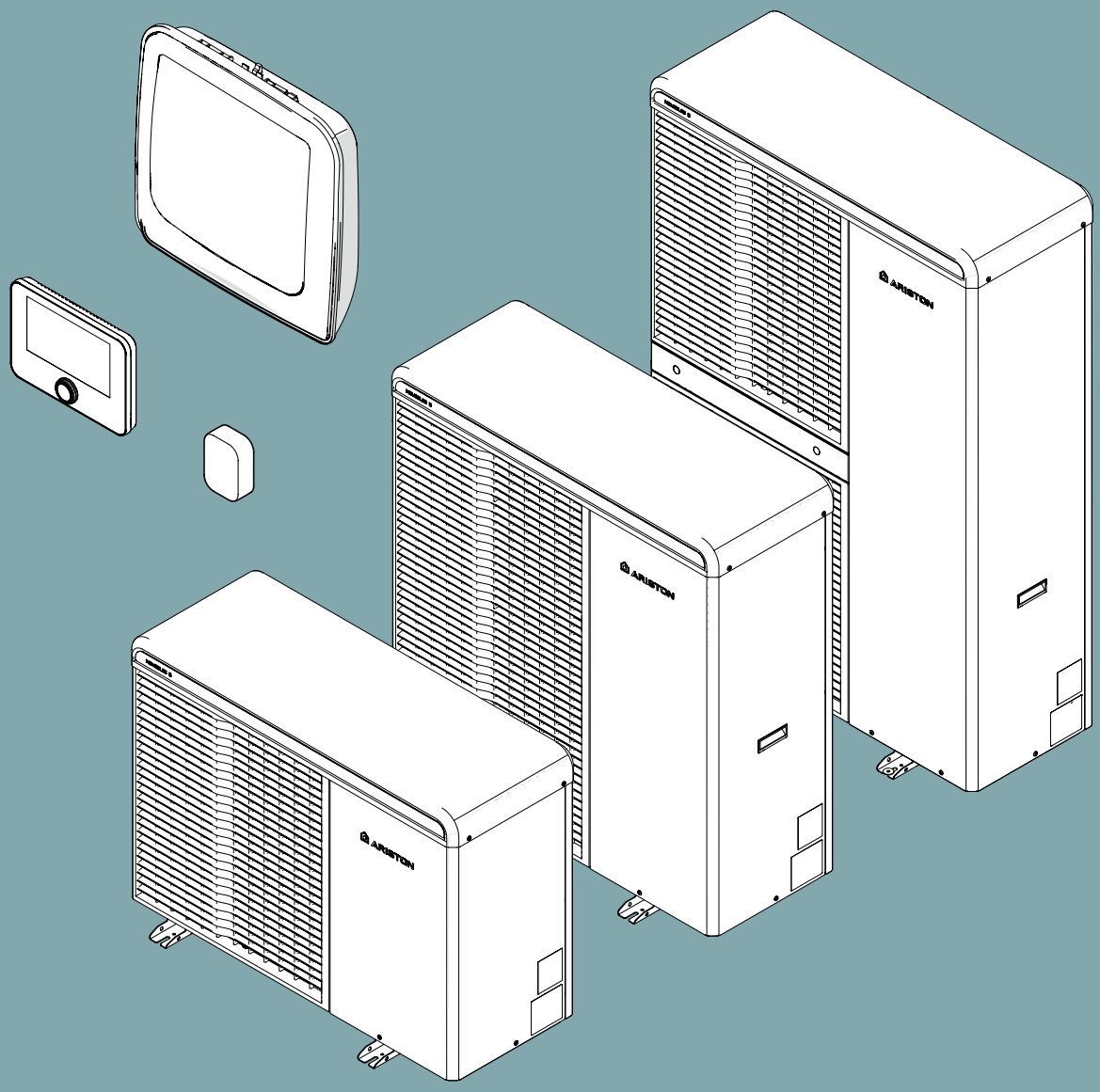


NIMBUS 5 POCKET M R290

4171002

ARISTON

TECHNICAL INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE

420000727700

Introduction

Dear Madam,
Dear Sir,
thank you for choosing the **NIMBUS 5 POCKET M R290 ARISTON** system.

This manual was drawn up with the aim of informing you on how to install, use and maintain the NIMBUS 5 POCKET M R290 system, in order to enable you to optimally use all the functions. Store this booklet, as it contains all the necessary information regarding the product following its initial installation.
To find the nearest Technical Assistance Service and to consult the multimedia copy of the documentation, you can connect to the Internet website www.ariston.com.
Please also refer to the Warranty Certificate that you will find inside the packaging, or which was handed to you by the installer.

Symbols used throughout this manual and their meaning

WARNING Indicates important information and particularly delicate operations.

WARNING: DANGER Indicates actions that, if not performed correctly, can lead to general injuries or malfunctions or material damages to the appliance; they therefore require special attention and adequate training.

Warranty

The ARISTON product is covered by a conventional warranty, which takes effect from the date of purchase of the appliance. For the warranty conditions, refer to the warranty certificate accompanying the product.

Compliance

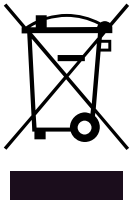
The CE marking applied to the appliance certifies that it conforms with the essential requirements of the following European Directives:

- 2014/30/EU (Electromagnetic Compatibility Directive)
- 2014/35/EU (Low Voltage Directive)
- RoHS 3 2015/863/EU on restrictions of the use of certain hazardous substances in electrical and electronic appliances (EN IEC 63000:2018)
- Regulation (EU) no. 813/2013 relative to ecodesign (no. 2014/C 207/02 - transitional methods of measurement and calculation)
- 2014/68/EU (PED)

Disposal

PRODUCT CONFORMING TO:

- EU DIRECTIVE 2012/19/EU
- Italian Legislative Decree 49/2014 pursuant to Art. 26 of Legislative Decree no. 49 of 14 March 2014, "Implementation of Directive 2012/19/UE on waste of electrical and electronic equipment (WEEE)"



The barred wheeled bin symbol appearing on the appliance or on its packaging indicates that the product must be collected separately from other waste at the end of its useful life.
The user must therefore deliver the decommissioned product to an appropriate local facility for separate collection of electrotechnical and electronic waste. Alternatively, the appliance to be scrapped can be delivered to the dealer when purchasing a new equivalent appliance.
Proper separated collection of the decommissioned appliance for its subsequent recycling, treatment and eco-compatible disposal helps to prevent negative effects on the environment and human health, besides encouraging reuse and/or recycling of its constituent materials.

Contents

1. Safety advices
   - 1.1 General warnings and safety instructions 4
   - 1.2 Use of the R290 refrigerant 6
2. Description of the system
   - 2.1 Identification of the unit 8
   - 2.2 Outdoor unit 9
     - 2.2.1 Structure 9
     - 2.2.2 Dimensions and weights 10
     - 2.2.3 Dimensions and weights 11
   - 2.3 Symbols affixed to the appliance 12
   - 2.4 System interface Sensys HD 2 13
   - 2.5 Operational limits 14
3. Installation
   - 3.1 Preliminary warnings 15
   - 3.2 Receiving the product 15
   - 3.3 Installing the outdoor unit 17
     - 3.3.1 Place of installation 17
     - 3.3.2 Safety area 17
     - 3.3.3 Minimum installation distances 20
     - 3.3.4 Noise level 21
     - 3.3.5 Handling 22
     - 3.3.6 Positioning 23
     - 3.3.7 Fixing 23
     - 3.3.8 Arranging the connections 24
     - 3.3.9 Installation of the condensate drain socket 25
     - 3.3.10 Water filter 25
     - 3.3.11 Installing the accessory kit 26
   - 3.4 Installing the indoor unit 27
     - 3.4.1 Place of installation 27
     - 3.4.2 Hanging the indoor unit 27
4. Plumbing connections
   - 4.1 Requirements for the hydraulic circuit 28
     - 4.1.1 Characteristics of the supply water 28
     - 4.1.2 Minimum water content 28
     - 4.1.3 Minimum flow rate 28
     - 4.1.4 Available pressure 28
     - 4.1.5 System requirements 29
   - 4.2 Plumbing connections outdoor unit 29
5. Electrical connections
   - 5.1 Outdoor unit electrical connections 32
   - 5.2 Indoor unit electrical connections 34
   - 5.3 Electrical panel cabling details 38
   - 5.4 Installing the system interface 39
     - 5.4.1 Wall installation 39
     - 5.4.2 Technical data 40
   - 5.5 Outdoor sensor 40
   - 5.6 Example of electrical connection between indoor and outdoor units 41
6. Examples of schemes of the system
7. Commissioning
   - 7.1 Checking for electrical dispersions and gas leakages 44
     - 7.1.1 Electrical safety checks 44
     - 7.1.2 Check for gas leakages 44
   - 7.2 Filling the system 44
   - 7.3 Initial start-up 45
     - 7.3.1 Start-up procedure 45
   - 7.4 Basic functions 46
   - 7.5 Access to technical area 46
   - 7.6 Technical parameters 47
   - 7.7 Temperature adjustment 64
   - 7.8 Standard SG ready 70
   - 7.9 Parameter table 71
8. Diagnostics
   - 8.1 Indoor unit errors 76
   - 8.2 Outdoor unit errors 77
   - 8.3 Inverter error 78
9. Service
   - 9.1 Routine maintenance 79
     - 9.1.1 Annual maintenance 81
     - 9.1.2 Annual maintenance of the electrical connections 82
     - 9.1.3 Annual maintenance of the DHW storage tank (If included in the system) 82
     - 9.1.4 Cleaning and inspecting the outdoor unit 83
     - 9.1.5 Cleaning and inspecting the indoor unit 83
   - 9.2 Non-scheduled maintenance 83
     - 9.2.1 Procedure for creating a vacuum and charging 83
10. Decommissioning
    - 10.1 Draining the circuit and recovering the refrigerant 85
    - 10.2 Disposal 86
11. Technical information
    - 11.1 Data plate 87
    - 11.2 Technical data table for refrigerant 87
12. Annexes

1. Safety advices

1.1 General warnings and safety instructions

This manual is property of ARISTON and it is forbidden to reproduce or transfer to third parties the contents of this document. All rights reserved. This document is an integral part of the product; make sure that it always accompanies the appliance, also when the latter is sold/transferred to another owner, so that it can be consulted by the user or by personnel authorised to perform maintenance and repairs.

Read the information and warnings given in this manual in full; they are essential to the safe installation, use and maintenance of the product.

The manufacturer declines all liability deriving from the use of the product if the above warnings are not observed.

It is forbidden to use this product for purposes and in conditions other than those specified here. The manufacturer shall not be held liable for any damages due to improper, incorrect or unreasonable use **or due to failure to comply with the instructions and warnings contained** in this manual.

It is forbidden to use this product in combination with electrical and electronic appliances or with accessories not manufactured and/or not authorised by the manufacturer that can alter the conditions guaranteeing conformity to the legal requirements and/or the relevant technical regulations or that can alter the safety and/or operating conditions and/or performances of the product itself, thus invalidating the product's conformity marking (e.g. CE mark or other conformity marks of the product).

In particular, it is forbidden to install on the proprietary BUS access port electrical and electronic appliances not manufactured and/or not authorised by the manufacturer.

It is also forbidden to make changes to the product's software programme for the above-mentioned reasons and for the potential consequences thereof, including the invalidation of the product's conformity marking (e.g. CE mark or other conformity marks of the product).

Make sure the installation site and any systems to which the appliance must be connected comply with applicable regulations.

The appliance is configured for connecting directly to the water mains.

At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The appliance contains flammable refrigerant (R290). In the event of a leak, the refrigerant can mix with air and form a flammable atmosphere.

All routine and extraordinary maintenance operations, such as breaking into the refrigerating circuit and opening of sealed components, must be carried exclusively by qualified personnel exclusively using original spare parts. The manufacturer is not liable for damage resulting from failure to observe this instruction, which may compromise the safety of the installation.

Product dismantling and recycling operations must be carried out by qualified technical personnel.



Prevent substances or gases other than the specified refrigerant from entering the unit. The presence of other gases or substances in the unit can reduce its performance and reliability and cause an abnormal rise in pressure during the cooling cycle. This can lead to explosion hazards and injury.



The outdoor unit must be installed outdoors in a safety area the dimensions of which must meet those specified in the relevant chapter.



The appliance may be used by children over 3 years of age and by persons with reduced physical, sensory or mental capabilities, or who do not possess experience or the necessary knowledge, provided that they are supervised or have been instructed in the safe use of the appliance and understand the dangers involved. Children must not play with the appliance. Cleaning and maintenance intended to be carried out by the user must not be carried out by children without supervision. Children between 3 and 8 years of age may only operate the tap connected to the water heater.



For electrical interventions, observe the provisions of the national electrical standard, local rules, applicable regulations, and the instructions of the installation manual. It is necessary to use an independent circuit and a single power outlet. Do not connect other appliances to the same power outlet. An insufficient electrical capacity or defective electrical installation may lead to potential electrocution or fire.



During the appliance installation phases, be careful not to damage the power cables or any existing piping.



Perform all electrical connections using suitably-sized cables.



Protect connection piping and cables so as to prevent damage to them.



During all work procedures, wear individual protective clothing and equipment. Do not touch the installed product if barefoot and/or with any wet part of the body.



Reset all safety and control functions affected by any work carried out on the appliance and make sure that they operate correctly before restarting it.



Do not climb the outdoor unit.



Do not leave the outdoor unit open, without its casing, for longer than strictly necessary for installation or maintenance.



Do not leave flammable material in the vicinity of the system. Make sure that all components of the system are positioned as required by regulations.



Do not start up the system if steam or dangerous powders are present in the installation room.



Do not place fluid containers and other foreign objects on the indoor or outdoor units.



Do not use the outdoor unit for treating water from industrial processes, swimming pools or domestic water. In such cases, to use the outdoor unit install a heat exchanger in an intermediate position.



The removal of the product's protective panels and all operations involving maintenance and connection of electrical equipment must be performed by qualified personnel.

1.2 Use of the R290 refrigerant



Highly flammable material (safety group A3 ISO 817)

Working on the refrigerant circuit R290 is strictly prohibited for anyone who does not meet the following requirement: expertise in accordance with the F-Gas (UE) 2024/573 Regulation and the Enforcement Regulation (UE) 2024/2215, which includes training on the refrigerants A2L and A3. Proof of the required qualifications must be provided to ensure compliance with the safety and regulatory requirements. In addition, local or national regulations may impose additional requirements beyond the F-Gas Regulation, which must be complied with.

The refrigerant R290 is odourless and highly flammable. In the event of a leak, the refrigerant can mix with air and form a flammable atmosphere. There is a risk of fire and explosion.

Keep all ignition sources away from the safety area. In particular, open flames, hot surfaces (at a temperature above 370°C), electrical appliances and/or tools not free of ignition sources, static discharges. Do not smoke.

In the event of a fire, use a nebuliser or water spray, dry powder, or foam. Do not use products that contain carbon dioxide.

Do not eat, drink, or smoke while installing the product.

Make sure that no air enters the refrigerant circuit, tools or appliances used to transport the refrigerant.

Refrigerant is heavier than air and can accumulate at or below ground level.

The typical indoor air exchange rate that ensures a healthy living environment according to current regulations is suitable and necessary for this application.

In the event of a leak, remove all ignition sources and power off the entire system. Monitor the concentration of the released product. Prevent spillage into sewers, basements, excavations or areas where accumulation can be dangerous. Use breathing apparatus in case the atmosphere becomes contaminated.

If refrigerant is suspected to have entered the heating circuit, all ignition sources in the entire building should be turned off at the electrical panel. Ventilate all rooms where gas may have leaked from the heating system (e.g., through a vent).

Refrigerant in high concentrations can cause asphyxiation, loss of mobility, and/or consciousness. It is possible not to be aware of asphyxiation. In low concentrations, it can have a narcotic effect and cause dizziness, headache, unconsciousness, nausea, and vomiting.

In case of contact with eyes, rinse immediately with water. Remove contact lenses if present and easy to do. Seek medical advice immediately. Contact with the gas can result in freezing due to rapid evaporative cooling. Seek medical attention.

Purge the system with dry inert gas (e.g. helium or nitrogen) before introducing refrigerant and when the system is taken out of service. Eliminate air from the system before introducing gas.

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.

Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. All possible ignition sources should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released. Put up "No Smoking" signs.

2. Description of the system

The NIMBUS 5 POCKET M R290 system is supplied in several packages placed inside a cardboard box. It comprises an outdoor unit and an indoor unit. The two units are hydraulically and electrically connected.

The **(1)** outdoor unit supplied is of one of the following models:

- NIMBUS 5 30 M EXT R290
- NIMBUS 5 50 M EXT R290
- NIMBUS 5 80 M EXT R290
- NIMBUS 5 80 M-T EXT R290
- NIMBUS 5 120 M EXT R290
- NIMBUS 5 150 M EXT R290
- NIMBUS 5 120 M-T EXT R290
- NIMBUS 5 150 M-T EXT R290

The **(2)** indoor unit supplied is the Lightbox.

The **(3)** system interface is Sensys HD 2.
Outdoor sensor **(4)**.

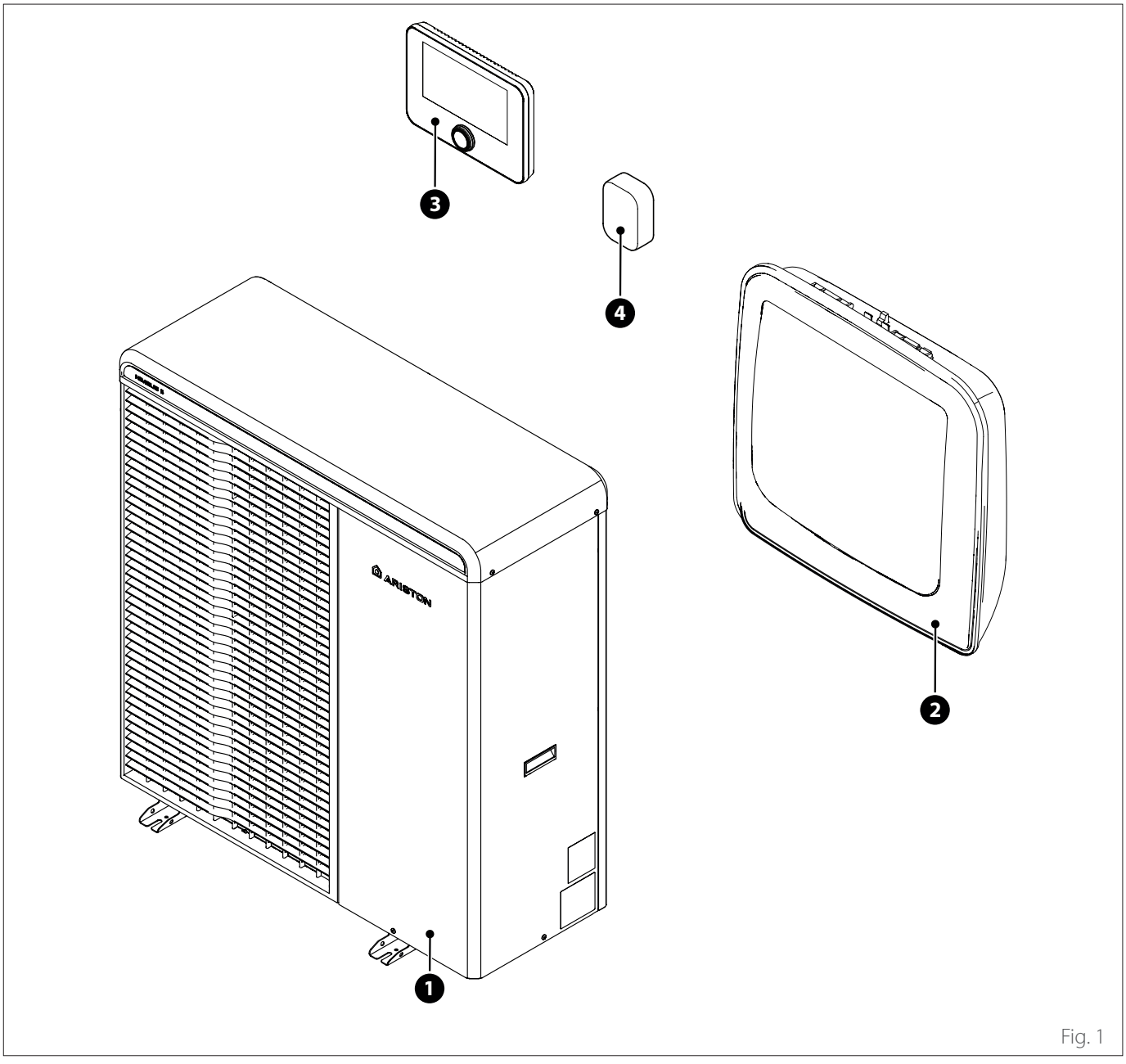
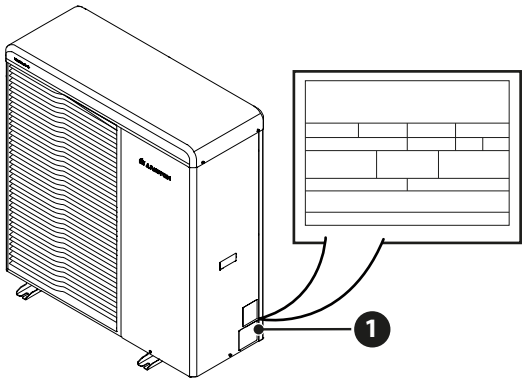


Fig. 1

2.1 Identification of the unit

The outdoor units can be identified through the product identification plate marked with the serial number, model and main technical-performance characteristics.

