 :** ON: running unit.
 OFF: stand-by unit.

OTHER INFORMATION ABOUT DL1/DL2/DL3/DL4/DL5: see diagnostic table

6.3 - ADDITIONAL HYDRAULIC CIRCUIT VERIFICATIONS

6.3.1 - CHECKS

With the pump running, perform the following checks:

- Hydraulic circuit air bleed: operate the pump at 100% in manual mode) for as long as it takes to completely purge the circuit air.
- Hydraulic pressure between 1.5 and 2.0 bar
- Hydraulic circuit water flow (see below)
- Return water temperature of the system

NOTES

- **PUMP RELEASE**

At the first start-up or after long periods of inactivity of the unit, the pump could be mechanically blocked for limestone or other reasons.

To unlock the pump, set the speed to 100% (in manual mode) and run the pump for at least 10 minutes; it will unlock automatically.

After the pump has been released, let it run in any case again all the time necessary (always at 100%) to purge well all the air of the system; then adjust the water flow as explained below.

- **MINIMUM RETURN WATER TEMPERATURE** (see graph "RETURN WATER MINIMUM TEMPERATURE PROTECTION")

A water temperature safety (system return) prevents the heat pump from operating if the temperature is lower than the heating authorization threshold with the heat pump (parameter 52). In this case, only the electric backup heating is authorized to raise the water temperature and allow the heat pump to operate, at any external temperature.

For this reason, the heat pump stops and the display will show the writing: **RWT < P52**

- **STOP THRESHOLD OF OUTDOOR AIR TEMPERATURE** (see graph "OPERATING RANGE OF HEAT PUMP/ BACKUP HEATING")

The operation of the heat pump is prevented if the outside temperature is below the stop threshold (parameter 40). Only the backup heating is authorized.

6.3.2 - WATER FLOW REGULATION PROCEDURE

The heat pump is equipped with a variable speed pump adjustable by the wired controller.

You can set pump speed during normal operation and re-read the water flow at the set speed.

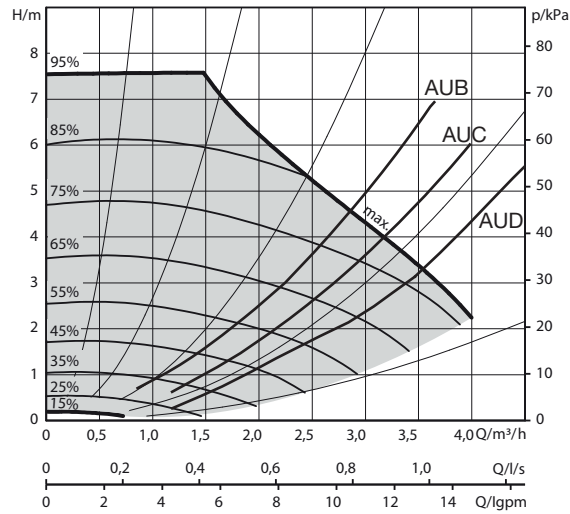
To change the pump speed, please see section 8.3.

- Change the pump speed to obtain, depending on the application, the rated working capacity according to the following table:

Application	Water outlet t.	Indoor unit	AUBV V2	AUCV V2		AUDV V2
		Outdoor unit	G65	G80	G110	G140
Radiant surface	35°C	Flow m ³ /h	1.10	1.33	1.83	2.34
Fan coil	45°C	Flow m ³ /h	1.10	1.33	1.82	2.34
Low temperature radiators	55°C	Flow m ³ /h	0.55	0.64	0.88	1.12

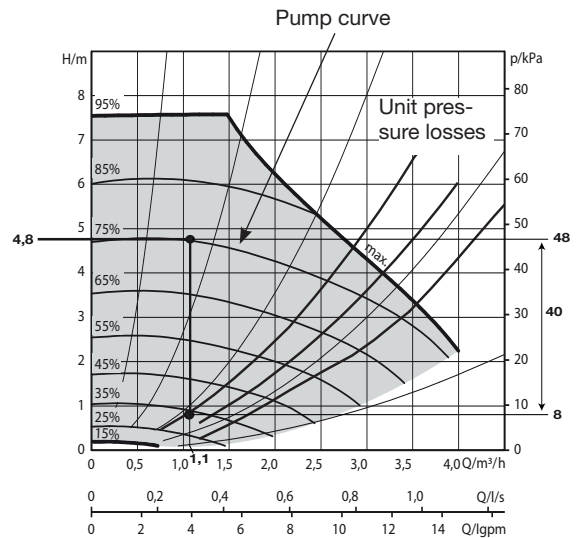
6.3.3 - CHECKING THE PRESSURE LOSSES


With the pump running at the set speed, compare the reread flow with the following curves to determine the system pressure losses and compare them with the calculations made during the installation of the system.



Example of calculation for floor system with AUBV:

- Set the pump speed to re-read a capacity of 1.10 m³/h (see table of page 20).
- On the chart, cross the vertical line corresponding to 1.10 m³/h with the pump curve corresponding to the % of the set speed (ex. 75%) and the curve of the unit pressure losses (AUBV).
- The system pressure losses correspond to the pressure losses of the pump curve less the unit pressure losses. In our example, the pressure losses are 48-8 = 40 kPa.



- Once the checks have been completed, press the  button until you return to the main menu.

6.4 - STARTING

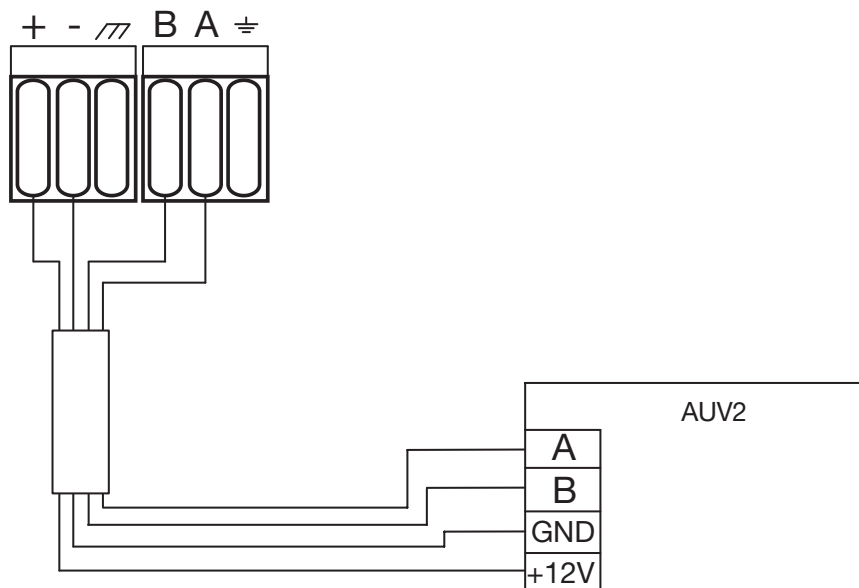
- Turn on the system five hours before start-up in order to preheat the compressor housing.
- The system can only be started by authorized service centers.
- Fill in the required starter form attached.

7.2 - ELECTRICAL CONNECTION



WARNING

Before installation, please cut off the power supply of the unit to which the wired controller is connected.



Multipolar wire A:
Electric cable 12V dc; section: 4 x 0,75mm².

ATTENTION!

When inserting or removing connectors, press gently on the clamp to facilitate the operation.

7.3 - ADVANCED PARAMETERS MENU

Press the MENU / PARAMETERS button for 2 seconds to enter the advanced parameters menu, then enter the password (-3). The menu will display:

GENERAL PARAMETERS
TECHNICAL WATER PARAMETERS
DHW PARAMETERS

Use the \wedge / \vee buttons to move between the parameters.

Once selected the desired parameter, press the OK button for 2 seconds and then it is possible to change the value of the parameter still using the \wedge / \vee buttons.

Press OK to confirm.

LEGEND OF ACRONYMS (CONTAINED IN THE PARAMETER TABLES)

DHW: DOMESTIC HOT WATER
 RWT: RETURN WATER TEMPERATURE
 OAT: OUTDOOR AIR TEMPERATURE

GENERAL PARAMETERS

Num.	Description	Unit	Default value			Range		Increment	Value description	Notes
			Floor	Fan coils	Radiators	Min.	Max.			
P03	Water pump mode	-	Auto (0)	Auto (0)	Auto (0)	Auto (0)	ON (1)	AUTO= Auto mode ON= Water pump always ON		
P06	Secondary water pump	-	0	0	0	0	1	0= Unit pump only 1= Secondary pump installed (primary/secondary circuit)		
P08	Language	-	English (1)	English (1)	English (1)	0	2	0= French 1= English 2= Italian		
P31	Antifreeze function threshold	°C	1	1	1	-20	+35	If OAT < P31, antifreeze function is activated in order to avoid water freezing in the pipings.	See graph "ANTIFREEZE FUNCTION"	
P32	Antifreeze threshold (P31) hysteresis	°C	1	1	1	1	5	Hysteresis on P31	See graph "ANTIFREEZE FUNCTION"	
P33	Minimum water flow	m ³ /h	0,3	0,4	0,4	0,3	4,0	Minimum water flow threshold	If water flow drops below P33, water flow error will appear and the unit will stop	
P40	Heat pump threshold	°C	-20	-20	-20	-20	P12	Heating mode: OAT < P40: heat pump disabled OAT > P40: heat pump enabled	See graph "OPERATING RANGE OF HEAT PUMP/BACKUP HEATING"	
P41	Defrost	-	0	0	0	0	1	If P41 is set to 1 and unit is running in heating mode, a defrost will start. At the end of defrost cycle P41 is automatically reset to 0		
P50	Factory default reset	-	0	0	0	0	1	If P50 is set to 1, all parameters will be reset to the default value. After the reset has been done, P50 is automatically reset to 0		
P51	Maximum heat pump setpoint	°C	58	58	58	20	58	Maximum setpoint for the heat pump. If calculated setpoint is > P51, heat pump will stop when P51 is reached and setpoint can only be reached with backup heating (if enabled).		
P52	Return water minimum temperature	°C	15	15	15	5	20	Heating mode: RWT < P52: heat pump disabled and backup heating activated. RWT > P52: heat pump enabled.	See graph "RETURN WATER MINIMUM TEMPERATURE PROTECTION"	
P53	Special command	-	0	0	0	0	999	0= Special command disabled 1= Air pump function activation		