Outdoor unit



1 Identification plate

Fig. 2

Refer to section "Data plate" for more detailed information.

2.2 Outdoor unit

2.2.1 Structure

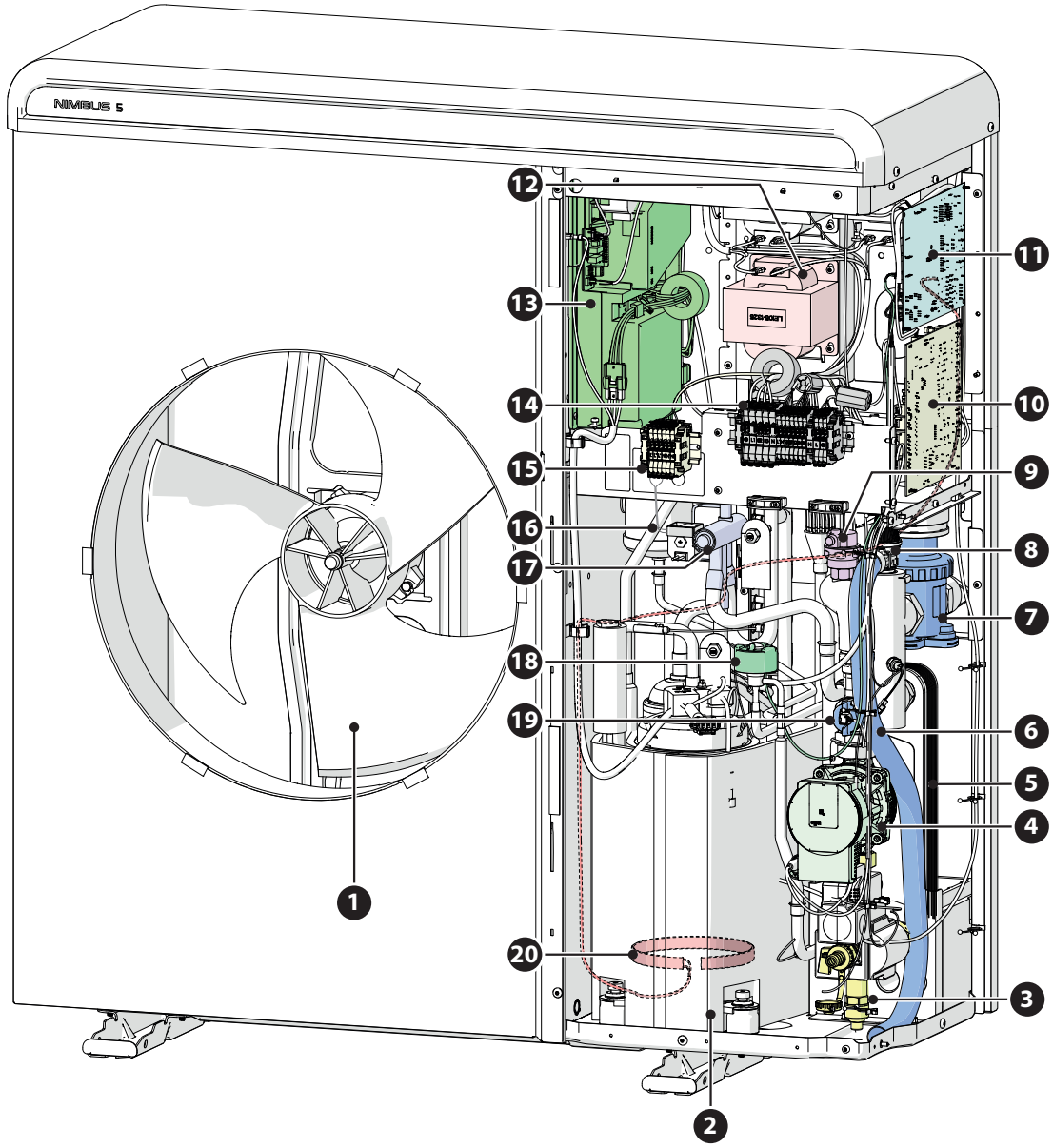


Fig. 3

1 Fan
2 Compressor
3 Anti-freeze valve
4 Circulation pump
5 Plate heat exchanger
6 Drainage pipe for safety valve
7 Deaerator
8 Safety valve
9 Air vent valve
10 TDM 4 board
11 Control board
12 Reactor
13 Inverter
14 Terminal block
15 Auxiliary terminal block
16 Heater for four-way valve
17 4-way valve
18 Expansion valve
19 Flowmeter
20 Compressor heater

2.2.2 Dimensions and weights

Outdoor unit	Weight [kg]
30 M	65.7
50 M	77.2
80 M	100.7
80 M-T	112.7
120 M / 150 M	125
120 M-T / 150 M-T	138.5

30 M,50 M

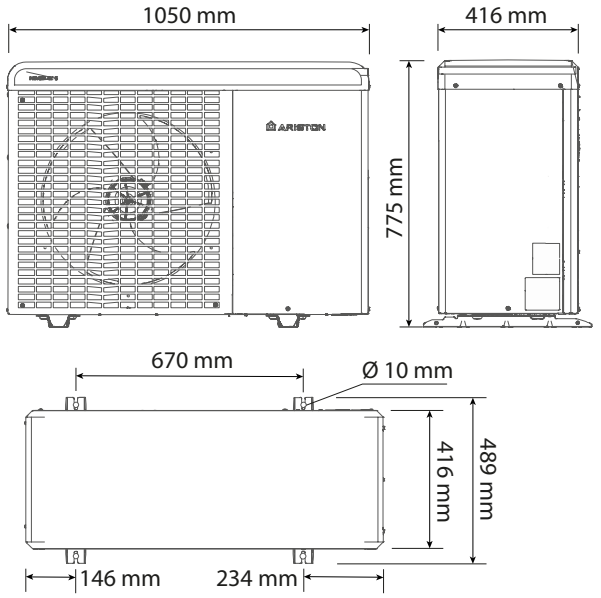


Fig. 4

80 M & M-T

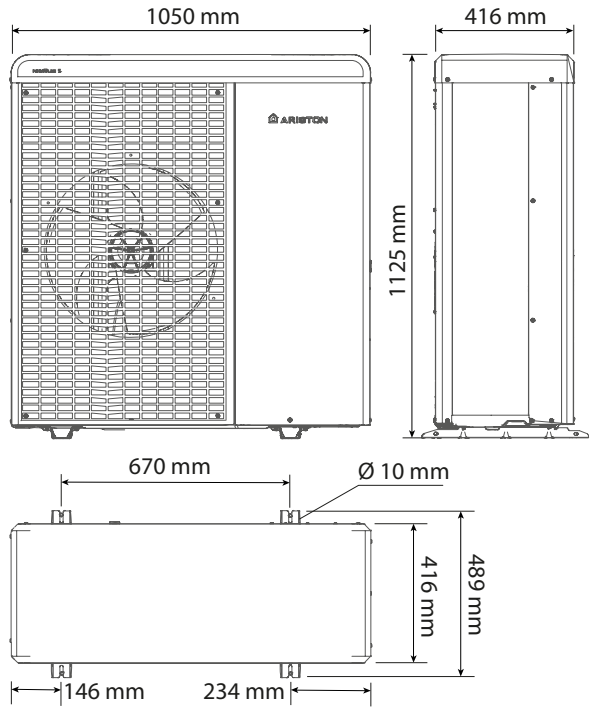


Fig. 5

120 M & M-T / 150 M & M-T

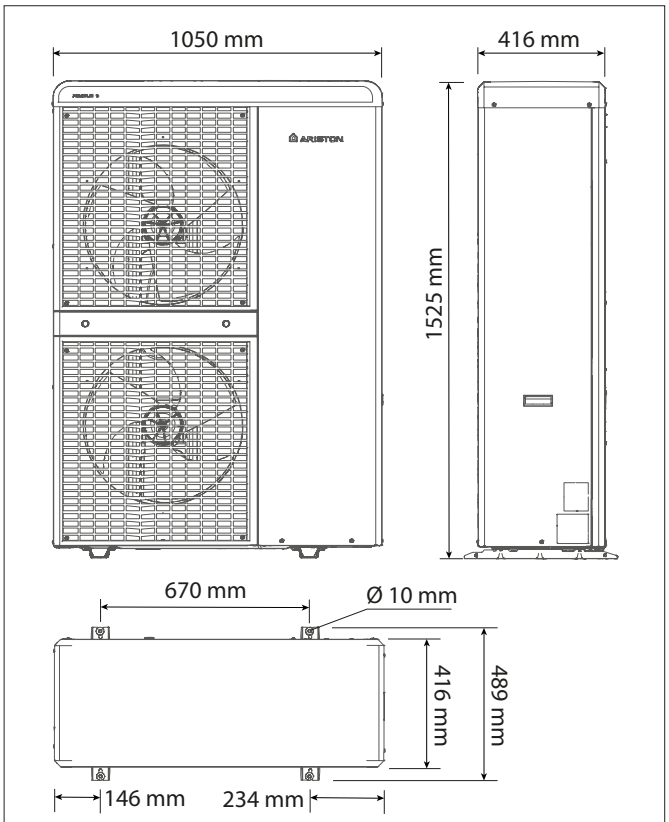


Fig. 6

2.2.3 Dimensions and weights

Indoor unit	Weight [kg]
NIMBUS 5 LB M R290	0.85

The NIMBUS 5 LB M R290 indoor unit comprises a module that contains the terminal blocks for the electrical connections and the Energy Manager.

The unit is classified with a IPX5 protection rating.

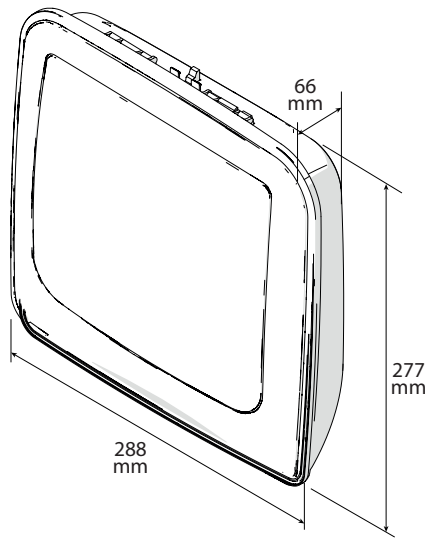


Fig. 7

2.3 Symbols affixed to the appliance

The appliance has the following symbols affixed to it:

Outdoor unit

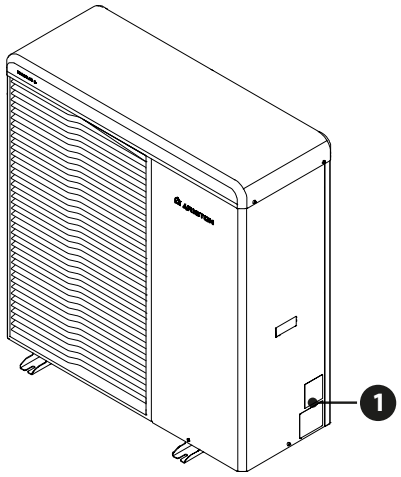
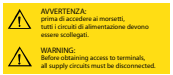


Fig. 8

Reference (1)	Description
	Danger moving parts
	Danger flammable refrigerant
	Normative symbols for R290 gas
	Serial number
	Electrical precautions

2.4 System interface Sensys HD 2

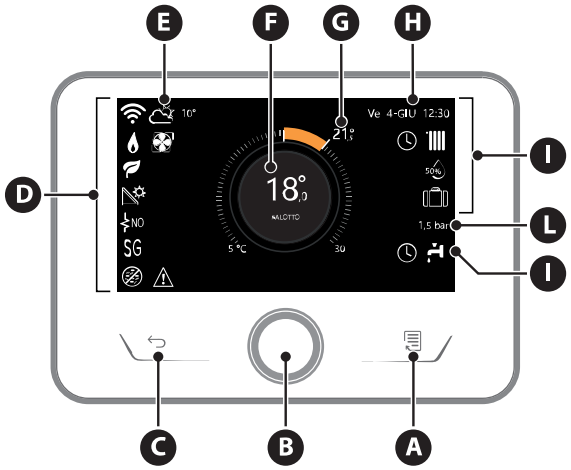


Fig. 9

A Menu button
B Selector (turn to select / press to confirm)
C Esc button (back)
D Function icons
E Weather and outdoor temperature
F Room temperature
G Required temperature
H Time & Date
I Operation icons
L Pressure indication

The Sensys HD 2 interface is compatible with Ariston NET when used with an ARISTON Wi-Fi module. Find out more on www.ariston.com

* Verify your local internet connection. If it sill doesn't work, try to power off gateway and restart after some minutes.

SYMBOLS	
	Wi-Fi module update in progress
AP	Access Point Opening in progress
	Wi-Fi Off or not connected *
	Wi-Fi connected but internet access failed
	Wi-Fi active
	Outside air temperature
	Flame present
	Optimum boiler efficiency
	Solar heating module connected
PV	Photovoltaic contact enabled
PV	Photovoltaic contact active
SG	Smart Grid system enabled
SG	Smart Grid system active
NO	Supplementary heating elements not enabled
	Number of heating element stages active
	Generic heating element active (only for heat pump cascades)
	DHW storage tank heating element active
	Heat pump active
	Room set-point extension active
	Heating cycle
	Heating active
	DHW cycle
	Domestic hot water active
	Cooling service enabled
	Cooling service active
90%	Relative humidity index
60%	Inhibition of cooling

SYMBOLS	
	Zone Off
	Time program
	Manual
auto	Temperature regulation function active
BMS	Building Management System control active
	Holiday function active
BOOST	Domestic hot water Boost function enabled
HC HP	DHW comfort function enabled with the HC-HP operating mode and electricity full rate band
HC HP	DHW comfort function enabled with the HC-HP operating mode and electricity reduced rate band
HC40	DHW comfort function enabled with the HC-HP 40 operating mode and electricity full rate band
HC40	DHW comfort function enabled with the HC-HP 40 operating mode and electricity reduced rate band
	Test mode active
	Thermal sanitation function active
	Anti-freeze function active
UR	Dehumidification function active
	Silent mode active (only for heat pumps)
	Error in progress
	Power supply lock-out (only for heat pumps)
	Tank overtemperature
	Solar manifold overtemperature
	Anti-freeze solar manifold

NOTE: Visibility is determined by the settings defined by the technician.

2.5 Operational limits

The following diagrams show the limits of the heat pump. The temperature difference between the flow and return of the plate heat exchanger must be between 5°C and 8°C.

Operating limits for space heating

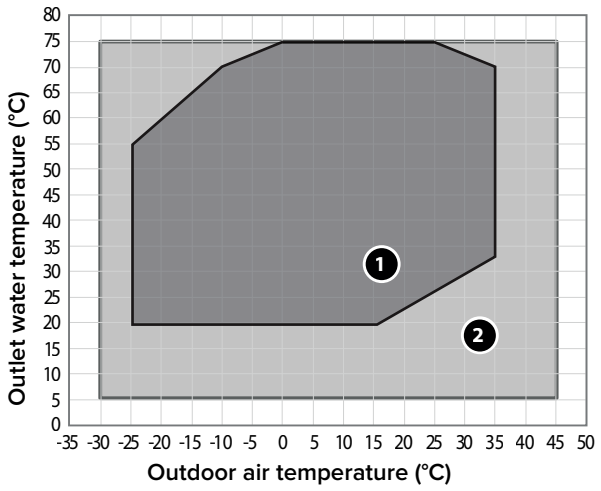


Fig. 10

1 Operation without restrictions
2 Operation of the outdoor unit with possible capacity reductions and/or with necessary back-up electric heating element

Operating limits for cooling

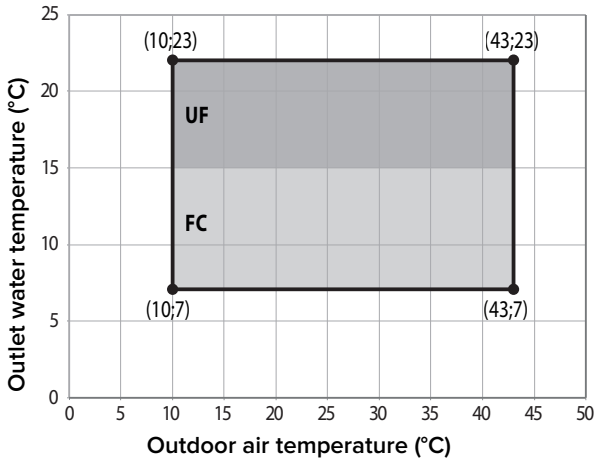


Fig. 11

UF: underfloor heating
FC: fan coil unit

Operating limits for domestic hot water

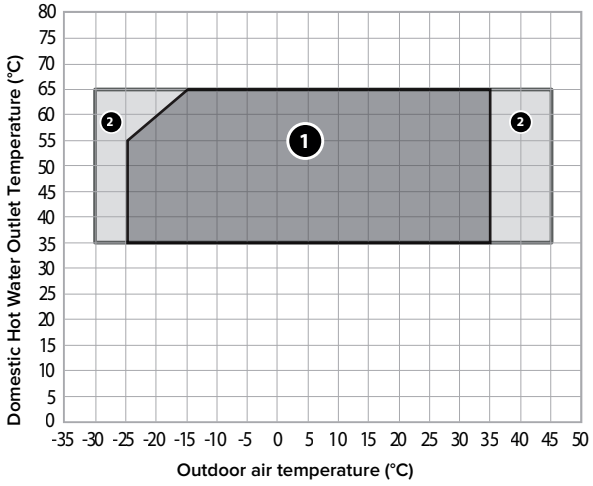


Fig. 12

1 Operation without restrictions
2 Operation of the outdoor unit with possible capacity reductions and/or with necessary back-up electric heating element

Operating limits for indoor unit

The indoor unit can also be installed outdoors provided that the following operating limits are observed:

- Minimum temperature: -20°C
- Maximum temperature: +43°C

For installation in indoor environments:

- Maximum relative humidity: 65% ; 30°C

If the device is installed outdoors, make sure that the installation is protected against direct sunlight.

Operational limits

- Minimum system water temperature: 7°C
- Maximum system water temperature: 75°C

3. Installation

3.1 Preliminary warnings

The appliance's installation operations must be carried out exclusively by the Technical Assistance Service or by professionally qualified personnel according to the local regulations and laws.

- Ensure that all applicable national safety standards are observed throughout the course of the installation.
- Ensure that the system is adequately earthed.
- Ensure that residual-current devices and safety switches are adequately sized and connected to the outdoor and indoor units.

Refer to the safety information in chapter "Safety advices".

3.2 Receiving the product

Upon receiving the product, make sure that its contents are intact and complete and, if they do not match the order, contact the branch that sold the appliance.

Remove the packaging by appropriate means taking care not to damage the unit.

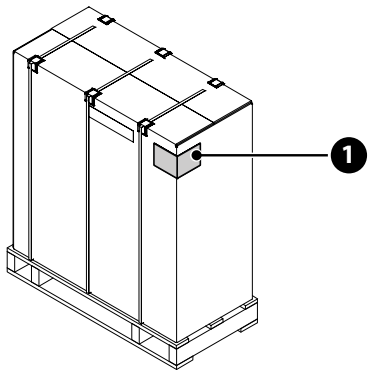
IT IS FORBIDDEN to disperse the packaging material in the environment or leave it within reach of children, as it may be potentially dangerous.

The appliance must be lifted following correct manual handling regulations and guidance.

Handling operations may potentially cause personal injuries or damages to the appliance or to the surrounding area. Identify the risky area and check that it is free of people or objects during lifting operations.

Observe the maximum weight that can be lifted per person.

1 Outdoor unit



1 Packaging label

Fig. 13

A plastic bag inside the packaging contains:

- Reference document of the manual in the indoor unit
- Electrical diagram
- Energy label

In the front panel are:

- Drain pipe for condensate discharge outlet **(1)**
- Two cable grommets **(2)**

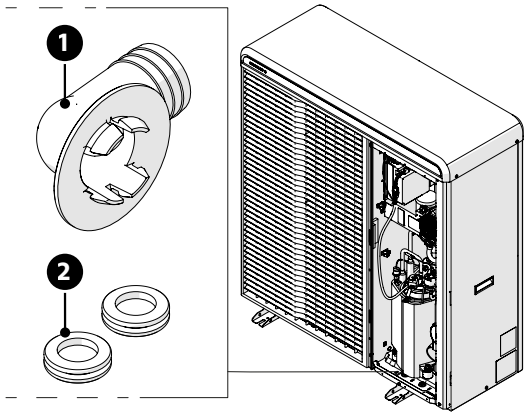


Fig. 14

The 120 M, 150 M, 120 M-T, 150 M-T outdoor unit is supplied with: (3) Y-shaped water filter and its 1" M–M (4) nipple, 2 (5) shut-off valves and 90° (6) fitting.

It is mandatory to install the outdoor water filter and shut-off valves.
Failure to install the outdoor water filter will invalidate the warranty.