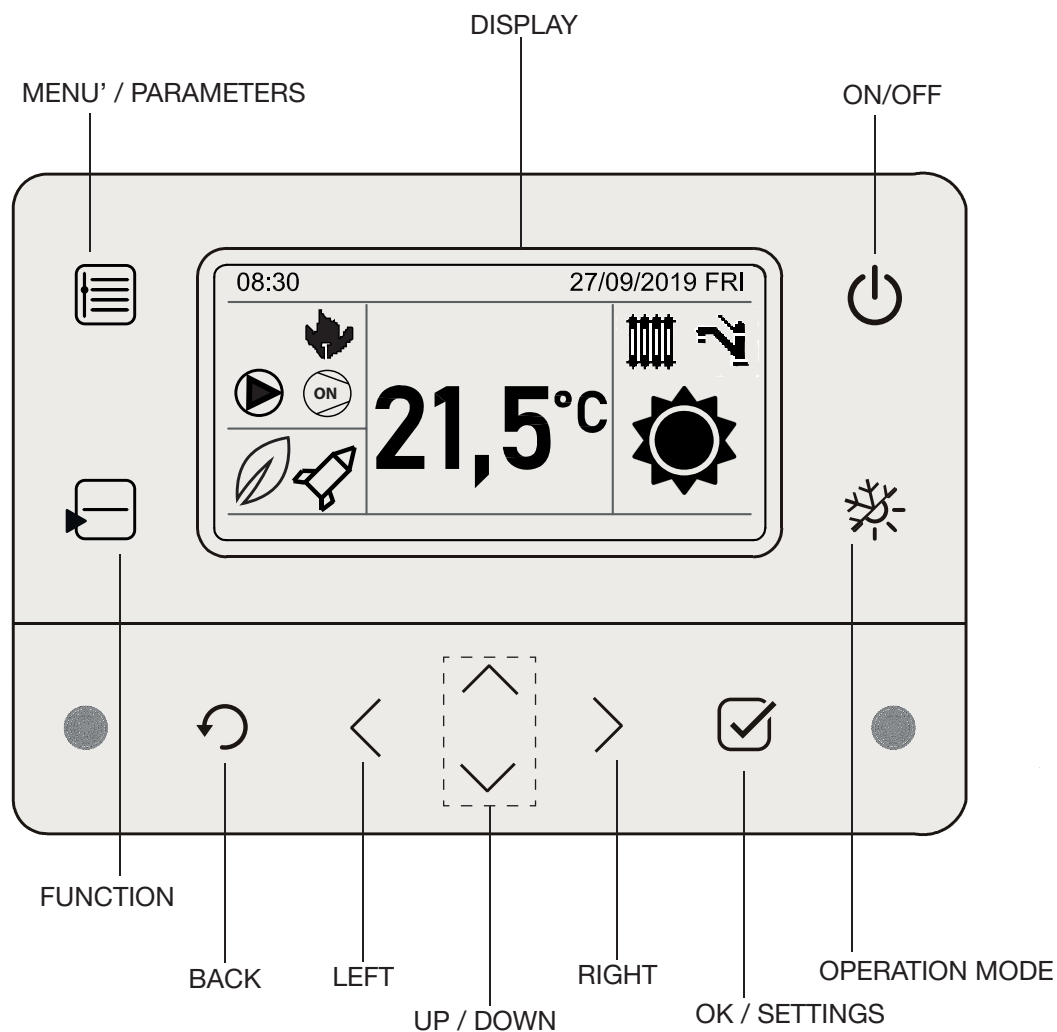
Num.	Description	Unit	Default value			Range		Increase	Value description	Notes
			Floor	Fan coils	Radiators	Min.	Max.			
P60	Eco mode power limit	%	75	75	75	30	100	1	%= percentage of maximum electric power in ECO mode	
P61	Eco mode	-	1	1	1	0	1	1	1= Limitation of absorbed electric power	
	Unit type		Read only							
	Unit Sw code									
	Unit Sw version									
	Controller Sw version									

TECHNICAL WATER PARAMETERS

Num.	Description	Unit	Default value			Range		Increment	Value description	Notes
			Floor	Fan coils	Radiators	Min.	Max.			
P02	On-Off hysteresis	°C	3	3	3	0.5	10	0.5	Hysteresis of heat pump restart on the return water temperature See graph "ON/OFF HYSTERESIS"	
P05	Setpoint mode	-	1	1	1	0	1	1	0= Automatic setpoint (climatic curve) 1= Fixed setpoint (user selection) In 2-zones application, if auto mode is selected the warmest (heating mode) or the coldest (cooling mode) setpoint is selected	
P09	External Backup heating mode	-	0	0	0	0	3	1	0= External Backup heating disabled 1= External backup heating enabled	
P10	Backup heating delay	Min.	20	20	20	5	120	1	Time of heat pump functioning before backup heating activation Valid only if P40 < OAT < P12 See graph "OPERATING RANGE OF HEAT PUMP/ BACKUP HEATING"	
P11	Boost mode (Backup heating system)	-	0	0	0	0	1	1	0= Boost mode disabled 1= Boost mode activated If P11 = 1, backup heating (according to P09) will be immediately activated up to the setpoint, then P11 is automatically reset to 0	
P12	Backup heating threshold	°C	0	0	0	P40	+35	1	Heating mode: OAT > P12: backup heating disabled OAT < P12: backup heating enabled See graph "OPERATING RANGE OF HEAT PUMP/ BACKUP HEATING"	
P14	Working mode selection	-	1	1	1	0	1	1	0= Working mode selected by thermostat 1= Working mode selected with wired controller	
P101	Plant type	-		0		0	2	1	0= Underfloor 1= Fan coil 2= Low temperature radiators When P101 is changed, P105 / P106 / P120 / P121 P123 are reset to the corresponding default value.	
P105	Maximum climatic curve setpoint	°C	35	45	50	30	55	0,5	Only for heating mode See graph "CLIMATIC CURVE"	
P106	Minimum climatic curve setpoint	°C	20	35	40	20	40	0,5	See graph "CLIMATIC CURVE"	
P120	Temperature for maximum setpoint	°C	-7	-7	-7	-20	P121	0,5	Set to the minimum expected regional temperature See graph "CLIMATIC CURVE"	
P121	Temperature for minimum setpoint	°C	17	17	17	P120	+35	0,5	If P121 < P120, P120 is automatically set to P121 See graph "CLIMATIC CURVE"	
P123	Cooling setpoint	°C	23	12	-	10	30	0,5	In cooling mode the setpoint is fixed and it corresponds to P123	
P152	Manual setpoint shift	°C	0	0	0	0	10	0,5	Climatic curve manual setpoint shift in heating mode	

DHW PARAMETERS

Num.	Description	Unit	Default value			Range		Increase	Value description	Notes
			Floor	Fan coils	Radiators	Min.	Max.			
P23	Maximum DHW production time	h	5	5	5	1	24	1		
P30	Minimum heating time of the system	Min.	60	60	60	10	120	5	Valid if there is a system request	
P62	DHW mode	-	0	0	0	0	2	1	ECO: maximum efficiency FAST: maximum yield AUTO: ECO if ON/OFF contact is open FAST if ON/OFF contact is closed	
P63	DHW turning on hysteresis	°C	10	10	10	1	30	1	Temperature delta for DHW activation	
P64	Enabling of DHW electrical heater	-	0	0	0	0	1	1	0=heater disabled 1=heater enabled	
P65	DHW electrical heater Heater activation delay	Min.	20	20	20	5	120	1	Heat pump operating time before activating the heater	
P66	Boost mode (DHW heater)	-	0	0	0	0	1	1	If P66 = 1, DHW heater (according to P64) will be immediately activated up to the set DHW setpoint, then P66 is automatically reset to 0	
P67	DHW max. setpoint	°C	55	55	55	40	85	1	Max. Setpoint of DHW temperature	
P68	Enabling of anti-legionella cycle	-	1	1	1	0	1	1	Enabling of DHW anti-legionella cycle	
P69	Legionella cycle frequency	h	72	72	72	1	200	1	Time between one minimum anti-legionella cycle and the next	



8.1 - BUTTONS

ON / OFF Button: Push this button to turn ON / OFF the unit section.

OPERATION MODE Button: Push this button to change the working mode (only for “TECHNICAL WATER”).

FUNCTION Button: Push this button to select the desired function.

MENU / PARAMETER Button: Push this button to enter the main parameters menu.

Use the < / > buttons to select the desired function (ECO/TURBO).

Press it for 2 seconds to enter the advanced parameters menu (protected by password).

LEFT / RIGHT Buttons: Push these buttons to select the desired section “TECHNICAL WATER” or “DHW”.

UP / DOWN Buttons: Push this buttons to change the set values (setpoint, pump speed, parameters,...)

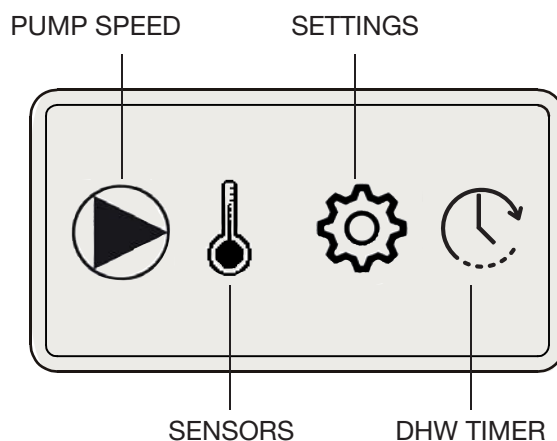
BACK Button: Push this button to go back to the previous menu.

OK / SETTINGS Button: Push this button to change the value of the selected parameter (see section 8.3).

8.3 - MAIN PARAMETERS MENU

Use the < / > buttons to move between the symbols.

Use the OK button to enter the selected menu.



PUMP SPEED:

Use OK button to enter the pump menu.