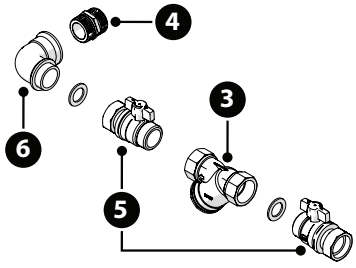
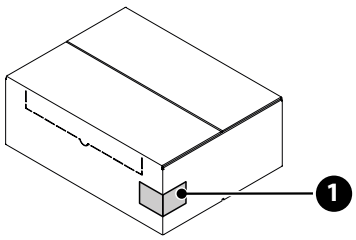


Fig. 15

2 Indoor unit



1 Packaging label

Fig. 16

The unit contains:

- Kit Sensys HD 2 **(1)**
- Light Gateway kit **(2)**
- Outdoor sensor **(3)**
- Lightbox **(4)**
- Bracket for fixing to wall **(5)**
- Dowels for fixing to wall **(6)**
- Manuals **(7)**

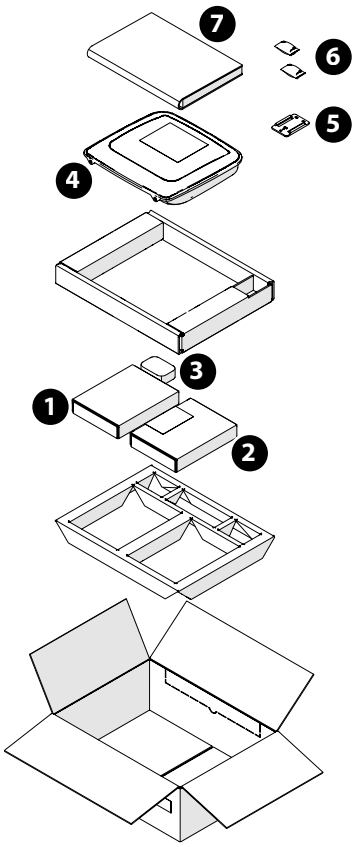


Fig. 17

3.3 Installing the outdoor unit

3.3.1 Place of installation

- The outdoor unit must only be installed outdoors.
- The area must not extend to neighbouring properties or public traffic areas.
- Avoid positioning the outdoor unit in places which are difficult to access for subsequent installation and maintenance operations.
- Avoid positioning the unit in positions influenced by external heat sources.
- Do not position the outdoor unit in places subject to continuous vibrations.
- Do not position the outdoor unit on load-bearing structures that are not designed to withstand its weight.
- Avoid positioning the appliance where combustible gas tanks or pipes are present.
- Avoid positions exposed to oil vapours.
- Choose a position where the noise and air emitted by the outdoor unit will not disturb the neighbours.
- Respect all the prescribed installation distances.
- Avoid positioning the appliance in a spot preventing access to doors and/or corridors.
- The floor supporting the appliance must be able to sustain the outdoor unit's weight and minimise all possible vibrations.
- If the outdoor unit is installed in a location normally subject to heavy snowfall, it must be positioned at least 200 mm above the usual level of snowfall, or else an adequate supporting structure must be mounted.
- Choose a position not directly exposed to wind.
- If the external unit is still aligned in the main wind direction, a wind protection shield must be provided.
- If the unit is frequently exposed to heavy snowfall: install a canopy above the unit to protect it from rain or snow. Be careful not to obstruct the flow of air around the unit.

Corrosion protection:

- Sprays, solvents, cleaning detergents containing chlorine, paints, varnishes, adhesives, road salt, etc. must not be used or stored on the heat pump (outdoor and indoor unit) and its environment.
- Under unfavorable conditions, these substances can lead to corrosion of the heat pump and other components of the heating system.

3.3.2 Safety area

The safety zone is the area surrounding the outdoor unit of the heat pump where specific requirements apply to ensure protection against hazards associated with the refrigerant R290.
The safety zone must be defined in such a way as to avoid the presence of any conditions that could lead to the accumulation of refrigerant or the introduction of ignition sources.

To minimise the risk of accidental ignition, it is prohibited to introduce ignition sources in the safety zone. These include, but are not limited to, the following: flammable gases and sprays, self-igniting dusts, electrical equipment that is not suitable for use in potentially explosive areas, open flames and equipment with naked flames, heated surfaces and processes that involve heat, sparks, electrostatic charges, eddy currents, ignition sources due to remote processes, objects with temperatures above 360°C, which could cause combustion.

There must NOT be any openings in the building within the safety area; these include, but are not limited to:

- **windows, doors, skylights, and windows on flat roofs;**
- **ventilation and exhaust openings for air conditioning and ventilation systems;**
- **entrances to basements, exit hatches, walkways, and skylights.**

In the safety area, there must NOT be:

- **wells, gutters, cracks, sewage manholes, traps, or other unsealed compartments;**
- **areas with slopes, depressions or crevices that could lead to the accumulation of gas.**

The safety areas must not extend to parking space, neighbouring properties or public traffic areas.

Installation in a free area

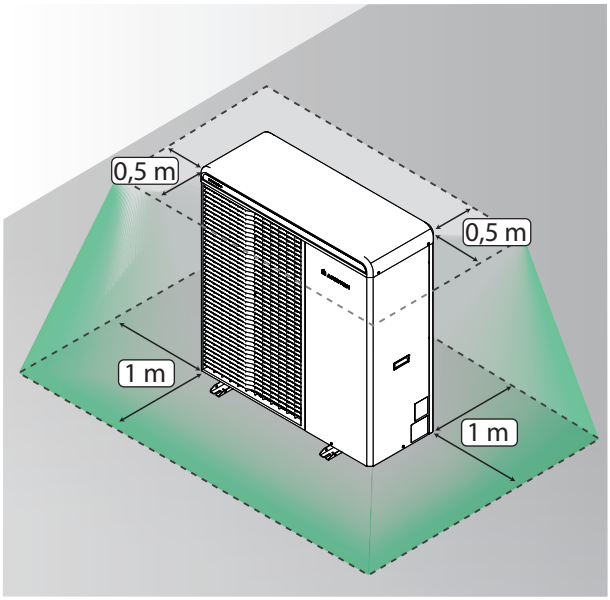


Fig. 18

The image shows the typical buffer areas. The actual required clearances must be adjusted according to the specific installation conditions and in accordance with applicable regulations.

Installation in front of an outdoor wall

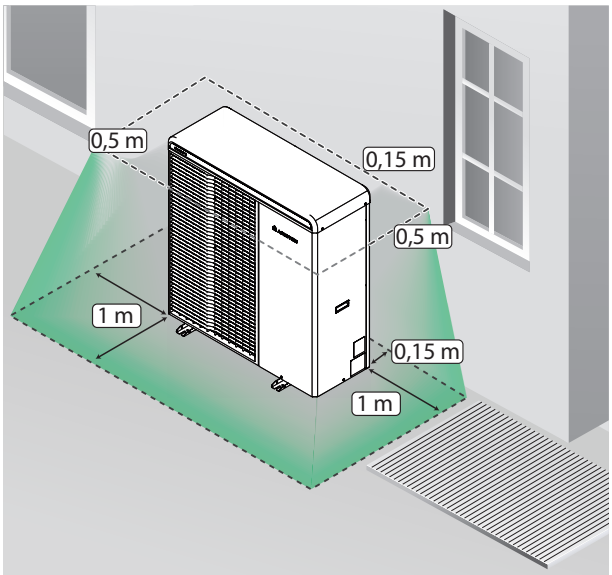


Fig. 19

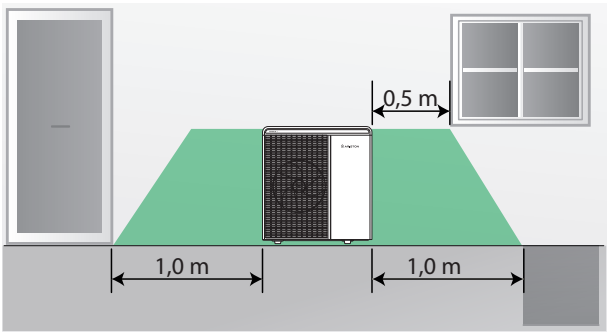


Fig. 20

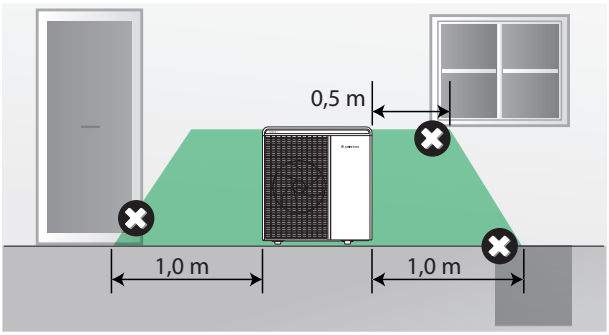


Fig. 21

Corner installation

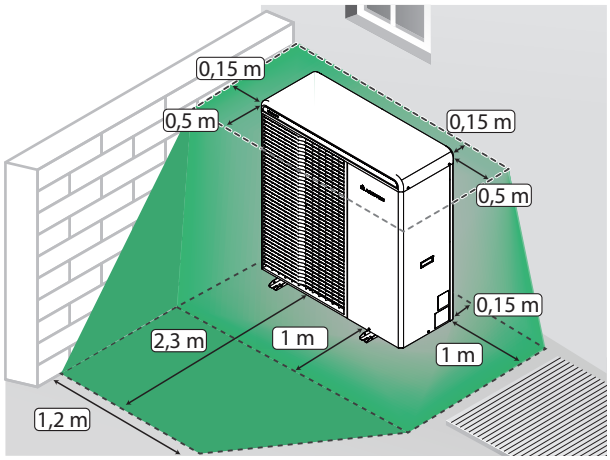


Fig. 22

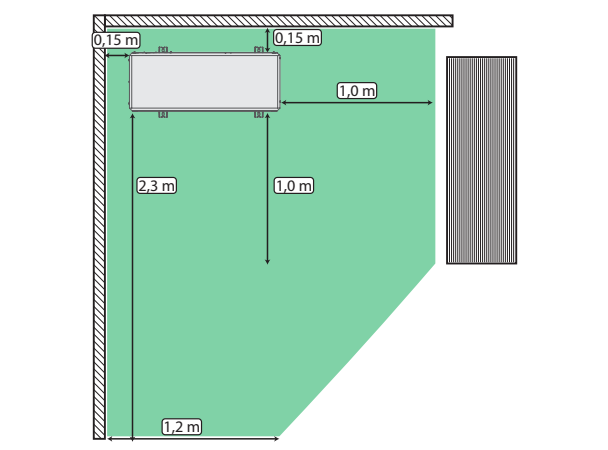


Fig. 23

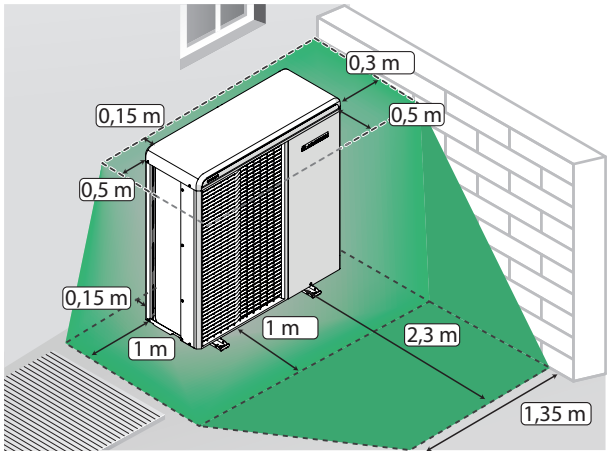


Fig. 24

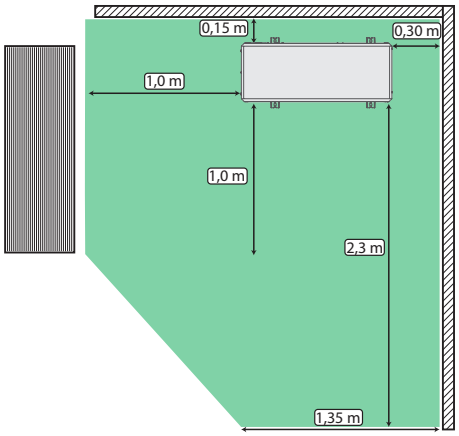


Fig. 25

Wall installation

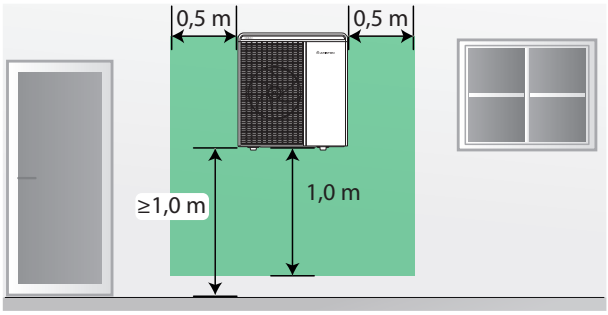


Fig. 26

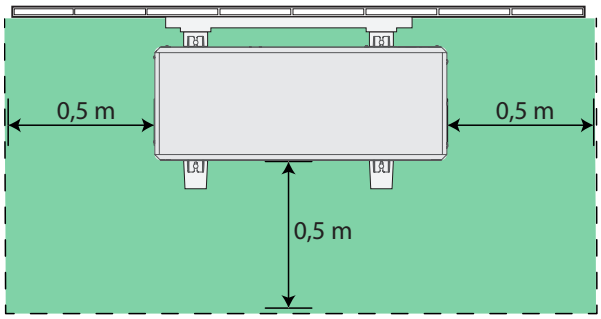


Fig. 27

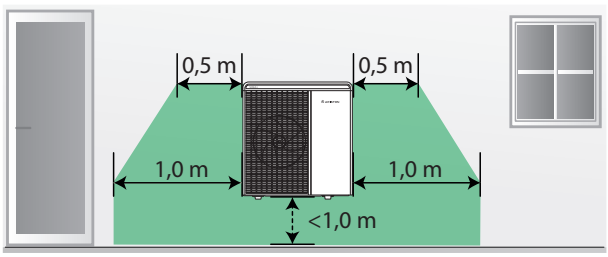


Fig. 28

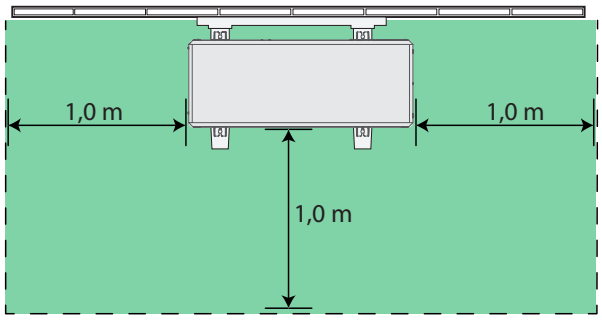


Fig. 29

Corner installation on a wall

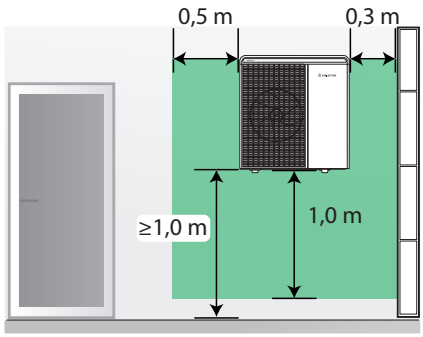


Fig. 30

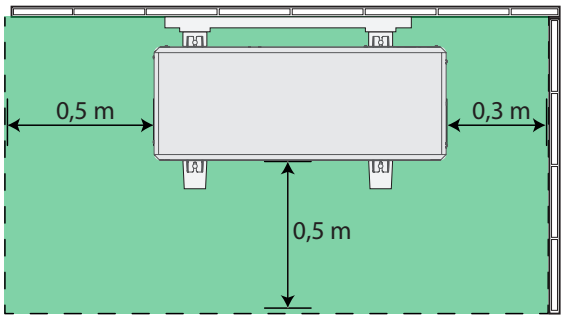


Fig. 31

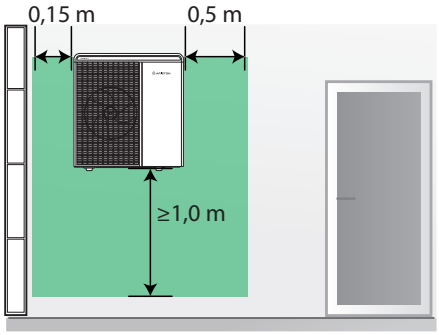


Fig. 32

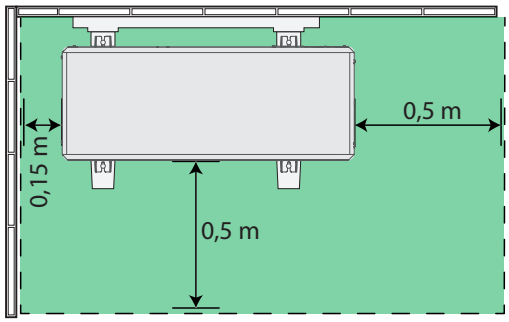


Fig. 33

3.3.3 Minimum installation distances

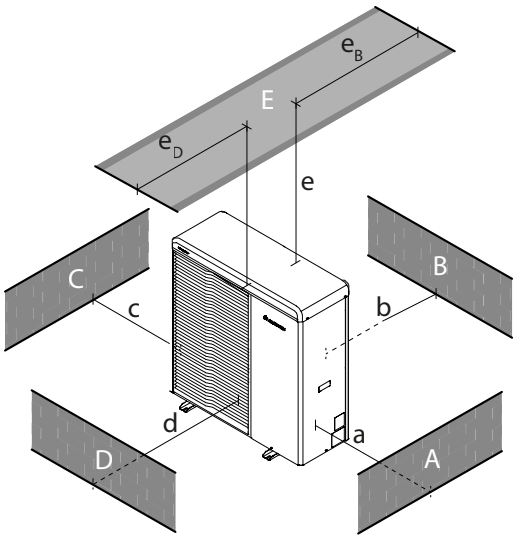


Fig. 34

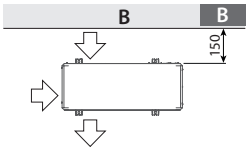
	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	eD [mm]	eB [mm]
A	≥300						
B		≥150					
C			≥150				
D				≥500			
E					≥150		
AB	≥300	≥150					
AC	≥300		≥150				
AD	≥300			≥1000			
AE	≥300				≥500		
BC		≥150	≥150				
BD		≥150		≥1000			
BE		≥150			≥500		≥150
CD			≥150	≥1000			
CE			≥150		≥500		
DE				≥1000	≥1000	≥1000	
ABC	≥300	≥150	≥150				
ABD	≥300	≥150		≥1000			
ABE	≥300	≥150			≥500		≥150
ACD	≥300		≥150	≥1000			
ACE	≥300		≥150		≥500		
ADE	≥300			≥1000	≥1000	≥1000	
BCD		≥150	≥150	≥1000			
BCE		≥150	≥150		≥500		≥150
BDE		≥150		≥1000	≥1000	≥1000	≥150
CDE			≥150	≥1000	≥1000	≥1000	
ABCD	not allowed						
ABCE	≥300	≥150	≥150		≥500		≥150
ABDE	≥300	≥150		≥1000	≥1000	≥1000	≥150
ACDE	≥300		≥150	≥1000	≥1000	≥1000	
BCDE		≥150	≥150	≥1000	≥1000	≥1000	≥150

The upper case letters "A, B, C, D" indicate the side walls.
The lower case letters "a, b, c, d" indicate the minimum clearance between the equipment and the wall.
The upper case letter "E" indicates the roof.
The lower case letter "e" indicates the minimum clearance between the equipment and the roof.
For example, the clearance between the equipment and the wall B must be at least 150 mm (b).

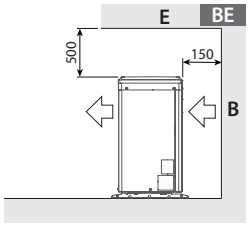
Installation of the outdoor unit in tight spaces may reduce its performance and increase its noise.

Ensure an adequate distance between the front part of the appliance and any nearby walls.

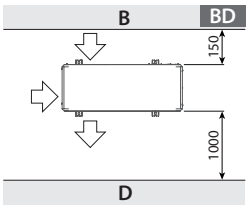
Visual installation example to support the interpretation of the table above.



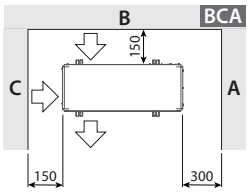
b
≥150



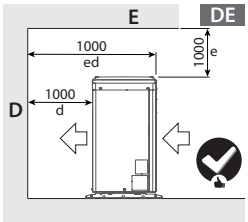
b	e
≥150	≥500



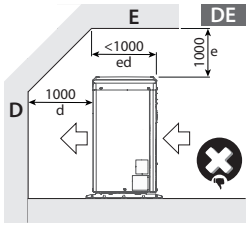
b	d
≥150	≥1000



a	b	c
≥300	≥150	≥150



d	e	eD
≥1000	≥1000	≥1000



d	e	eD
≥1000	≥1000	≥1000

3.3.4 Noise level

To limit noise pollution and the transmission of vibrations, it is possible:

- Install the outdoor unit on a metal frame or on a vibration-damping base. Vibration dampers must be mounted to reduce the transmission of vibrations.
- Install a wall-mounted vibration absorber on the wall behind the unit;
- Install a sound shield. The shield must have a surface area larger than the outdoor unit, it must be positioned as close as possible to the unit itself, while ensuring that air can nonetheless circulate freely, and must be made of suitable material (acoustic bricks or cement blocks lined with sound-absorbing material).

It is possible to limit the noise level by enabling the Silent mode, as described in paragraph "Technical parameters", parameter "1.12.11 Quiet mode activation HHP". Please note that activating this feature reduces the system's output capacity, which may result in diminished thermal comfort; this reduction becomes more significant as higher silent-mode levels are selected.

3.3.5 Handling

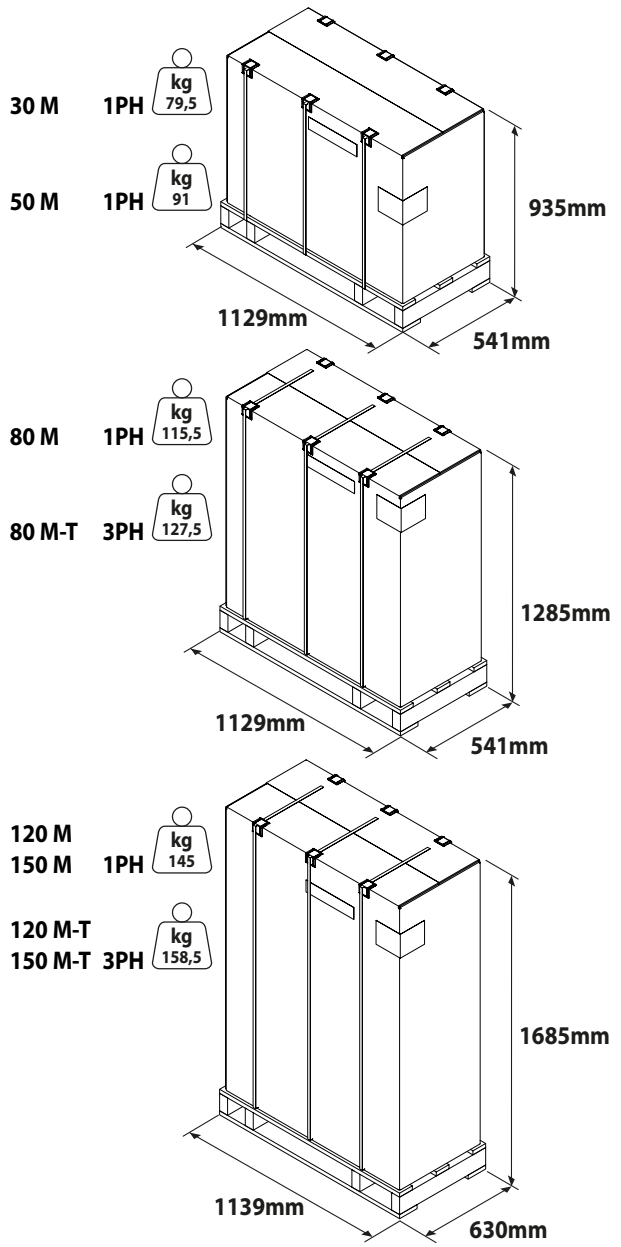


Fig. 35

The unpacked outdoor unit should be handled with a crane or hoist using straps (not included in supply).

– Loosen the screws **(1)** and remove the pallet **(2)**.

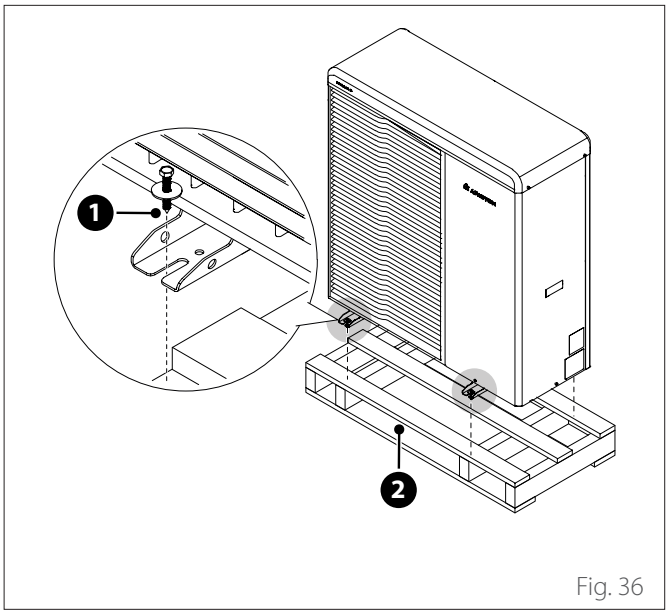


Fig. 36

– Bring the unit as close as possible to the place of installation.

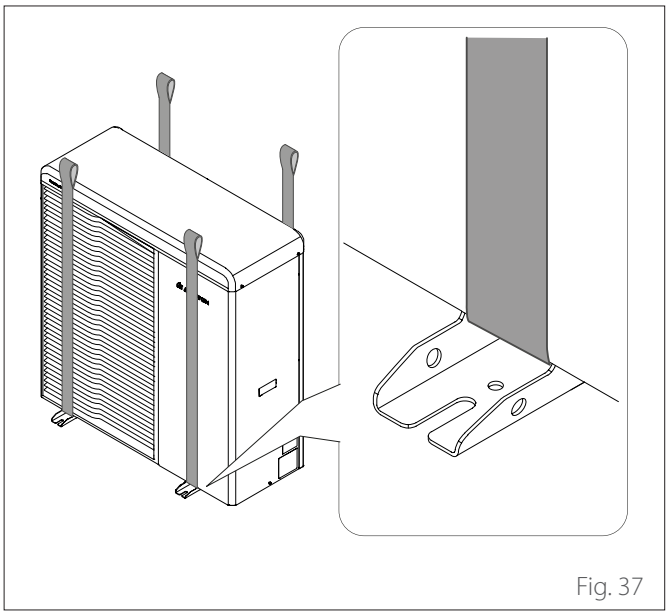


Fig. 37

The straps should pass through the support feet, as shown in the figure.

3.3.6 Positioning

The unit can put in place using the gripping points **(1)** or with straps attached to the pins **(2)**.

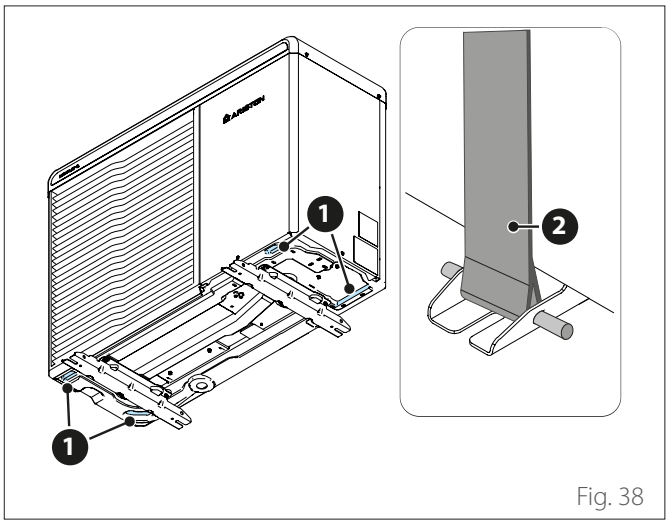


Fig. 38

Use appropriate equipment and safety devices when positioning the unit. Comply with the maximum weight that can be lifted by a person.

The positioning operations must only be carried out with the unit at a short distance above the ground.

Do not handle the unit with a crane or hoist using the straps fixed to the pins.

Before installation, ensure that the support base is adequately load-bearing and perfectly level. Proper leveling is required to ensure correct condensate drainage.

3.3.7 Fixing

Make sure to observe the minimum clearances for installation (refer to "Minimum installation distances").

The outdoor unit must be fixed to the ground or to a wall-mounted bracket.

If the unit is to be installed on the floor or on a (strip) foundation, proceed as follows:

- Mark the positions of the four rawl plugs by referring to the measurements shown on the assembly dimensions diagram.
- Drill the holes for the rawl plugs.
- Clean the concrete dust out of the holes.
- Hammer the rawl plugs into the drilled holes.
- Anchor the base of the outdoor unit to the holes, using anchoring bolts **(1)** (M10 x 4), washers **(2)** and the vibration dampers **(3)** provided in accessory kit.

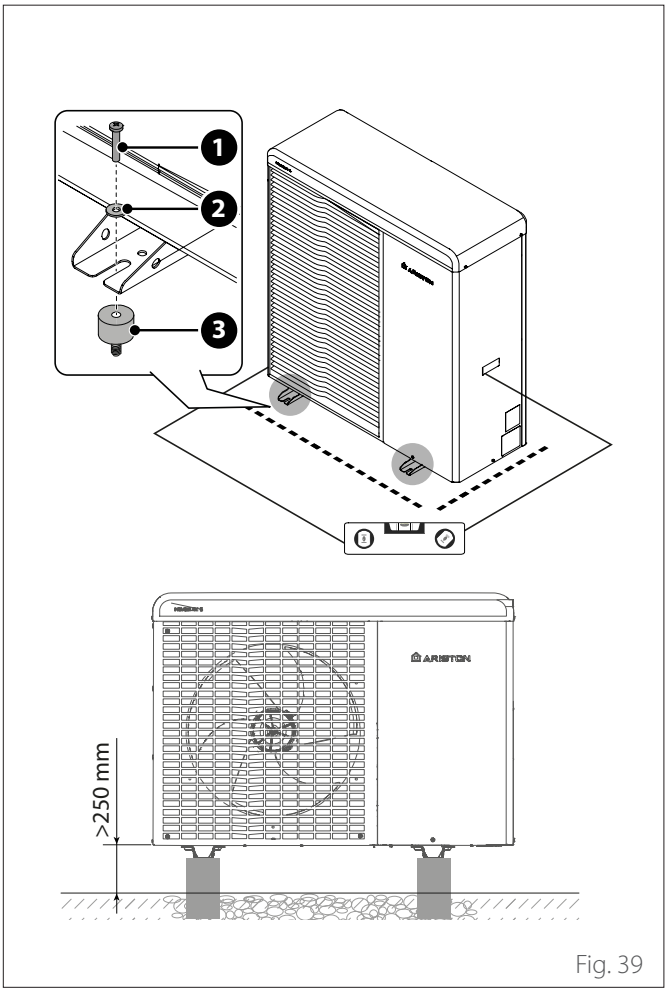


Fig. 39

When drilling holes into concrete, we recommend always wearing safety goggles or glasses.

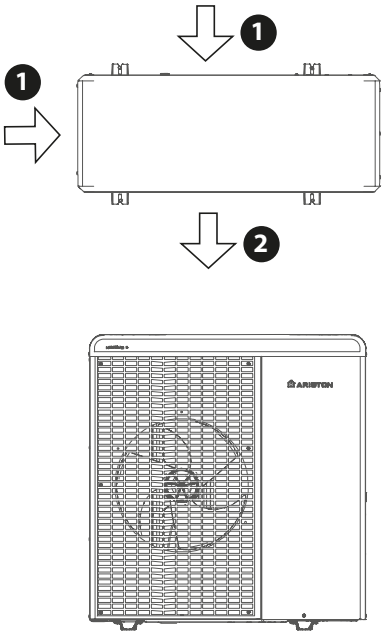


Fig. 40

1 Air inlet
2 Air outlet

If the unit must be secured to a wall-mounted bracket, proceed as follows:

- Mark the positions of the holes for the brackets by referring to the measurements shown on the assembly dimensions diagram.
- Drill the holes for the rawl plugs.
- Clean the concrete dust and residues out of the holes.
- Screw the rawl plugs into the holes of the mounting brackets, arrange the brackets in the proper position and hammer the plugs into the wall.
- Check that the mounting brackets are properly aligned.
- Carefully lift the unit and place its mounting feet on the brackets.
- Secure the unit tightly to the brackets using the anchoring bolts **(1)** (M10 x 4), the washers **(2)**, the vibration dampers **(3)** and the nuts **(4)**.

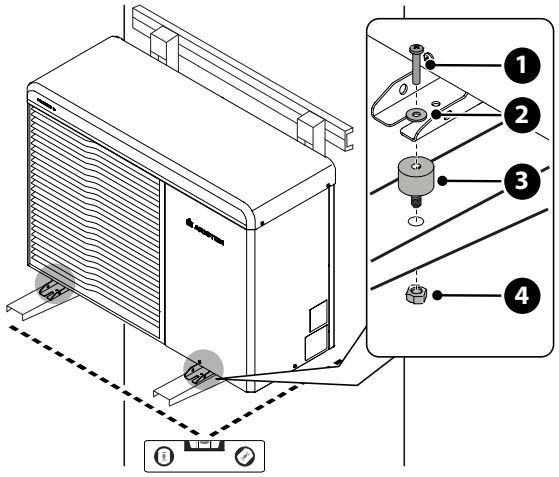


Fig. 41

3.3.8 Arranging the connections

- To allow the passage of cables, use a suitable tool to remove the pre-cut pieces **(1)** from the unit frame.
- Before passing the cables, position the cable grommets **(2)** contained in the documentation envelope.

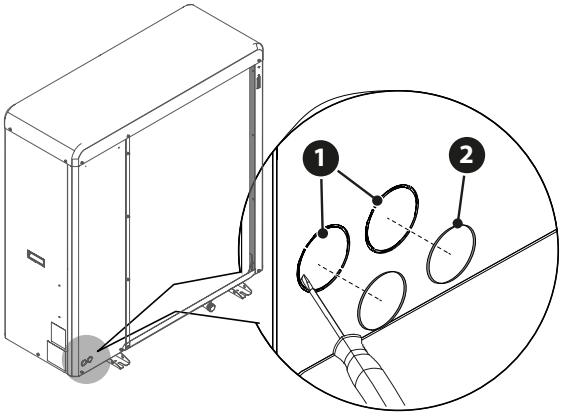


Fig. 42

- Unscrew the screws **(3)** and remove the front panel **(4)**.

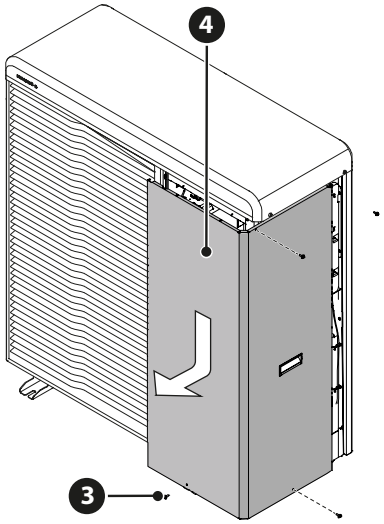


Fig. 43

Before making the hydraulic connections of the outdoor unit, it is essential to check that the air vent valve (5) is open.

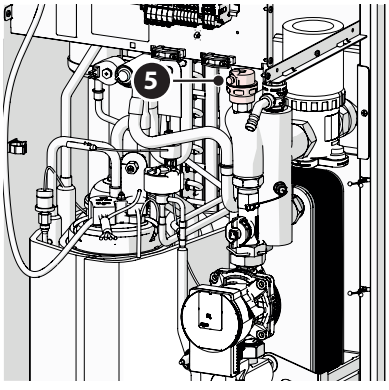


Fig. 44

3.3.9 Installation of the condensate drain socket

The unit has a drain socket (provided) for draining condensate. Install the unit as indicated:

- Place the drain socket **(1)**.
- Push it firmly into its housing.

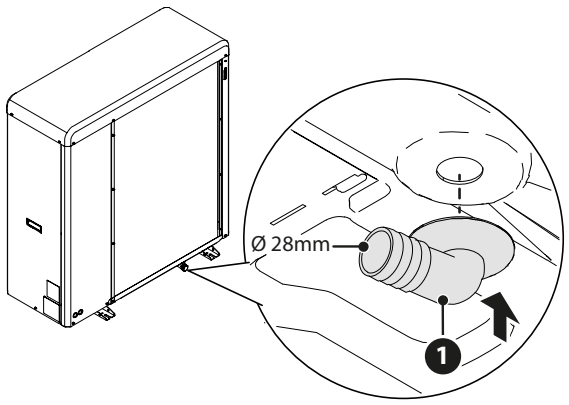


Fig. 45

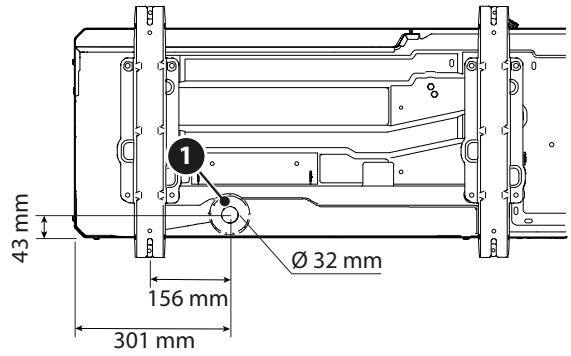


Fig. 46

1 Position of the drain socket in relation to the feet of the base

Ensure that condensation water can drain properly without forming pools that could freeze in cold climates. If necessary, fit a gutter for draining the condensate.

In case of installation in very cold and/or snowy areas, make sure that the condensate cannot freeze.

Make sure that water can drain away properly. Improper drainage may cause water to stagnate in the discharge outlet socket, resulting in the risk of formation of ice and possible clogging of the drainage pipe.
This condition is particularly to be avoided if a drain socket is installed at the outlet of the condensate drainage pipe.
In such a case, it is recommended to thermally insulate the drainage pipe and, if necessary, to install an electric anti-freeze heating element connecting it to the relevant terminal blocks (see the Electrical Connections chapter).

Note: the drainage pipe and heating element for the pipe are not provided as accessories.

3.3.10 Water filter

The 30 M, 50 M, 80 M, 80 M-T outdoor unit has an integrated internal water filter.
The 120 M, 150 M, 120 M-T, 150 M-T outdoor unit has an outdoor water filter-kit to be installed as indicated in Fig. 48.

Integrated Water Filter (1)

Outdoor Unit	Integrated Water Filter
30 M	Present
50 M	Present
80 M / 80 M-T	Present
120 M / 120 M-T	Not present
150 M / 150 M-T	Not present

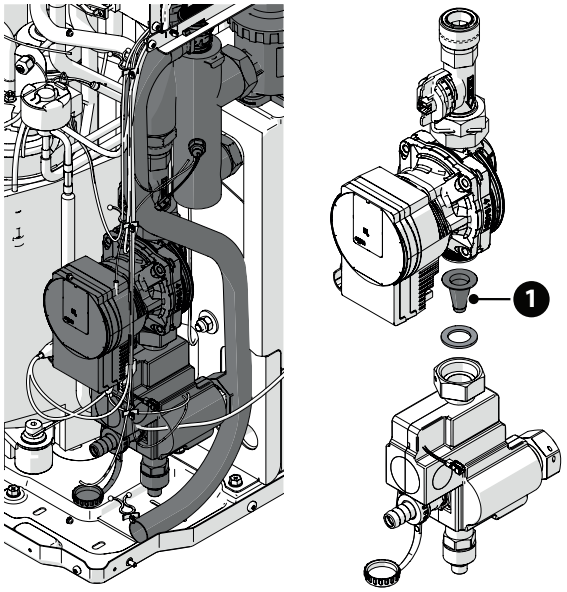


Fig. 47

Outdoor Water Filter

The 120 M, 150 M, 120 M-T, 150 M-T outdoor unit does not have an integrated internal water filter. For these models, the outdoor water filter must be installed in the position indicated in Fig. 48.

The 30 M, 50 M, 80 M, 80 M-T outdoor unit has an integrated water filter. For these models, it is mandatory to install an outdoor filter in the circuit to prevent impurities from entering the machine and facilitate its maintainability. Refer to the table below for information and requirements relating to the outdoor water filter.

Install the filter applying Teflon on the thread of the outdoor unit and on the thread of the filter to guarantee a watertight seal. It is recommended to install a shut-off valve **(2)** upstream and downstream of the filter to facilitate cleaning of the filter.

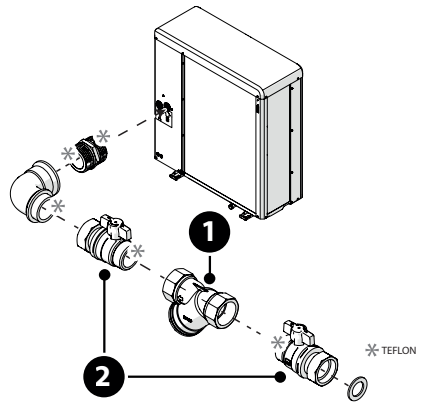


Fig. 48

Outdoor Unit	Outdoor Water Filter (1)	Shut-off valves (2)	Installation of the Outdoor Water Filter
30 M	Not supplied	Not supplied	Mandatory in the Water circuit
50 M	Not supplied	Not supplied	Mandatory in the Water circuit
80 M / 80 M-T	Not supplied	Not supplied	Mandatory in the Water circuit
120 M / 120 M-T	Supplied	Supplied	Mandatory as in Fig. 48
150 M / 150 M-T	Supplied	Supplied	Mandatory as in Fig. 48

It is mandatory to install the outdoor water filter for the 120 M, 150 M, 120 M-T, 150 M-T outdoor units (refer to Fig. 48). Failure to observe this requirement will invalidate the warranty.

3.3.11 Installing the accessory kit

The outdoor unit can be equipped with the following accessory:

Base heating element

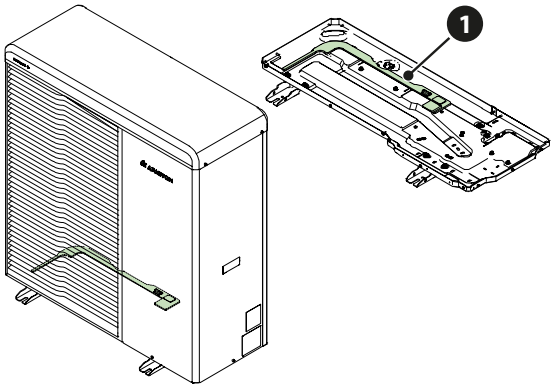


Fig. 49

For information on installing the heating element **(1)**, refer to the relevant instructions supplied with the kit.