Press OK button on "SPEED" for 2 seconds to change the pump speed.

Use \wedge / \vee buttons to change the set value, then press OK to confirm: this last value will be the maximum speed used during operation (the corresponding flow will also be displayed at the same time).

SPEED	100%
FLOW	0,5 m ³ /h

SENSORS: Use OK button to see the values:

- H2O INLET [°C]
- H2O OUTLET [°C]
- FREON INLET (ICT2)[°C]
- FREON OUTLET (ICT1)[°C]
- DHW TANK [°C]
- PRESSURE [BAR]
- CONDENSATION [°C]

TIMER (ONLY FOR DHW): Every time you press the OK button you select a type of timer:

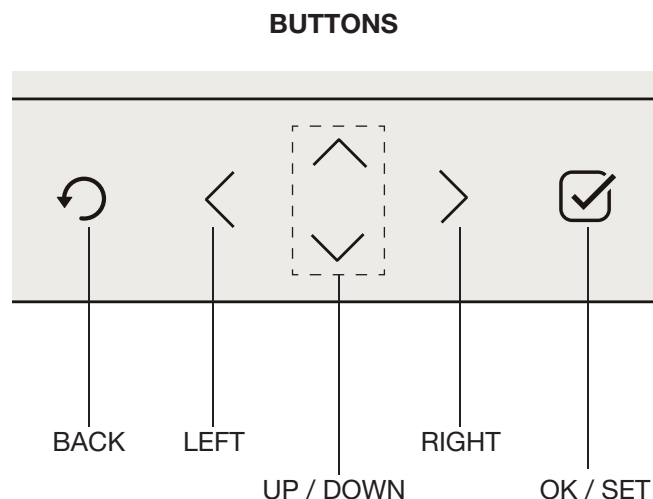
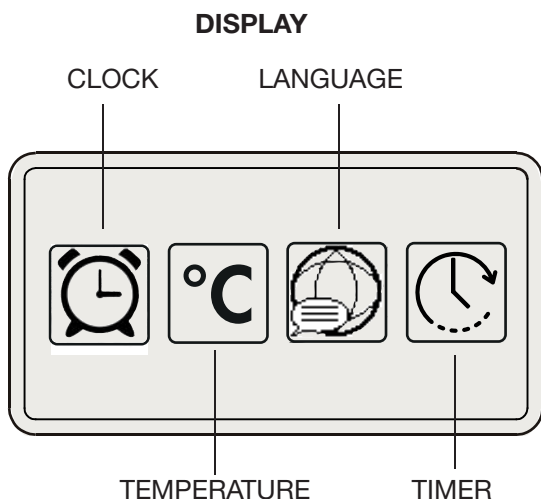
① → ② → ③ or "OFF"
timer schedule

For timer setting see section 8.4

SETTING: Pressing the OK button you open the Setting menu (see section 8.4).

8.4 - SETTINGS MENU

Use the < / > buttons to move between the symbols.



CLOCK:

Select CLOCK symbol and press OK to enter the setting menu. The following options will appear:

LEVEL 1	LEVEL 2
CLOCK FORMAT	24h
TIME	15:48
DATE	16/11/2021 TUE

Select the parameter to be modified (**LEVEL 1**) using the buttons UP/DOWN, long press the OK button to change the setting or value, always using the buttons UP/DOWN (**LEVEL 2**).

Then press OK to confirm or BACK to cancel the change.

CLOCK FORMAT

It is possible to change the clock format between 24h or 12h am / pm

TIME

Set the current time, once you have entered LEVEL 2, press OK to move to the minutes' setting.

DATE

Set the current date, once you have entered LEVEL 2, press OK to move to the setting of month and day.

TEMPERATURE: Choose CELSIUS or FAHRENHEIT pressing OK button.

LANGUAGE: Press OK button to change the language (English, Italian, French, Spanish, German, Portuguese).

DHW TIMER:

Select TIMER symbol and press OK to enter the setting menu.

Exemple SCHEDULE 1

SCHEDULE	1	2	3							
SUN	MON	TUE	WED	THU	FRI	SAT				
80°C										
75°C										
70°C										
65°C										
60°C										
55°C										
50°C										
45°C										
40°C										
	0	2	4	6	8	10	12	16	18	20
	APPLY TO	DAY	ALL	M-F						

Press OK to confirm SCHEDULE 1.

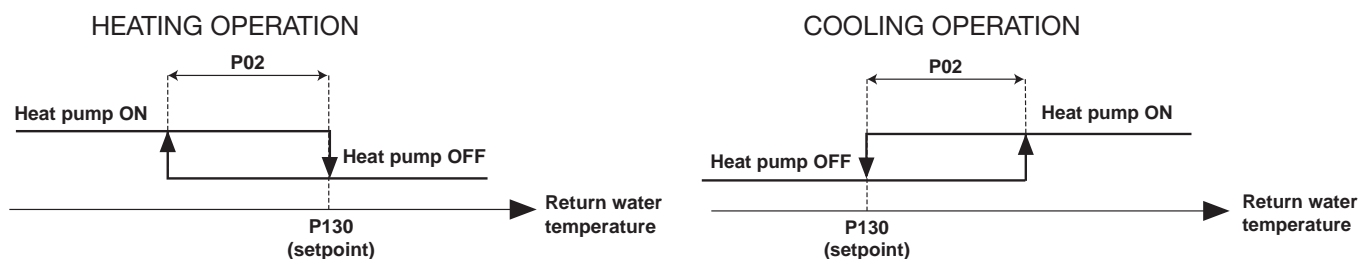
Press OK to confirm the day.