The manufacturer recommends installation of the base heating element in case of installation in very cold and/or snowy areas.

The unit has an integrated anti-freeze function that guarantees protection of the hydraulic circuit and plate heat exchanger against freezing. No additional kit is therefore needed.

The unit has integrated anti-freeze protection. This consists of:

- **Integrated software** (protection not guaranteed in the event of a power cut)**:**
  - in winter mode, protection is enabled when either the delivery or return temperature is below 10°C, and disabled automatically when the temperature is above 10°C
  - in summer mode, protection is enabled when either the delivery or return temperature is below 4°C, and disabled automatically when the temperature is above 4°C
- **Integrated anti-freeze valve (1):** The integrated anti-freeze valve is a mechanical emergency device that protects the hydraulic circuit and the plate heat exchanger from freezing. It operates independently of the power supply and continues to provide protection in the event of a power cut, power shortage, or disconnection. Therefore, no additional kit is necessary to protect the external unit's hydraulic circuit.

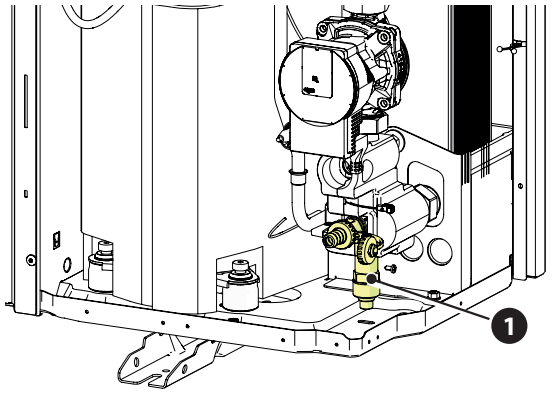


Fig. 50

It is always prohibited to use anti-freeze solutions such as glycol.

It is strongly recommended to always ensure a continuous power supply to the heat pump, especially in cold climate conditions. The outdoor unit is equipped with integrated anti-freeze protection; however, if the unit is expected to remain switched off or in standby for extended periods, it is good engineering practice to drain the system, particularly in areas exposed to low outdoor temperatures and at risk of frost.

3.4 Installing the indoor unit

3.4.1 Place of installation

The indoor unit is designed for wall mounting.
Make sure that all the module's components are intact after transport and handling, and that they have not been damaged by impacts.
In case of evident damages to the product, do not proceed with the installation.

Be careful to avoid damaging existing electrical cables or piping when drilling the wall.

3.4.2 Hanging the indoor unit

- Arrange the bracket **(1)** on the wall and make the holes.
- Fasten the bracket **(1)** using the screws and plugs **(2)** with the aid of a spirit level.

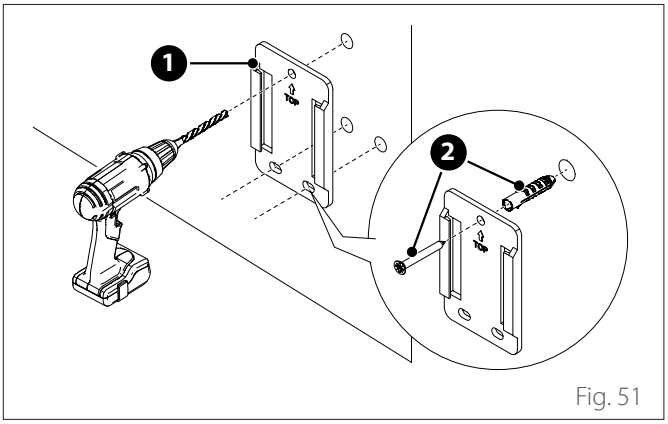


Fig. 51

- Hook the appliance to the bracket.

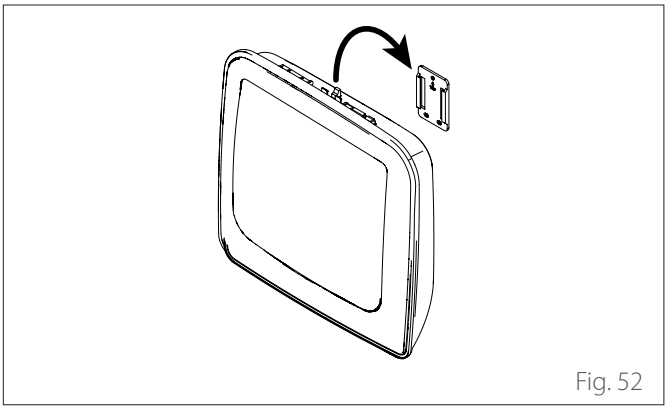


Fig. 52

4. Plumbing connections

4.1 Requirements for the hydraulic circuit

4.1.1 Characteristics of the supply water

Make sure that the system is supplied with water having a hardness between 4.5°dH (8°fH) and 8.4°dH (15°fH) and conductivity below 500µS/cm.
In zones where the water is particularly hard, mount a water softener.
If the system is filled with water that is aggressive (the pH should be maintained between 7.5 and 9), ferruginous or hard, use treated water to prevent limescale build-up, corrosion and damages to the appliance. Even a slight quantity of impurities in the water may decrease system performance.
The filling water used must strictly be treated in the case of high-capacity installations (high volumes of water) or if frequent water top-ups are required to maintain a constant level of liquid in the system. If the system must be cleaned, fill it completely with treated water.
Do not use glycol as it can compromise the performance of the device.

4.1.2 Minimum water content

Make sure that the water content of the system is greater than the minimum volume of water required to ensure that the heat pump works properly, as shown in the table below.

The internal water volume of the heat pump must not be included in the calculation of the minimum water volume of the system.
The minimum water content in the system for the different operating mode is reported in the table below.

	Heating only	Heating + Cooling
Backup Heater	3 l/kW	5 l/kW
NO Backup Heater	5 l/kW	5 l/kW

Install an additional buffer in case the required minimum volume is not guaranteed.

When the circulation in each room heating/cooling loop is controlled by zone valves, the minimum system content must be guaranteed even if all the valves are closed.

4.1.3 Minimum flow rate

The minimum flow rate must always be guaranteed in all operating conditions.

Model	Minimum flow rate [l/h]
30 M	333
50 M	390
80 M & M-T	585
120 M & M-T	702
150 M & M-T	852

If thermostatic or zone valves are installed on all the terminals, fit a by-pass to ensure the minimum flow rate.

4.1.4 Available pressure

Make sure that the available pressure is not lower than the head loss of the entire hydraulic system.
The curves in the pictures below shown the available pressure on the flow from the outdoor unit.

NIMBUS 5 EXT R290

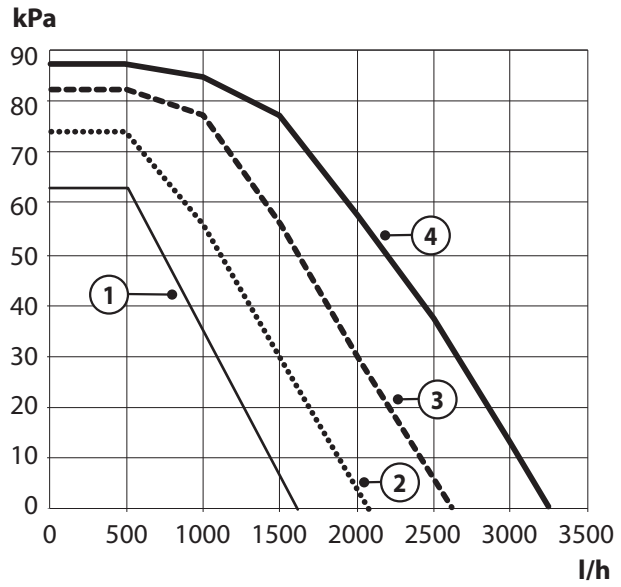


Fig. 53

1 30 M
2 50 M
3 80 M & M-T
4 120 M & M-T / 150 M & M-T

Water filter pressure drops

Pressure drops relating to the separator filter to be installed on on the return pipe to the outdoor unit inlet. For more detailed information, please refer to the section "Water filter".

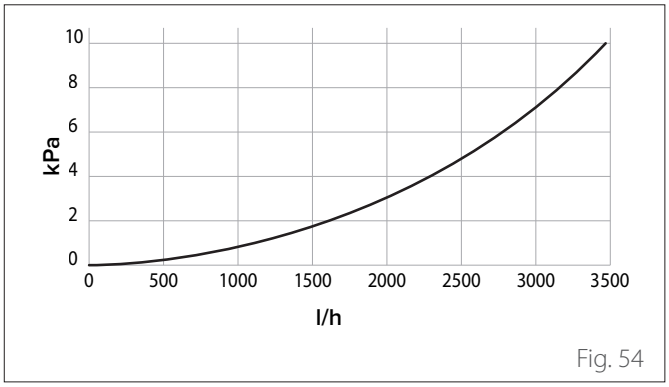


Fig. 54

4.1.5 System requirements

To prevent a potentially dangerous amount of refrigerant from entering the building in the event of an internal leak inside the plate heat exchanger, the heat pump's outdoor unit is equipped with the following safety devices:

- 2.5 bar safety valve to generally protect the hydraulic circuit from overpressure and for safe discharge of refrigerant to the outside in the event of an internal leak in the plate heat exchanger. **The valve has a tolerance on the nominal value of 0.15 bar.**
- Air/refrigerant separator with automatic vent for continuous venting the hydraulic circuit and for safe discharge of refrigerant to the outside in the event of an internal leak in the plate heat exchanger.

Important additional measures to prevent refrigerant leakage indoors in the event of an internal leak in the plate heat exchanger:

- In indoor areas, the use of automatic vent valves must be limited to the minimum necessary to sufficiently vent the hydraulic circuit.
- **Automatic vent valves are not permitted only on buffer tanks.**
  Note: Use manual vent valves!
- In hybrid systems that include a heat generator (e.g. a gas condensing boiler) with a built-in automatic vent, the air connection must be guided outside the unit housing by means of a silicone hose.
- **Air/refrigerant** separators are not permitted in the heating system.
  Note: An air/refrigerant separator is integrated in the outdoor unit.
- When using 3 bar safety valves in the system, height restrictions must be considered; otherwise install a safety valve with a pressure setting high enough to ensure it opens after the outdoor unit valve.
  Note: the max allowable pressure for the indoor unit is 3 bar.

4.2 Plumbing connections outdoor unit

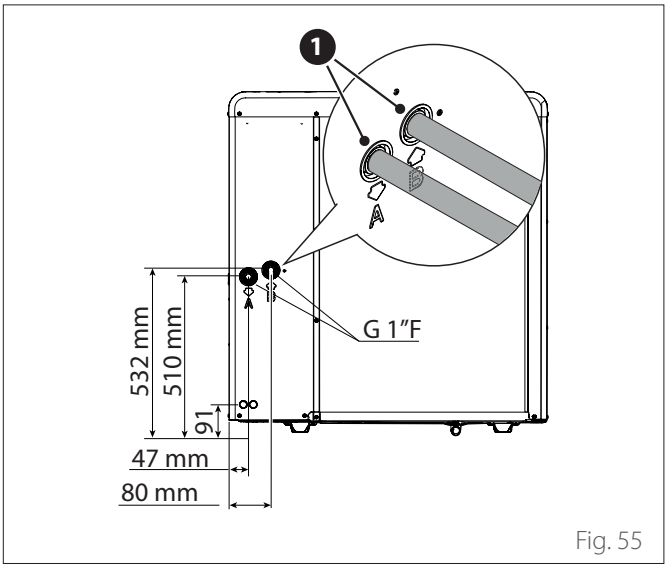


Fig. 55

1 Plumbing connections

Label		Description	Ø of fittings [inches]
A	A	Delivery from heat pump	1
B	B	Return to heat pump	1

5. Electrical connections

The electrical diagram of the unit is enclosed in the accompanying set of documents.

Carry out the electrical connections after having completed all the hydraulic connections.

After the outdoor unit is switched off, it is necessary to wait at least 5 minutes to switch it on again.

Before make the wiring to the connectors already present on the board, disconnect the connectors from the board.

The required stripping length for the 2.5 mm² DIN rail terminal block (terminal block reference AL) is 10-11 mm. This applies to both the outdoor and indoor unit terminal blocks.

The required stripping length for the 6 mm² DIN rail terminal block (terminal block reference AL) is 16-17 mm. This applies to both the outdoor and indoor unit terminal blocks.

If the installation involves the use of thermostats or timer-controlled thermostats to manage the heat request, it is necessary to ensure that they do not have a proportional-band control logic. This logic may indeed cause inefficient behaviour of the system and fail to guarantee the fulfilment of the room temperature set-point. We recommend using modulating thermostats, modulating timer-controlled thermostats or ON/OFF thermostats without proportional band logic.

The indoor and outdoor units must be powered separately by observing the indications of the table.
A ATG485 type connection (named ATG TDM) must also be made between the indoor and outdoor unit.
This connection can be made using a cable with reduced cross-sectional size (0.75 mm² recommended cross-sectional size).

Electrical circuit

- The electrical system must satisfy all the requirements of the law in force.
- Check that the mains power supply voltage and frequency are in line with the data indicated on the system's data plate (see table).
- For greater safety, ask a qualified technician to perform a thorough check of the electrical system.
- We recommend verifying the presence of surge protection devices (SPDs) on the power supply line, in order to comply with the IEC 60364 standard and the national standards in force, and the presence of safety switches and circuit breakers in the electrical panels that power the indoor and outdoor units separately.
- For the machine's power supply we recommend using properly sized disconnection devices in compliance with the applicable regulations.
- The power supply connection is a type-Y system and the connection cable should only be replaced by a qualified technical support centre, in order to avoid any damages.
- Check that the electrical installation is adequate for supporting the power consumption of the installed units, as indicated on the appliances' data plate.
- The electrical connections must be made with the help of a fixed support (do not use portable socket-outlets) and fitted with a double pole switch, with a contact gap of at least 3 mm.
- The system must be connected to an electrical system with an earthing device capable of ensuring the safety of the installation.
- It is forbidden to use hydraulic connection pipes and pipes of the space heating system to earth the system.
- The manufacturer is not liable for any damage caused by a system with inadequate earthing or electrical system anomalies.
- Connect the power supply cable to a **230 V- 50 Hz (1 ph) or 400 V - 50 Hz (3 ph)** network, while verifying that the pole markings match and the connections to earth (see table).

The cross-sectional size of the cables used must comply with the system power (see data plate).
The cross-sectional size of the power cables indicated in the table must be regarded as the minimum cross-sectional -size.

Prior to accessing the terminal blocks, all the supply circuits must be disconnected.

OUTDOOR UNIT		NIMBUS 5 EXT R290							
Parameter		**30 M**	**50 M**	**80 M**	**80 M-T**	**120 M**	**120 M-T**	**150 M**	**150 M-T**
Rated current / live	A	7.47	13.3	22.66	9.37	28.38	12.5	32.95	13.91
Maximum current / live	A	8.3	14.78	22.66	10.4	31.53	13.89	36.6	15.45
Max power	W	1710	3050	5170	5551	6428	7195	7510	8064
Circuit breaker size	A	C13/C16	C20	C32	C13/C16	C40	C16	C40	C20
RCCB size	mA	F-30 / B-30	F-30 / B-30	F-30 / B-30	B-30	F-30 / B-30	B-30	F-30 / B-30	B-30
Surge current		<3							
Rated voltage		230	230	230	400	230	400	230	400
Permissible voltage fields		207-253	207-253	207-253	360-440	207-253	360-440	207-253	360-440
Cos phi		>0.9							
Power supply wiring ref.		H07RN-F							
Cable min cross-sec.		3G2.5	3G4	3G6	5G2.5	3G6	5G2.5	3G6	5G4
Max diameter	mm	14	16.2	18	17	18	17	18	19.9
Comm cable ref.		H05RN-F							
Cable min cross-sec.	mm^2	3x0.75							
Max length	m	50							

The power supplies of the indoor and outdoor units must be connected respectively to a dedicated residual-current circuit breaker (RCCB) with a minimum threshold of 30 mA. For units equipped with an inverter (outdoor unit), we recommend using type B residual-current devices for 3 ph power supplies and type B or F devices (depending on the electrical system to which they are connected) for 1 ph power supplies. For units lacking an inverter (indoor unit), a type A residual-current device is sufficient. The type of connection must nonetheless be made in a workmanlike manner by qualified personnel in order to comply with the national regulations in force.

Main power supply table.

INDOOR UNIT			NIMBUS 5 LB M R290
Parameter			
Power supply		V - ph - Hz	230 - 1 - 50
Permissible voltage fields		V	207 ÷ 253
Nominal absorbed power		W	32
Maximum current		mA	140
Circuit breaker		A	C4
Residual-current breaker RCCB size		mA	Type A - 30
Power supply wiring cable:			
	Reference		H05RN-F
	Cross-sectional size		3G0.75
	Max. diameter	mm	8.1
eBUS 2 Communication cable reference:			
	Reference		H05RN-F
	Cross-sectional size	mm^2	2x0.5
	Max. diameter	mm	6.4
	Max. length	m	50

Terminals	Example cable type (mm^2)
NTC	LiYWYW 2x0.35
HV IN 1, HV IN 2	H07RN-F 2x0.75
V1, V2	H03V2V2-F 3x0.5
P1, P2	H03V2V2-F 3Gx0.5

Note: in making the connection between the communication cable from the indoor unit to the outdoor unit, use a shielded cable to prevent interference problems.

5.1 Outdoor unit electrical connections

In accordance with the installation instructions, all systems for disconnecting the main power supply must have an open contact (4 mm) that guarantees full disconnection as per the indications of the Class III overvoltage conditions.

Make the earth connection before proceeding with all the other electrical connections.

The indoor and outdoor units must be powered separately.

To avoid any risk, the power cable of the indoor and outdoor units must be installed and replaced only by specialised technicians.

- Remove the front panel to access the electrical parts.
- Remove the pre-cut sections **(1)** with the aid of a screwdriver in order to pass the electrical cables. The power and signal cables must be inserted separately.

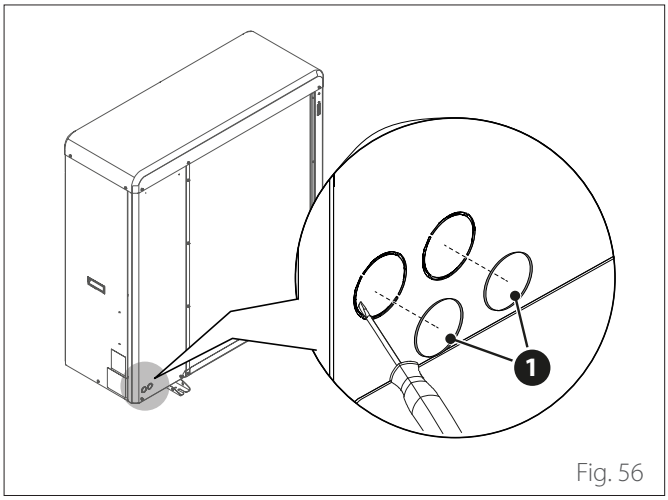


Fig. 56

Prior to accessing the terminal blocks, all the supply circuits must be disconnected.

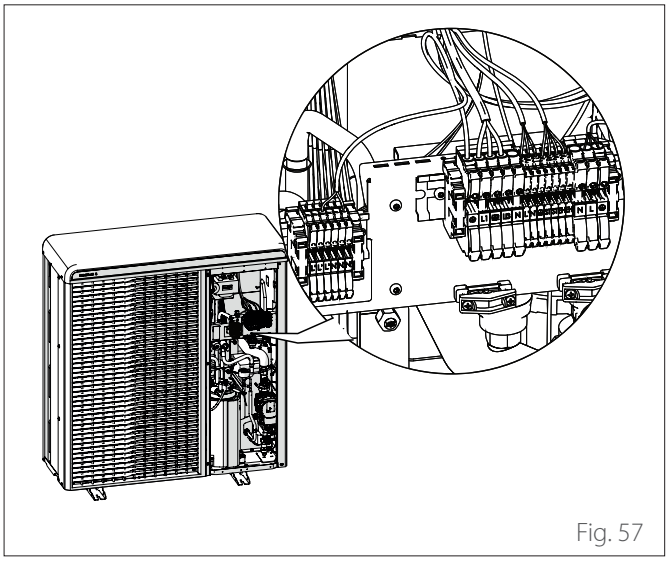


Fig. 57

1-ph outdoor unit terminal block

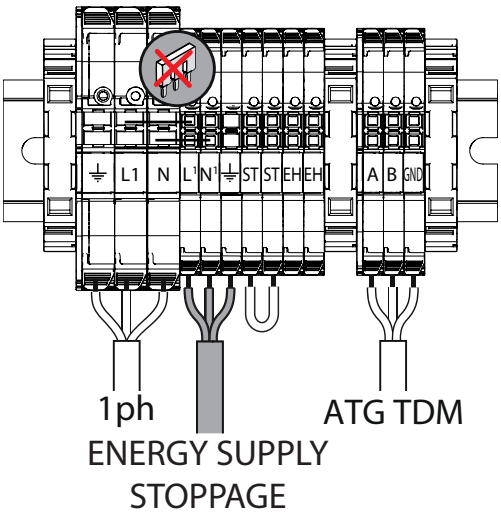


Fig. 58

ATG TDM	ATG TDM connection between indoor and outdoor unit
1ph	Connection to single-phase power supply
ENERGY SUPPLY STOPPAGE	This allows operation of the electronic and communication part with an auxiliary power supply even when the machine is off (not always present)
EH	Connection for a heating element of max 200W (note: heating element accessory not supplied by ARISTON)
ST	Connection of the safety thermostat (230 V)

3ph outdoor unit terminal block (80 M/80 M-T/120 M)

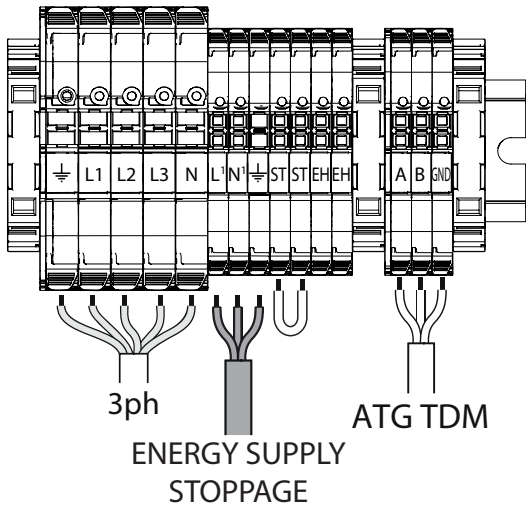


Fig. 59

ATG TDM	ATG TDM connection between indoor and outdoor unit
3ph	Connection to three-phase power supply
ENERGY SUPPLY STOPPAGE	This allows operation of the electronic and communication part with an auxiliary power supply even when the machine is off (not always present)
EH	Connection for a heating element of max 200W (note: heating element accessory not supplied by ARISTON)
ST	Connection of the safety thermostat (230 V)

The contact ST is bridged by default. Do not remove the bridge.