Use ^ / v buttons to change the temperature value and < / > buttons to move between the time slots.

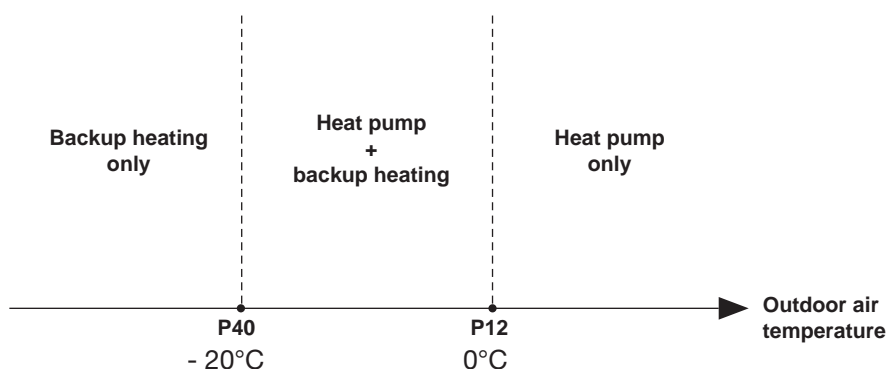
Press OK and confirm if you want to apply the schedule to the selected DAY or to ALL days or to the working days (M-F if a day between MON and FRI was selected) or holidays (S-S if a day between SAT and SUN was selected).

8.5 - GRAFICI

ON/OFF HYSTERESIS



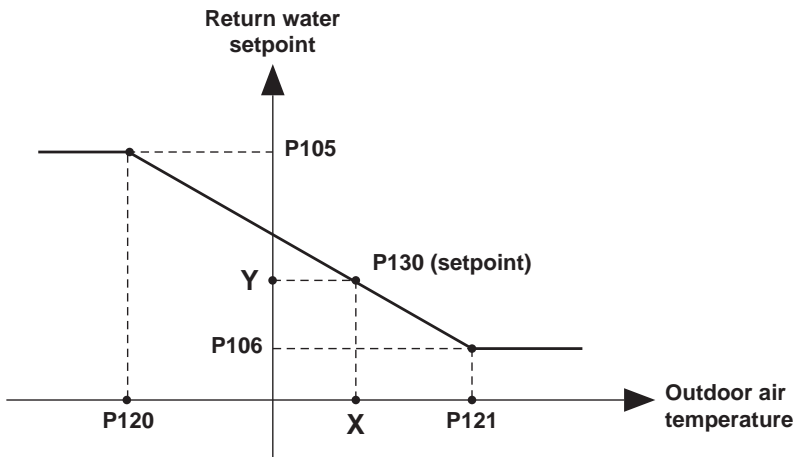
OPERATING RANGE OF HEAT PUMP/BACKUP HEATING



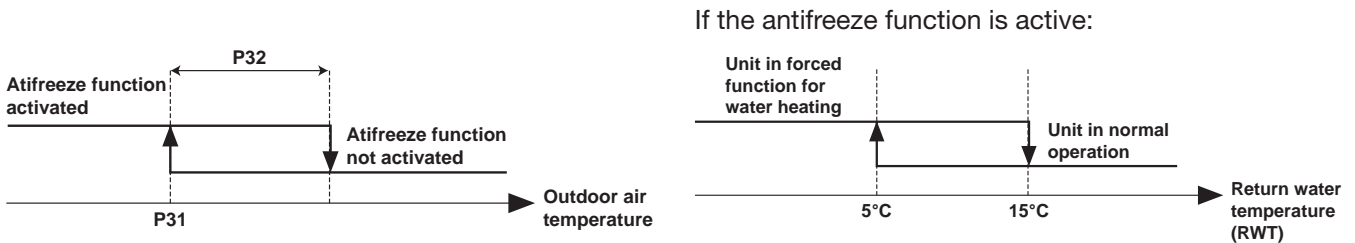
NOTE

The operation of the heat pump is prevented if the outside temperature is below the stop threshold (parameter 40). Only the backup heating is authorized.