The heating element going to the output of the terminal block EH has a maximum power of 200 W.

- Fasten the power cable **(1)** to the terminal block **(M1)**.
- Fasten the communication cable **(2)** between the outdoor and indoor units to the terminal block **(M2)**.
- To ensure adequate resistance to pulling, the power cables must be secured using the cable clamps **(3)**.

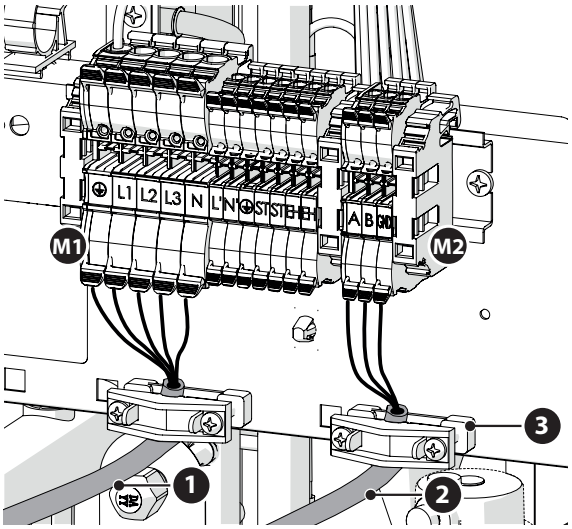


Fig. 60

Auxiliary terminal block

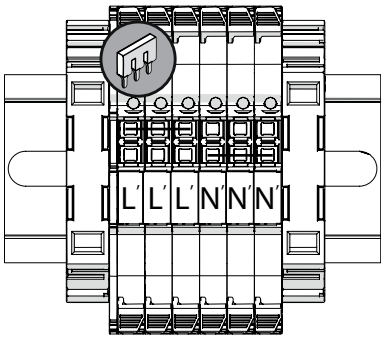


Fig. 61

L'	Line
N'	Neutral

5.2 Indoor unit electrical connections

Make the connection to the board and the cylinder observing the poles of the anode (+24V-GND): the red wire must be connected on the +24V, and the black wire on the GND. Failure to observe this requirement can cause corrosion.

Use multipolar cables with outer diameter ≥7.5mm² and PVC insulation.

Before carrying out any work on the system, shut off the power supply at the main switch.

Comply with the neutral and phase connections.

– To access the indoor unit's electrical panel, loosen the closing screws **(1)** and open the door.

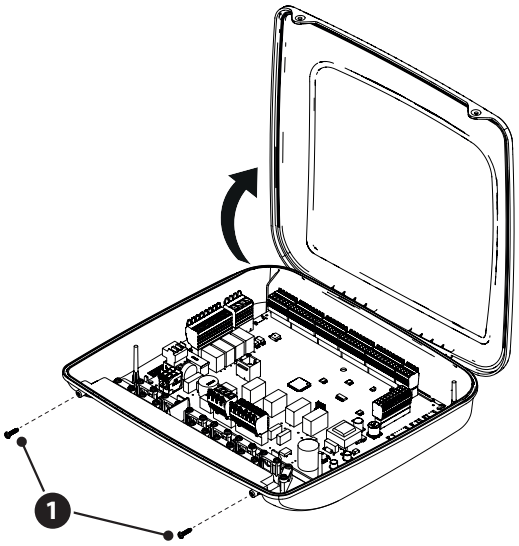


Fig. 62

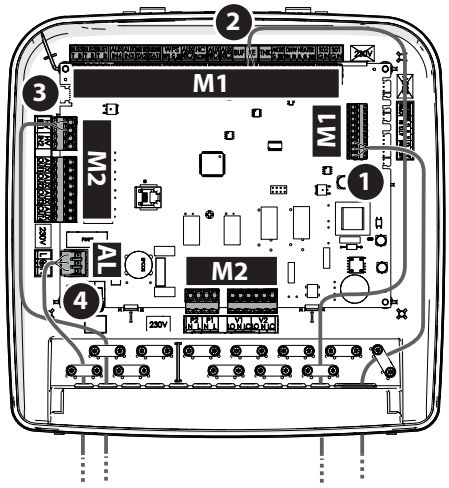


Fig. 63

M1	M signal terminal block1
M2	230V signal terminal block
AL	Power supply terminal block
1	ATG TDM signal connections
2	Signal connections SE (outdoor sensor)
3	230 V connections
4	Power supply connections

Note: secure the cables inside the appliance using the cable ties.

If a DHW indirect tank must be installed, make sure that the anode and the indirect tank sensor are properly connected on the terminal block.

Power supply connections

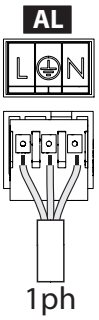


Fig. 64

AL	Power supply terminal block
1ph	Connection to single-phase power supply

Signal connections

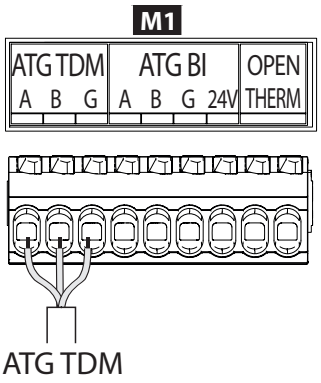


Fig. 65

M1	ATG TDM signal terminal block
ATG TDM	ATG TDM cable connection between the indoor and outdoor units

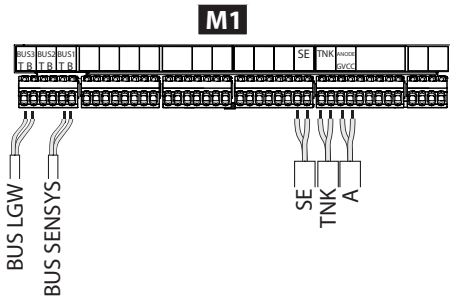


Fig. 66

M1	Signal terminal block
A	Anode connection
SE	Outdoor sensor connection
TNK	Domestic hot water tank sensor connection
BUS	Interface connection (if the user interface is not mounted on the machine)

Make the connections of the TNK sensor and of the anode in case of the stand-alone domestic hot water tank.

BUS is the BUS BridgeNet® that connects the system interface and zone accessories.

The cross-section and length of the cables must be sized according to the power indicated on the indoor unit's data plate.

After completing the electrical connections between the indoor and outdoor units, close both installation panels.

Always keep the power and signal cables separate.

ATG TDM signal terminal block

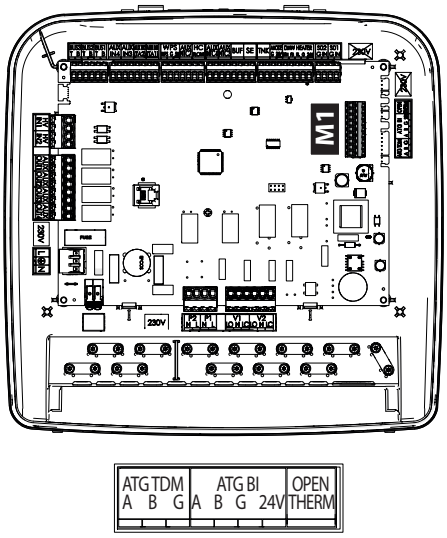


Fig. 67

OPEN THERM	Connection to thermostat Open - Therm.
ATG BI	Backup interface ATG TDM connection.
ATG TDM	ATG TDM connection.

Signal terminal block

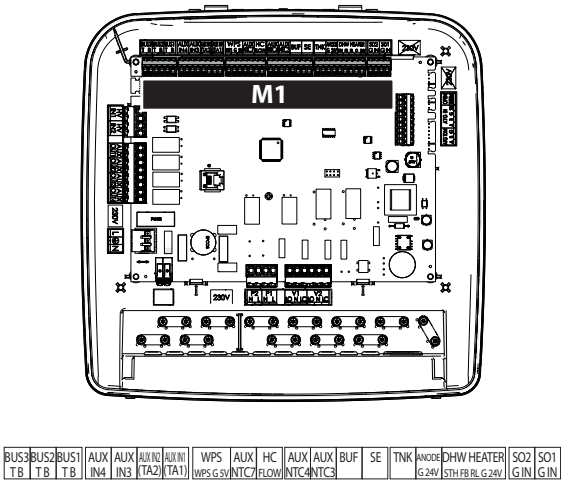


Fig. 68

S01	S0 impulse interface for energy meters.
S02	Not used.
DHW HEATER	Back-up interface circuit board.
ANODE	Tank protection anode connection. Observe the electrical polarities.
TNK	Domestic hot water tank sensor connection.
SE	Outdoor temperature sensor connection.
BUF	High buffer temperature connection.
AUX NTC 3	Multifunction sensor connection. Select the operating mode through parameter **1.1.10**.
AUX NTC 4	Multifunction sensor connection. Select the operating mode through parameter **1.1.11**.
HC FLOW	Flow HC sensor connection.
AUX NTC 7	Multifunction sensor connection. Select the operating mode through parameter **1.1.12**.
WPS	Water pressure sensor connection.
AUX IN 1 (TA1) / 2 (TA2)	Multifunctional Inputs - TA1/TA2 (default). Select the operating mode through parameters **1.1.3** and **1.1.4**.
AUX IN 3 / 4	Multifunctional Inputs. Select the operating mode through parameters **1.1.13** and **1.1.14**.
BUS 1 / 2 / 3	BUS connection for system interface.

230 V terminal block

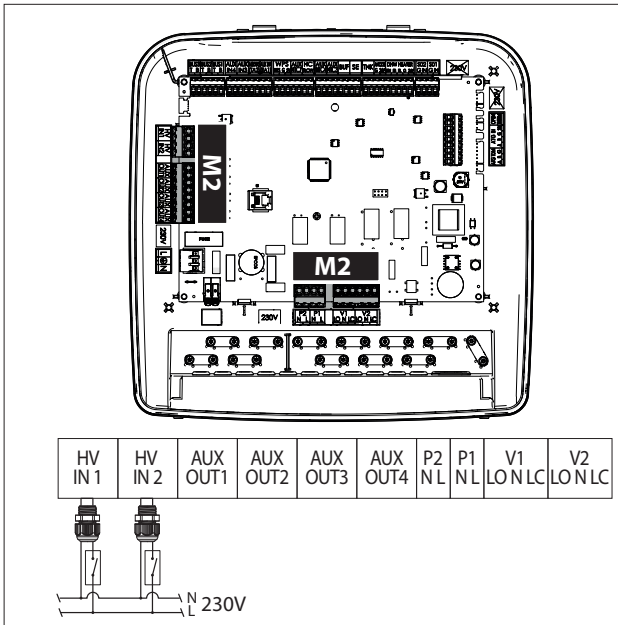


Fig. 69

HV IN 1	230 V input. Select the operating mode through parameter **1.1.0**.
HV IN 2	230 V input. Select the operating mode through parameter **1.1.1**.
AUX OUT 1 / 2 / 3 / 4	Auxiliary output, potential-free contact. Select the operating mode through parameters **1.2.0 / 1.2.1 / 1.2.2 / 1.2.3**.
V1	Diverter valve supply outlet for domestic water.
V2	Diverter valve supply outlet for cooling circuit.
P1	Pump supply outlet 1.
P2	Pump supply outlet 2.

After completing the electrical connections between the indoor and outdoor units, close both installation panels.

Description of the terminal block connections

Terminal block	I/O status	Type of connection	Maximum current
S01	Input	S0 impulse interface for energy meters	13mA
S02	Input	Not used	-
DHW HEATER	I/O	Back-up interface circuit board - 24V	30mA
ANODE	Output	Anode --> protection anode - 24V	9mA
TNK	Input	Heater DHW tank - NTC 10 kOhm-25 °C	1mA
SE	Input	Outdoor temperature sensor - NTC 10 kOhm-25 °C	1mA
BUF	Input	High buffer temperature sensor - NTC 10 kOhm-25 °C	1mA
AUX NTC3	Input	sensor - NTC 10 kOhm-25 °C	1mA
AUX NTC4	Input	sensor - NTC 10 kOhm-25 °C	1mA
HC FLOW	Input	Flow HC sensor - NTC 10 kOhm-25 °C	1mA
AUX NTC7	Input	sensor - NTC 10 kOhm-25 °C	1mA
WPS	Input	Water pressure sensor (power supply and signal - 5V)	10mA
AUX IN 1 (TA1)	Input	Potential free contact	0.2mA
AUX IN 2 (TA2)	Input	Potential free contact	0.2mA
AUX IN 3	Input	Potential free contact	0.2mA
AUX IN 4	Input	Potential free contact	0.2mA
HV input 1	Input	High voltage -230 V	0.8mA
HV input 2	Input	High voltage -230 V	0.8mA
AUX OUT 1	Output	Potential free contact	5A
AUX OUT 2	Output	Potential free contact	5A
AUX OUT 3	Output	Potential free contact	5A
AUX OUT 4	Output	Potential free contact	5A
230V	Input	Power supply (for Energy Manager 3.0 circuit board)	1.9A
V1	Output	Power supply (for diverter valve V1 - 230V)	0.1A
V2	Output	Power supply (for diverter valve V2 - 230V)	0.1A
P1	Output	Power supply (for Pump 1 - 230V)	1.1A
P2	Output	Power supply (for Pump 2 - 230V)	1.8A
OPENTHERM	Communication	OpenTherm communication protocol - 24V	23mA
ATG BI	Communication	Not used	-
ATG TDM	Communication	ATG485 communication protocol (for outdoor unit) - 5V	50mA

The sum of the currents of "Pump supply outlet 1 (P1)", "Diverter valve outlet 1 (V1)" and "Diverter valve outlet 2 (V2)" must not exceed 1.1A, while the sum of "Pump supply outlet 1 (P1)", "Pump supply outlet 2 (P2)", "Diverter valve outlet 1 (V1)" and "Diverter valve outlet 2 (V2)" must be less than 1.8A.

5.3 Electrical panel cabling details

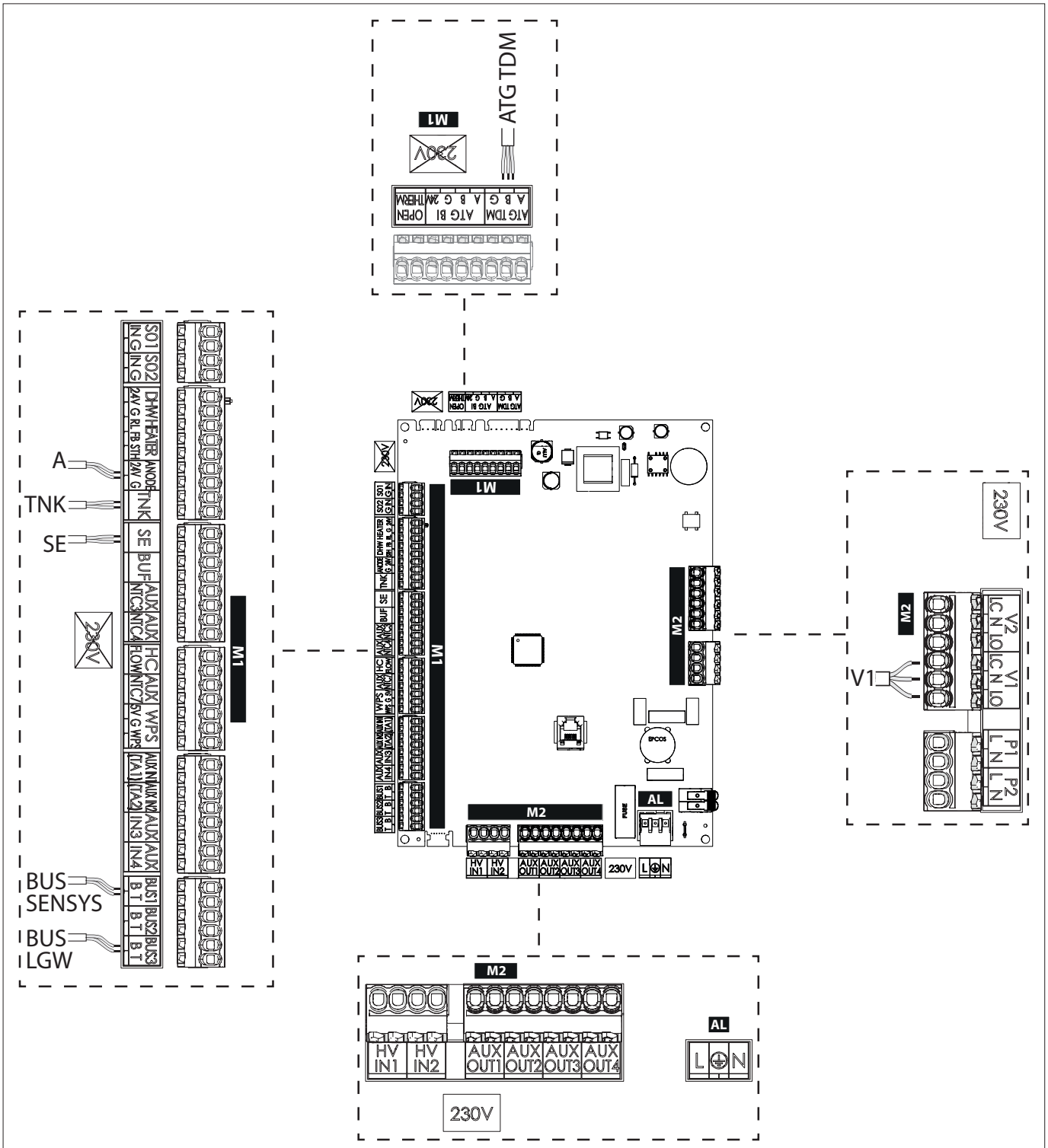


Fig. 70

5.4 Installing the system interface

Note: when installing cascade systems, to install the system interface refer to the relevant dedicated manual.

Positioning

The system interface detects the room temperature. This factor must be taken into account when choosing its position.

We recommend positioning the appliance far from heat sources (radiators, direct exposure to sunlight, fireplaces, etc.). We also advise against positioning it near draughts or external openings that could affect the operation of the system interface.

The interface must be placed at least 1.5 m above the floor.

Installation should be performed by a qualified technician. Before installing the appliance, ensure that the electrical power supply is disconnected.

5.4.1 Wall installation

The Sensys HD 2 system interface must be fitted to the wall prior to connecting the BUS line.

– Open the holes required for fixing.

– Fix the base of the device to the box on the wall using the screws **(1)**.

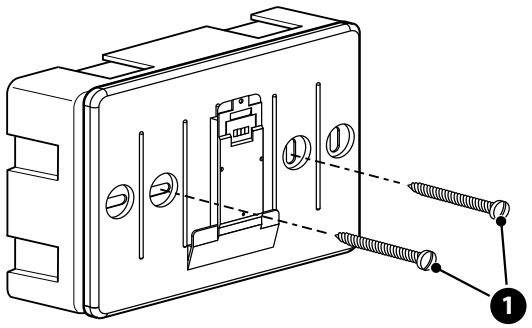


Fig. 71

– Connect the pair of wires to connector **(2)** while respecting the B-T polarity.

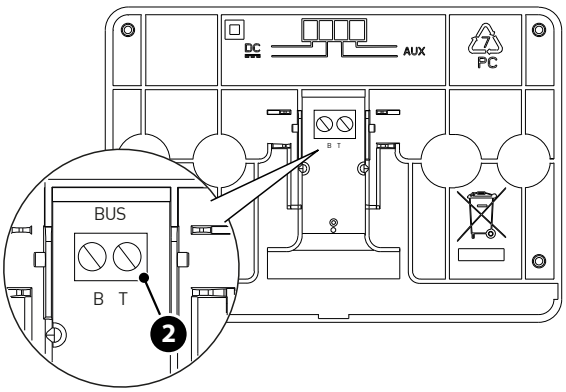


Fig. 72

B Blue
T Orange

– Position the system interface on the base, pushing it slightly downwards.

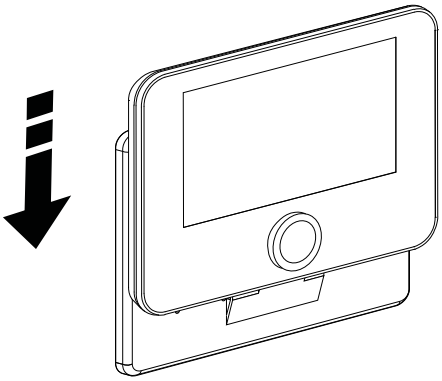


Fig. 73

Signal sending, receiving, and decoding is carried out using BUS protocol, which ensures the interaction between the system and the interface.

Connect the cables to the terminal block located in the system's indoor unit panel.

NOTE:

Use a shielded cable or a twisted-pair cable to connect the system interface and the indoor unit so as to avoid interference problems.

5.4.2 Technical data

TECHNICAL DATA	
Dimensions	134 mm x 96 mm x 21 mm
Power supply	BUS BridgeNet® 8 to 24V max
Current draw	≤35mA
Operating temperature	0 ÷ 50°C
Storage temperature	-10 ÷ 45°C
Humidity	20% RH ÷ 80% RH
Temperature reading precision	+/- 0.5°C
Buffer memory duration	min. 2h
Bus cable length and cross-sectional area	max. 50 m ø min. 0.5 mm^2

Note: in order to avoid interference problems, use a shielded cable or twisted-pair cable.

PRODUCT TECHNICAL SHEET	
Supplier name	ARISTON
Supplier identification model	Sensys HD 2
Temperature control class	V
Energy efficiency contribution % for space heating	+3%
Addition of an ARISTON outdoor sensor:	
Temperature control class	VI
Energy efficiency contribution % for space heating	+4%
In a system with 3 zones with 2 ARISTON room Sensors:	
Temperature control class	VIII
Energy efficiency contribution % for space heating	+5%

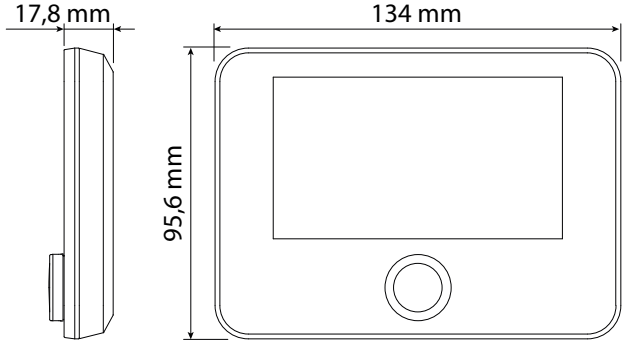


Fig. 74

5.5 Outdoor sensor

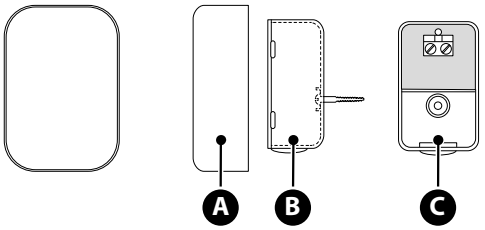


Fig. 75

PRODUCT TECHNICAL SHEET	
Supplier name	ARISTON
Supplier identification model	OUTDOOR SENSOR
Temperature control class	II
Energy efficiency contribution % for space heating	+2%

- Position the outdoor sensor on the north-facing wall of the building, at least 2.5 m from the ground and away from direct sunlight.
- Remove the cover **(A)** and install the sensor using the rawl plug and screw provided **(B)**.
- Make the connection using a 2x0.5 mm^2 cable. Maximum connection length 50 m.
- Connect the wire to the terminal block **(C)** by introducing it from the lower part after creating a suitable passage.
- Place the sensor cover back in the correct position.

5.6 Example of electrical connection between indoor and outdoor units

Before carrying out any work on the system, shut off the power supply at the main switch.
Make the electrical connection between the indoor and outdoor units using the two low voltage terminal blocks: 1 and 2.
Connect "A" on the terminal block of the indoor unit to "A" on the terminal block of the outdoor unit.
Connect "B" on the terminal block of the indoor unit to "B" on the terminal block of the outdoor unit.
Connect "G" on the terminal block of the indoor unit to "GND" on the terminal block of the outdoor unit.

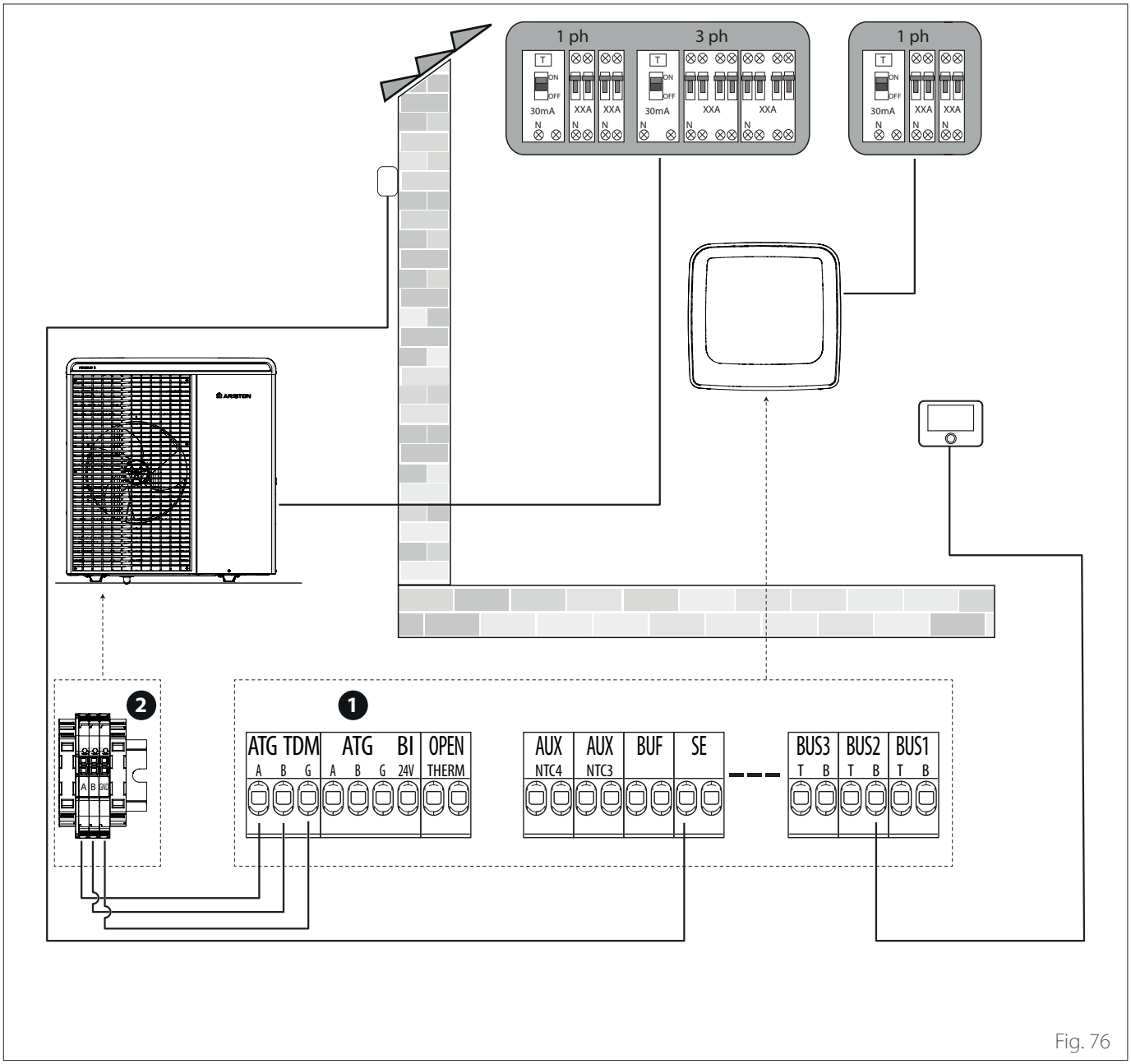


Fig. 76

1 ph Single-phase power supply (depending on the model)
3 ph Three-phase power supply (depending on the model)

After completing the electrical connections between the indoor and outdoor units, close both installation panels.

Keep the high- and low-voltage cables separate.

6. Examples of schemes of the system

Carry out the electrical connections after having completed all the hydraulic connections.

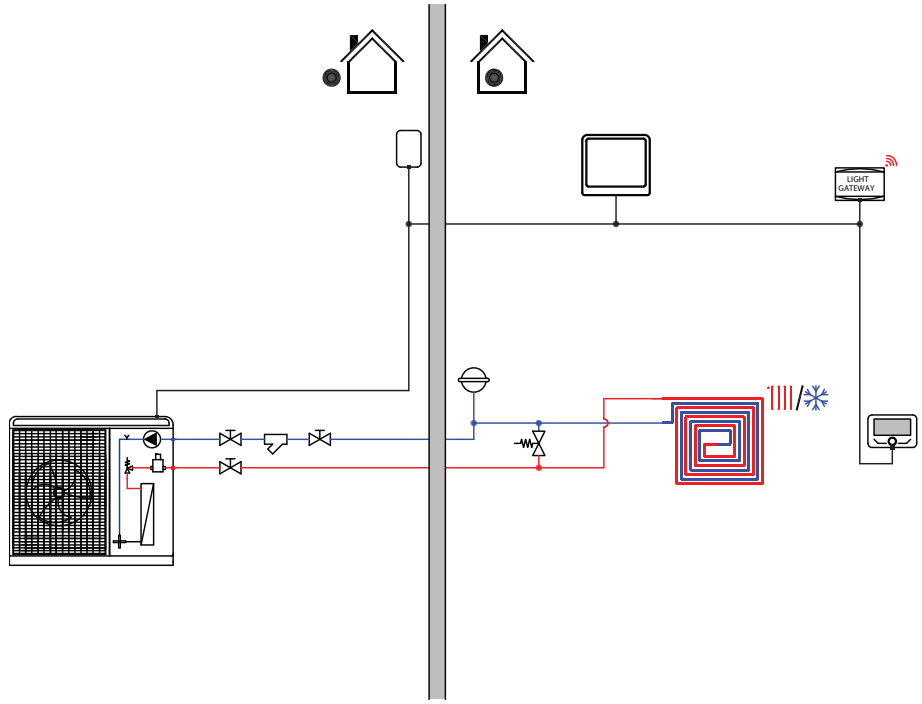


Fig. 77

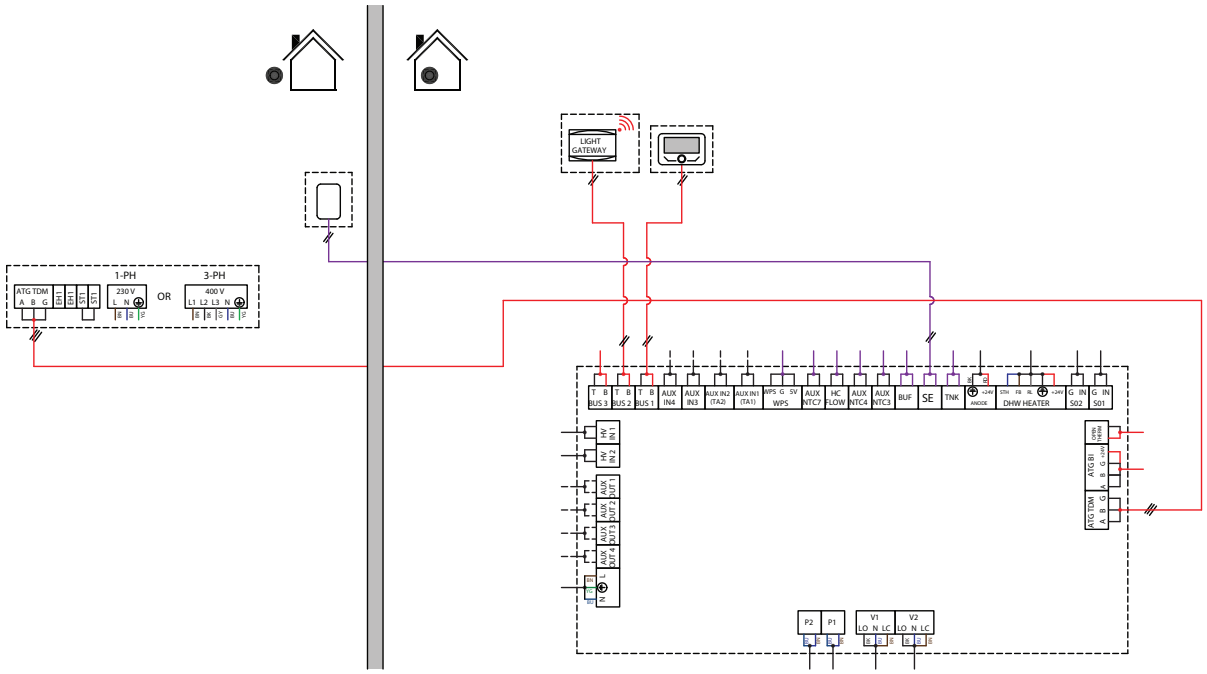


Fig. 78

Key

Symbol	Description
	System flow
	System return
	Communication connection
	Electrical connection
	Domestic cold water inlet
	Domestic hot water outlet
	Domestic mixed water
	Refrigerant circuit
	Gas supply
	Circulation pump
	Shutter valve
	Diverter valve
	DHW 3-way mixing valve
	System 3-way mixing valve
	Safety valve
	Differential bypass valve
	Non-return valve
	Sludge filter
	Y-shaped filter
	Air vent valve
	Syphon
	Plate heat exchanger
	Manifold
	Hydraulic circuit-breaker

Symbol	Description
	Buffer
	Domestic hot water tank
	DHW expansion vessel
	System expansion vessel
	NTC
	Low-temperature heating zone
	Radiator
	Fan coil unit
	Dehumidifier
	Outdoor sensor
	RF outdoor sensor
	Gateway
	Sensys HD 2
	CUBE S NET
	CUBE RF
	CUBE
	Timer-controlled thermostat
	Lightbox

Symbol	Description
	Zone manager
	2-zone wired control module
	2-zone wireless control module
	RF receiver
	Heating only
	Cooling only
	Heating / Cooling
	Living room
	Sleeping area
	Delivery temperature sensor
	Return temperature sensor
	Anti-freeze kit
	Kit barrette
	CKZ puffer kit
	Drain Pan supplementary heating element
	Generic system
	DHW storage tank with removable coil
	Relay
	Deaerator

NOTE: installations with under-floor system

In the case of installations with a floor system, make sure that in all operating modes (and switching from DHW in particular) the floor inlet temperature is within the limits of the application and those of the applicable regulations.

For installations with under-floor system, install a safety device on the space heating flow circuit, as specified in the national regulations.

For the electrical connection of the thermostat, refer to the paragraph "Electrical connections".

If the flow temperature is too high, the system stops in both domestic hot water and heating/cooling modes, and the remote control will report error code 936 "Under-floor safety thermostat open". The system will start again when the manual-reset thermostat is closed.

The input to be used for connection to the underfloor heating safety thermostat shall be AUX IN 1 (TA1), (TA2), 3, or 4, configured as option 4 – Safety Thermostat (one of the four configurable parameters).

When error 936 occurs, water circulation for antifreeze protection is guaranteed in any case.

7. Commissioning

7.1 Checking for electrical dispersions and gas leakages

7.1.1 Electrical safety checks

Upon completing the installation, check that all the power cables have been installed in conformity to the relevant national and local regulations and according to the instructions contained in the installation manual.

PRIOR TO THE OPERATIONAL TEST
Check the integrity of the earthing circuit.
Measure the earth resistance of the machine before installing it with a visual inspection and with a specific tester. The earth resistance of the machine must be below 0.1 Ω.

DURING THE OPERATIONAL TEST
Check for electrical dispersions.
During the functional test, carry out a complete electrical check, e.g. with the help of a multimeter, in order to identify any electrical dispersions.
If an electrical dispersion is detected, switch off the unit immediately and contact a qualified electrician to identify and solve the cause of the problem.

All electrical connections must be made by an authorised electrician in conformity to the national and local electrical standards.

7.1.2 Check for gas leakages

If a leak detector is used, follow the instructions contained in the user manual of the device.

Danger to life due to fire or explosion in the event of leaks in the refrigerant circuit.

In the event of a leak, the refrigerant R290 can mix with air and form a flammable atmosphere. There is a risk of fire and explosion.

7.2 Filling the system

During filling, make sure that all the air is purged from the system. If the system's pressure drops excessively, load water.

To check the system water pressure, install a pressure gauge on the system as it is not present in the product. The system's pressure can nonetheless be read through the system interface (parameter 1.16.7).

The outdoor unit is equipped with:

- An air vent valve **(1)** on the return pipe. Make sure that the valve is open when filling with water and during operation of the heat pump.
- A deaerator **(2)** on the delivery pipe with air vent valve always open.

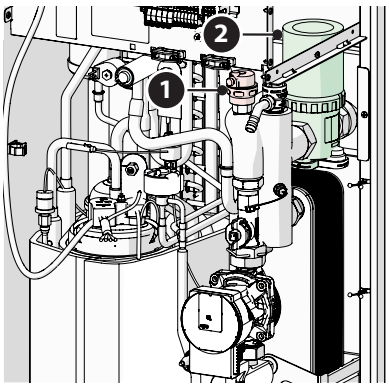


Fig. 79

The accumulation of air can cause malfunctions to the system and damage the components.

If frequent fillings (once a month or more frequently) are required for your system, this indicates a potential problem with the installation (leaks, expansion vessel problems). Contact your trusted installer to analyse and solve the problem quickly, and to prevent damage caused by corrosion of the components due to excessive water replacement in the system.

7.3 Initial start-up

To guarantee safety and correct operation of the system interface, it must be commissioned by a qualified and expert technician possessing the requirements of the law.

Refer to chapter "System interface Sensys HD 2" for more information.

The minimum water temperature in heating mode, in order for the system to function correctly, is 20°C. In the absence of back-up energy sources, if the water temperature is below 20°C there could be problems during the machine start-up phase.

7.3.1 Start-up procedure

- Insert the system interface on the connection slide pushing it gently downwards. After a brief initialisation, the device will be ready for being configured.
- The display screen shows "Select language". Select the desired language by rotating the selector.
- Press the selector.
- The display shows the "Date and Time". Turn the selector to select day, month and year. For each selection, always press the selector to confirm. Once the date has been set, the selection shifts to the time setting. Turn the selector to set the exact time, press the selector to confirm and move to the minute selection and setting. Press the selector to confirm.
- Once the date is set, the selection moves to the daylight saving time setting. Turn the selector to select AUTO or MANUAL. If you want the system to automatically update the period when daylight saving time is in use, select AUTO.
- Press the selector.

NOTE:
The display is set by default with a multi-level set-point time schedule. If a message appears concerning the time schedule conflict:

- On the home page press the "Menu" button to access the user menu.
- Turn the selector to select the "Advanced settings" menu, then press the selector.
- Turn the selector to select the "Type of service of the schedule programme", then press the selector.
- Turn the selector and select the same value (Two-Level Set-Point or Multi-Level Set-Point) present in the other User Interfaces (see technical parameter 0.4.3 on the boiler interface, if available) and press the selector.
- If there is still a conflict, repeat the procedure and use the selector to choose the two-level set-point, then press the selector.

7.4 Basic functions

The system interface is a device that controls the heating system. It can be used as a room thermostat and/or as a system interface for monitoring the installation's operation and configuring the desired settings.

Manual room temperature adjustment
The operating mode of the zone associated with the device is set to MANUAL **(1)**.
Turn the selector to select the temperature value indicated on the display using the movable cursor near the ring. Press the selector to confirm.
The display shows the set temperature.



Fig. 80

Room temperature adjustment in programmed mode
The operating mode of the zone associated with the device is set to PROGRAMMED **(2)**. During operation in scheduled programming mode, the set room temperature can be changed temporarily.
Turn the selector to select the temperature value indicated using the movable cursor near the ring. Press the selector to confirm.
The display shows the set temperature.
Turn the selector to set the time until which the change must be maintained.
Press the selector to confirm. The **(3)** symbol appears on the display.
The system interface will maintain the temperature value until the set time, after which the pre-set room temperature is restored.



Fig. 81

Room temperature adjustment with AUTO function on
If the heating hot water temperature does not match the desired value, it can be increased or decreased via the "Heating Settings". The correction bar will appear on the display.
Press the selector to confirm, or press the back button to return to the previous screen without saving.

7.5 Access to technical area

If the screensaver is on, press any button to access the main page.
Simultaneously press the "Esc" and "Menu" buttons until "Insert Code" appears on the display.
Turn the selector to enter the technical code (234) then press the selector to confirm; the display will show TECHNICAL AREA.

- Language, date and time
- BUS network setting
- Zone mode
- Complete Menu
- Configuration wizard
- Service
- Faults

Turn the selector and select:

- BUS NETWORK SETTING

The display will show the list of devices connected within the system:

- System interface (local)
- Energy Manager
- Zone Manager

To set the correct zone associated with the system interface, turn the knob and select:

- System interface (local)

Press the OK button. Turn the knob and set the correct zone. Press the OK button to confirm the setting.