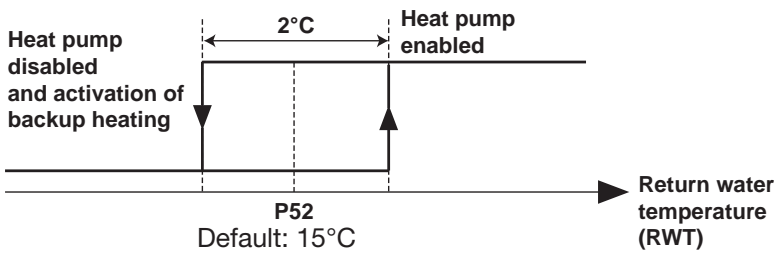
CLIMATIC CURVE (HEATING MODE)



ANTIFREEZE FUNCTION



RETURN WATER MINIMUM TEMPERATURE PROTECTION



NOTE

A water temperature safety (system return) prevents the heat pump from operating if the temperature is lower than the heating authorization threshold with the heat pump (parameter 52). In this case, only the electric backup heating is authorized to raise the water temperature and allow the heat pump to operate, at any external temperature. If the backup heating is not installed (P09 = 0) this protection is not active. For this reason, the heat pump stops and the display will show the writing: **RWT < P52**

IMPORTANT NOTE

- Before doing any work on the installation, make sure it is switched off and all power supplies locked out. Before disconnect the outdoor unit and then Aqua Unit or contemporally.
- Also check that the capacitors are discharged.
- Any work must be carried out by personnel qualified and authorised to work on this type of machine.
- Prior to all maintenance and servicing on the refrigerating circuit, one must first shut down the unit then wait a few minutes before installing temperature or pressure sensors. Certain equipment, such as the compressor and piping, may reach temperatures above 100°C and high pressures may lead to serious burns.

9.1 - GENERAL MAINTENANCE

All equipment must be properly maintained in order to provide optimum performance over time. Faulty maintenance can result in the cancellation of the product guaranty. Depending on the products, maintenance operations consist in the cleaning of filters (air, water), internal and external exchangers, casings, and the cleaning and protection of condensate tanks. Treating odours and the disinfection of room surfaces and volumes also contributes to the cleanliness of the air breathed by users.

- **Carry out the following operations at least once a year** (the frequency depends on the installation and operating conditions):
 - Check for leaks on the refrigerating circuit.
 - Check for traces of corrosion or oil stains around the refrigerating components.
 - Inspect the composition and the condition of the coolant and check that it does not contain traces of refrigerating fluid.
 - Cleaning the exchangers.
 - Checking the wear parts.
 - Checking the operating instructions and points.
 - Check the safety devices.
 - De-dusting the electrical equipment cabinet.
 - Checking that the electrical connections are secure.
 - Checking the earth connection.
 - Check the hydraulic circuit (clean the filter, water quality, purge, flow rate, pressure, etc.).

9.2 - TROUBLESHOOTING RECOMMENDATIONS

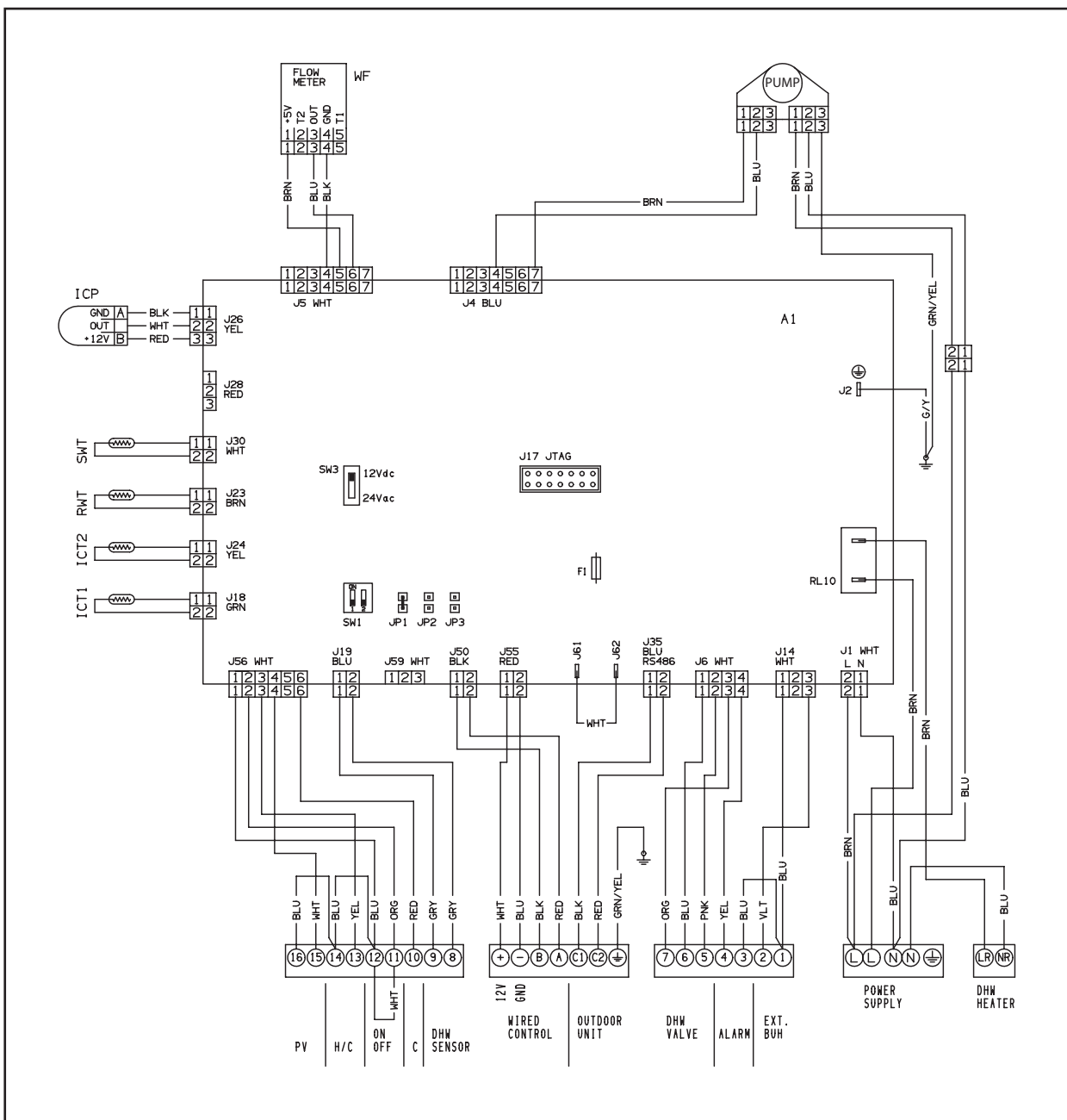
- All maintenance and servicing operations on the refrigerating circuit must be conducted in accordance with standard trade practices and safety rules: recovery of the refrigerant, inert shielded (nitrogen) brazing, etc...
- All brazing operations must be conducted by qualified personnel.
- This unit is equipped with pressurised equipment, for example piping.
Use only genuine parts listed in the spare parts list for replacing defective refrigeration components.
- Leak detection, in the case of pressure testing:
 - Never use oxygen or dry air, as the risk of fire or explosion is present.
 - Use dehydrated nitrogen or a nitrogen and refrigerant mix indicated on the manufacturer's plate.
 - For units equipped with pressure gauges, the test pressure must not exceed the gauges' maximum allowable pressure rating.
- All part replacement with other than genuine parts, all modifications of the refrigerating circuit, all replacement of refrigerant by a fluid other than that indicated on the manufacturer's plate, all use of the unit outside the application limits defined in the documentation, shall result in the cancellation of PED EC marking compliance which shall fall under the liability of the individual who carried out these modifications and the void warranty.
- The technical information, relative to the safety requirements of the various applicable directives, is indicated on the manufacturer's plate of the unit and mentioned on the 1st page of this manual.

Symbols of the components

- RWT** Return water temperature sensor
- SWT** Supply water temperature sensor
- ICT1** Outlet sensor (HEAT) / inlet sensor (COOL) plate exchanger
- ICT2** Inlet sensor (HEAT) / outlet sensor (FREDDO) plate exchanger
- ICP** Condensation pressure sensor (HEAT) / evaporation pressure sensor (COOL)

Colour of the wires

- BLK** Black
- BRN** Brown
- BLU** Blue
- GRN** Green
- GRY** Grey
- ORG** Orange
- PNK** Pink
- RED** Red
- VLT** Violet
- WHT** White
- YEL** Yellow



11 - AUTO-DIAGNOSIS TABLE



CAUTION

Disconnect power and wait that all LEDs are OFF before servicing on the electrical box.

X LED OFF

O LED ON

⚡ LED BLINKING

DISPLAY		LEDs ON BOARD					DESCRIPTION
E99	COMM2 ERROR	⚡	⚡	⚡	X	⚡	Communication error with display
E21	DHW SENS. DEFECT	X	X	X	X	⚡	Tank sensor damaged or not connected
E19	EXT UNIT ERR	⚡	X	⚡	⚡	⚡	Error on outdoor unit
E18	ICP DEFECT	⚡	⚡	X	X	⚡	Refrigerant pressure sensor not connected
E17	HIGH PRESS	X	⚡	⚡	X	⚡	High pressure error
E16	LOW PRESS	⚡	X	X	⚡	⚡	Low pressure error
E11	ICT2 DEFECT	X	X	X	⚡	X	ICT2 sensor damaged or not connected
E10	ICT1 DEFECT	X	X	⚡	X	X	ICT1 sensor damaged or not connected
E09	SWT DEFECT	X	⚡	X	X	X	SWT sensor damaged or not connected
E08	RWT DEFECT	⚡	X	X	X	X	RWT sensor damaged or not connected
E03	COMM ERROR	X	X	⚡	⚡	⚡	Communication error with outdoor unit
E01	NO FLOW	⚡	⚡	⚡	X	X	No water flow
ERROR CODE		DL5	DL4	DL3	DL2	DL1	
		O	O	O	O	O	

ERROR E21: activated only if DHW section presence is set via SW1.


INFORMATION FOR CORRECT DISPOSAL OF THE PRODUCT IN ACCORDANCE WITH THE EUROPEAN DIRECTIVE 2012/19/EU

At the end of its working life this equipment must not be disposed of as an household waste. It must be taken to special local community waste collection centres or to a dealer providing this service. Disposing of an electrical and electronic equipment separately avoids possible negative effects on the environment and human health deriving from an inappropriate disposal and enables its components to be recovered and recycled to obtain significant savings in energy and resources. In order to underline the duty to dispose of this equipment separately, the product is marked with a crossed-out dustbin.

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