7.6 Technical parameters

Simultaneously press the "Esc" and "Menu" buttons until "Insert Code" appears on the display.
Turn the selector to enter the technical code (234) then press the selector to confirm; the display will show TECHNICAL AREA.
Turn the selector to choose the desired item.

– COMPLETE MENU

Press the selector. Turn the selector to choose the desired item.

0 NETWORK: Network configuration
0.6 SYSTEM SETTINGS
0.6.0 Currency
Selection of the currency.
Press the selector. Turn the selector to choose the desired item.
0 Euro (€).
1 Pounds (£).
2 Switzerland Franc (CHF).
3 US Dollar ($).
4 Canada dollar ($).
5 Ruble (₽).
6 Forint (Ft).
7 Dinar (Дин.).
8 Renminbi (¥).
9 Zloty (zl).
10 Turkey lira (₺).
11 Kuna (kn).
12 Peso ($).
13 Leu (lei).
14 Hryvnia (₴).
Press the selector to confirm.

0.6.1 Gas Type
Types of gases available.
Press the selector. Turn the selector to choose the desired item.
0 NG.
1 LPG.
2 G230.
3 G130.
4 Propane.
Press the selector to confirm.

0.6.2 Gas units
Selection of the unit of measurement.
Press the selector. Turn the selector to choose the desired item.
0 kWh.
1 GJ.
2 MMBtu.
3 Therm.
4 smc.
5 m3.
6 Liters.
7 Gallons.
Press the selector to confirm.

0.6.3 Gas cost
Selection of the cost of gas in cents.

0.6.4 Electric units
Selection of the unit of measurement of the current.
Press the selector. Turn the selector to choose the desired item.
0 kWh.
1 GJ.
Press the selector to confirm.

0.6.5 Electricity cost
Selection of the cost of electricity in cents.

0.6.6 Electricity cost (low tariff)
Selection of the cost of electricity cost at the reduced rate, when the parameter 1.1.0 HV input 1 (input configurable to 230 V) = 2 EDF.

1 ENERGY MANAGER
1.0 BASIC PARAMETERS
1.0.0 IDU type
Press the selector. Turn the selector to choose the desired item.
0 None.
1 Hybrid Mode: hybrid hydraulic unit.
2 Hydraulic module: wall-hung or floor-standing hydraulic unit.
3 Light: electronic board only.
Press the selector to confirm.

1.0.1 External Unit Version

Press the selector. Turn the selector to choose the desired item.

1 Heat Pump: electric heat pump.

Press the selector to confirm.

1.0.2 Tank management

Press the selector. Turn the selector to choose the desired item.

0 None.

1 Storage with NTC: presence of a DHW tank with temperature sensor for the NTC tank.

2 Storage with Thermostat: presence of a DHW tank with temperature managed through a mechanical thermostat (ON/OFF).

Press the selector to confirm.

1.0.6 Thermoregulation

Press the selector. Turn the selector to choose the desired item.

0 Provisioned - Not active.

1 Active.

Press the selector to confirm.

1.1 INPUT CONFIGURATION

1.1.0 HV input 1 (input configurable to 230 V)

Press the selector. Turn the selector to choose the desired item.

1 Absent: input not active.

2 EDF: Reduced rate: Input not active (0V). By applying a 230 VAC signal to the input, the system applies the reduced electricity rate defined by parameter 0.6.6 Electricity cost (low tariff).

3 SG1: input 1 for the Smart Grid Ready protocol (refer to the paragraph "Standard SG ready").

4 External switch off signal: switches the machine OFF. Every heating, cooling and DHW request is interrupted while the anti-freeze protection logics are active.

5 Photovoltaic integration: input not active (0 V), no integration. Input active (230 V), the energy surplus is used to increase the DHW set-point by the quantity defined through parameter 1.26.0 PV offset DHW setpoint temperature. If the DHW tank has reached the new set-point, it is possible to use this energy to increase the set-point of the inertial storage tank (if present) through parameter 20.4.4 Buffer electric integration offset or of the heating / cooling function to the comfort set-point.

Press the selector to confirm.

1.1.1 HV input 2 (input configurable to 230 V)

Press the selector. Turn the selector to choose the desired item.

1 Absent: input not active.

2 DLSG: Input not active (0 V), the heating elements are disabled in every operating cycle.

3 SG2: input 2 for the Smart Grid Ready protocol (refer to the paragraph "Standard SG ready").

4 External switch off signal: switches the machine OFF. Every heating, cooling and DHW request is interrupted while the anti-freeze protection logics are active.

5 Photovoltaic integration: input not active (0 V), no integration. Input active (230 V), the energy surplus is used to increase the DHW set-point by the quantity defined through parameter 1.26.0 PV offset DHW setpoint temperature. If the DHW tank has reached the new set-point, it is possible to use this energy to increase the set-point of the inertial storage tank (if present) through parameter 20.4.4 Buffer electric integration offset or of the heating / cooling function to the comfort set-point.

Press the selector to confirm.

1.1.3 AUX input 1

Press the selector. Turn the selector to choose the desired item.

0 None.

1 Humidistat sensor: when the contact is closed, the heat pump is turned off during the cooling cycle. Use Par. 1.1.9 Humidity input zone to set the zone pumps that will stop as a result.

2 Heat / Cool by external control: when the contact is closed, the operating mode is set to cooling; when the contact is opened, the operating mode is set to heating.

NOTE:

When this mode is activated, recommend to the end user to avoid change of operation mode by Sensys HD 2, to not lose the coherence between the operation modes of Energy Manager and the external device.

4 Safety thermostat: connect an underfloor safety thermostat to the contact. When the contact is closed, water circulation is interrupted.

5 Photovoltaic integration: input not active (contact open), no integration.
Input active (contact closed), the energy surplus is used to increase the DHW set-point by the quantity defined through parameter 1.26.0 PV offset DHW setpoint temperature. If the DHW tank has reached the new set-point, it is possible to use this energy to increase the set-point of the inertial storage tank (if present) through parameter 20.4.4 Buffer electric integration offset or of the heating/cooling function to the comfort set-point.

6 Room thermostat: the signal is interpreted as a contact for a thermostat in zone 1.
When the contact is closed, it is sent as a heat request for zone 1.

Press the selector to confirm.

1.1.4 AUX input 2

Press the selector. Turn the selector to choose the desired item.

0 None.
1 Humidistat sensor: when the contact is closed, the heat pump is turned off during the cooling cycle. Use Par. 1.1.9 Humidity input zone to set the zone pumps that will stop as a result.
2 Heat / Cool by external control: when the contact is closed, the operating mode is set to cooling; when the contact is opened, the operating mode is set to heating.

NOTE:
When this mode is activated, recommend to the end user to avoid change of operation mode by Sensys HD 2, to not lose the coherence between the operation modes of Energy Manager and the external device.

4 Safety thermostat: connect an underfloor safety thermostat to the contact. When the contact is closed, water circulation is interrupted.
5 Photovoltaic integration: input not active (contact open), no integration.
Input active (contact closed), the energy surplus is used to increase the DHW set-point by the quantity defined through parameter 1.26.0 PV offset DHW setpoint temperature. If the DHW tank has reached the new set-point, it is possible to use this energy to increase the set-point of the inertial storage tank (if present) through parameter 20.4.4 Buffer electric integration offset or of the heating/cooling function to the comfort set-point.
6 Room thermostat: the signal is interpreted as a contact for a thermostat in zone 2.
When the contact is closed, it is sent as a heat request for zone 2.

Press the selector to confirm.

1.1.5 Electric heat sources blocking type

Press the selector. Turn the selector to choose the desired item.

0 None: The company block function is not specified.
1 Soft lockout: The energy provider can send a signal to switch off the heat pump.
2 Hard lockout: The energy provider shuts off the power supply to the heat pump.
3 Hybrid lockout: The energy provider sends a signal and disconnects the power supply to switch off the heat pump.

Press the selector to confirm.

1.1.7 CH Press Detection Device

Press the selector. Turn the selector to choose the desired item.

0 Not defined. No pressure device present (Lightbox or hybrid system setting)

Press the selector to confirm.

1.1.8 System flow T selection

Press the selector. Turn the selector to choose the desired item.

0 HP water flow temp: LWT sensor is used as water flow sensor by the system
1 System flow T: Heating flow sensor is used as water flow sensor by the system

Press the selector to confirm.

1.1.9 Humidity input zone

This parameter defines to which zones the value of the humidity read by the Energy Manager has to be set.

Press the selector. Turn the selector to choose the desired item.

0 All zones
1 Zone 1
2 Zone 2
3 Zone 3
4 Zone 4
5 Zone 5
6 Zone 6
7 Zones 1 , 2
8 Zones 3 , 4
9 Zones 5 , 6
10 Zones 1,2,3
11 Zones 4,5,6
12 No zone set

Press the selector to confirm.

1.1.10 AUX NTC3

This parameter defines which sensor to associate with the input ntc-3 of the EM board.

Press the selector. Turn the selector to choose the desired item.

0 None
1 Buffer low

Press the selector to confirm.

1.1.11 AUX NTC4

This parameter defines which sensor to associate with the input ntc-4 of the EM board.

Press the selector. Turn the selector to choose the desired item.

0 None

1 Buffer low

Press the selector to confirm.

1.1.12 AUX NTC7

This parameter defines which sensor to associate with the input ntc-7 of the EM board.

Press the selector. Turn the selector to choose the desired item.

0 None

1 Buffer low

Press the selector to confirm.

1.1.13 Aux input 3

Press the selector. Turn the selector to choose the desired item.

0 None.

1 Humidistat sensor: when the contact is closed, the heat pump is turned off during the cooling cycle. Use Par. 1.1.9 Humidity input zone to set the zone pumps that will stop as a result.

2 Heat / Cool by external control: when the contact is closed, the operating mode is set to cooling; when the contact is opened, the operating mode is set to heating.

NOTE:

When this mode is activated, recommend to the end user to avoid change of operation mode by Sensys HD 2, to not lose the coherence between the operation modes of Energy Manager and the external device.

4 Safety thermostat: connect an underfloor safety thermostat to the contact. When the contact is closed, water circulation is interrupted.

5 Photovoltaic integration: input not active (contact open), no integration.
Input active (contact closed), the energy surplus is used to increase the DHW set-point by the quantity defined through parameter 1.26.0 PV offset DHW setpoint temperature. If the DHW tank has reached the new set-point, it is possible to use this energy to increase the set-point of the inertial storage tank (if present) through parameter 20.4.4 Buffer electric integration offset or of the heating/cooling function to the comfort set-point.

6 Room thermostat HC3: the signal is interpreted as a contact for a thermostat in zone 3.
When the contact is closed, it is sent as a heat request for zone 3.

Press the selector to confirm.

1.1.14 Aux input 4

Press the selector. Turn the selector to choose the desired item.

0 None.

1 Humidistat sensor: when the contact is closed, the heat pump is turned off during the cooling cycle. Use Par. 1.1.9 Humidity input zone to set the zone pumps that will stop as a result.

2 Heat / Cool by external control: when the contact is closed, the operating mode is set to cooling; when the contact is opened, the operating mode is set to heating.

NOTE:

When this mode is activated, recommend to the end user to avoid change of operation mode by Sensys HD 2, to not lose the coherence between the operation modes of Energy Manager and the external device.

4 Safety thermostat: connect an underfloor safety thermostat to the contact. When the contact is closed, water circulation is interrupted.

5 Photovoltaic integration: input not active (contact open), no integration.
Input active (contact closed), the energy surplus is used to increase the DHW set-point by the quantity defined through parameter 1.26.0 PV offset DHW setpoint temperature. If the DHW tank has reached the new set-point, it is possible to use this energy to increase the set-point of the inertial storage tank (if present) through parameter 20.4.4 Buffer electric integration offset or of the heating/cooling function to the comfort set-point.

6 Room thermostat HC4: the signal is interpreted as a contact for a thermostat in zone 4.
When the contact is closed, it is sent as a heat request for zone 4.

Press the selector to confirm.

1.2 OUTPUT CONFIGURATION

1.2.0 AUX output 1

Press the selector. Turn the selector to choose the desired item.

0 None.
1 Fault alarm: the contact is closed in case of a system error.
2 Humidity control threshold: (Par. 1.8.3 Humidity control threshold) the contact closes when the humidity of at least one zone exceeds the humidity control threshold and the system is available for cooling or is performing the cooling service.
3 External heat and DHW request: the contact is closed to generate a heat request towards an external source for space heating and DHW production (managed with the parameter set in the DHW request and heating request options).
4 Cooling request: the contact closes when a cooling request is present.
5 DHW request: the contact is closed to generate a heat request towards an external source for DHW (managed with the parameters 1.4.0 DHW aux heat source activation logic, 1.4.2 Delay timer and 1.4.3 Release integral threshold).
6 Heat / Cool mode: the contact is closed when the cooling operating mode is active. The contact is opened when the operating mode is heating or stand-by.
7 CH request: the contact is closed to generate a heat request towards an external source for heating (managed with the parameters 1.3.0 CH aux heat source activation logic and 1.3.2 ECO / COMFORT).
8 Cooling serving: The contact is closed when the system is serving a cooling request.

Press the selector to confirm.

1.2.1 AUX output 2

Press the selector. Turn the selector to choose the desired item.

0 None.
1 Fault alarm: the contact is closed in case of a system error.
2 Humidity control threshold: (Par. 1.8.3 Humidity control threshold) the contact closes when the humidity of at least one zone exceeds the humidity control threshold and the system is available for cooling or is performing the cooling service.
3 External heat and DHW request: the contact is closed to generate a heat request towards an external source for space heating and DHW production (managed with the parameter set in the DHW request and heating request options).
4 Cooling request: the contact closes when a cooling request is present.
5 DHW request: the contact is closed to generate a heat request towards an external source for DHW (managed with the parameters 1.4.0 DHW aux heat source activation logic, 1.4.2 Delay timer and 1.4.3 Release integral threshold).
6 Heat / Cool mode: the contact is closed when the cooling operating mode is active. The contact is opened when the operating mode is heating or stand-by.
7 CH request: the contact is closed to generate a heat request towards an external source for heating (managed with the parameters 1.3.0 CH aux heat source activation logic and 1.3.2 ECO / COMFORT).
8 Cooling serving: The contact is closed when the system is serving a cooling request.

Press the selector to confirm.

1.2.2 AUX output 3

Press the selector . Turn the selector  to choose the desired item.

0 None.
1 Fault alarm: the contact is closed in case of a system error.
2 Humidity control threshold: (Par. 1.8.3 Humidity control threshold) the contact closes when the humidity of at least one zone exceeds the humidity control threshold and the system is available for cooling or is performing the cooling service.
3 External heat and DHW request: the contact is closed to generate a heat request towards an external source for space heating and DHW production (managed with the parameter set in the DHW request and heating request options).
4 Cooling request: the contact closes when a cooling request is present.
5 DHW request: the contact is closed to generate a heat request towards an external source for DHW (managed with the parameters 1.4.0 DHW aux heat source activation logic, 1.4.2 Delay timer and 1.4.3 Release integral threshold).
6 Heat / Cool mode: the contact is closed when the cooling operating mode is active. The contact is opened when the operating mode is heating or stand-by.
7 CH request: the contact is closed to generate a heat request towards an external source for heating (managed with the parameters 1.3.0 CH aux heat source activation logic and 1.3.2 ECO / COMFORT).
8 Cooling serving: The contact is closed when the system is serving a cooling request.

Press the selector  to confirm.

1.2.3 AUX output 4

Press the selector . Turn the selector  to choose the desired item.

0 None.
1 Fault alarm: the contact is closed in case of a system error.
2 Humidity control threshold: (Par. 1.8.3 Humidity control threshold) the contact closes when the humidity of at least one zone exceeds the humidity control threshold and the system is available for cooling or is performing the cooling service.
3 External heat and DHW request: the contact is closed to generate a heat request towards an external source for space heating and DHW production (managed with the parameter set in the DHW request and heating request options).
4 Cooling request: the contact closes when a cooling request is present.
5 DHW request: the contact is closed to generate a heat request towards an external source for DHW (managed with the parameters 1.4.0 DHW aux heat source activation logic, 1.4.2 Delay timer and 1.4.3 Release integral threshold).
6 Heat / Cool mode: the contact is closed when the cooling operating mode is active. The contact is opened when the operating mode is heating or stand-by.
7 CH request: the contact is closed to generate a heat request towards an external source for heating (managed with the parameters 1.3.0 CH aux heat source activation logic and 1.3.2 ECO / COMFORT).
8 Cooling serving: The contact is closed when the system is serving a cooling request.

Press the selector  to confirm.

1.2.4 AUX P1 circulator setting

Select different operating modes to adapt the operation of the pump.

Press the selector. Turn the selector to choose the desired item.

0 Auxiliary circulator: the circulation pump simultaneously follows the switching on/off of the primary circulation pump.
1 Cooling circulator: activates when the cooling mode is selected and the cooling request is active.
2 Buffer circulator: activates when there is heating/cooling request and the buffer is in the system configuration.
3 DHW circulator: the circulation pump is activated depending on the auxiliary time schedule and when a thermal sanitisation cycle is in progress.
4 Time programmed output: the output is activated depending on the auxiliary schedule programming
5 De-stratification pump: the de-stratification pump is activated when a thermal sanitisation cycle is in progress
6 None.

Press the selector to confirm.

1.2.5 AUX P2 circulator setting

Press the selector. Turn the selector to choose the desired item.

0 Auxiliary circulator: the circulation pump simultaneously follows the switching on/off of the primary circulation pump.
1 Cooling circulator: activates when the cooling mode is selected and the cooling request is active.
2 Buffer circulator: activates when there is heating/cooling request and the buffer is in the system configuration.
3 DHW circulator: the circulation pump is activated depending on the auxiliary time schedule and when a thermal sanitisation cycle is in progress.
4 Time programmed output: the output is activated depending on the auxiliary schedule programming
5 De-stratification pump: the de-stratification pump is activated when a thermal sanitisation cycle is in progress
6 None.

Press the selector to confirm.

1.2.6 Pro-Tech anode active

Indicates the presence of the impressed-current anode on the DHW tank.

Press the selector. Turn the selector to choose the desired item.

0 OFF.
1 ON.

Press the selector to confirm.

1.3 CH SECONDARY HEAT SOURCE ACTIVATION

1.3.0 CH aux heat source activation logic

Press the selector. Turn the selector to choose the desired item.

0 Heat integr. and backup: during heating cycles the auxiliary sources (output auxiliary contacts or heating elements) can activate both in integration mode together with the heat pump and also if the heat pump is unavailable.
1 HP failure backup: during heating cycles the auxiliary sources (output auxiliary contacts or heating elements) can activate only if the heat pump is unavailable.

Press the selector to confirm.

1.3.2 ECO / COMFORT

Defines the start-up delay of the integration heating elements from most economical/ecological (longer delay time) to most comfortable (shorter delay time).

Press the selector. Turn the selector to choose the desired item.

0 Eco Plus.
1 Eco.
2 Medium.
3 Comfort.
4 Comfort Plus.
5 Customizable.

Press the selector to confirm.

1.3.3 Delay timer

The parameter is used when 1.3.2 ECO / COMFORT = 5 (custom). Defines the minutes to wait before the integration sources get involved by the Energy Manager.

1.3.4 Release integral threshold

The parameter is used when 1.3.2 ECO / COMFORT = 5 (custom). Defines the threshold for the enable integral used by the Energy Manager to activate the integration sources (°C*min).

1.3.5 Reset integral threshold
The parameter is used when 1.3.2 ECO / COMFORT = 5 (custom). Defines the threshold for the reset integral used by the Energy Manager to deactivate the integration sources (°C*min).

1.4 DHW SECONDARY HEAT SOURCE ACTIVATION
1.4.0 DHW aux heat source activation logic
Press the selector. Turn the selector to choose the desired item.

0 Heat integr. and backup: during DHW cycles the auxiliary sources (output auxiliary contacts or heating elements) can activate both in integration mode together with the heat pump and also if the heat pump is unavailable.

1 HP failure backup: during DHW cycles the auxiliary sources (output auxiliary contacts or heating elements) can activate only if the heat pump is unavailable.

Press the selector to confirm.

1.4.2 Delay timer
Time required for starting the calculation of the DHW integration with the auxiliary sources or with the heating elements.

1.4.3 Release integral threshold
Activation threshold for DHW integration expressed in °C x min.

1.4.4 Tank electric heater
Selection of the operating logic of the integration heating element immersed in the DHW tank. The use of this heating element precludes the use of any heating elements present in the hydraulic module in DHW mode.

Press the selector. Turn the selector to choose the desired item.

0 Absent.

1 Disabled: heating element present but disabled.

2 Alone electric heater: the heat pump is not used in DHW mode. Only the heating element heats the DHW tank.

3 Auxiliary: The heat pump and heating element both contribute to reaching the DHW set-point on the tank. If there are any cooling/heating requests, they are fulfilled in priority mode by the heat pump, except below the temperature threshold defined by parameter 1.4.6 DHW high priority temp. threshold .

Press the selector to confirm.

1.4.6 DHW high priority temp. threshold
Defines the DHW tank temperature below which both the heat pump and the heating element switch on together when Par. 1.4.4 Tank electric heater Heating element in DHW tank is set to 3 (Auxiliary).

Press the selector. Turn the selector to choose the desired item.

Press the selector to confirm.

1.5 ENERGY MANAGER PARAMETER 1
1.5.2 Text for boiler disabling
Used only for hybrid system: the system excludes the Boiler when the outdoor temperature is higher than the value set.

1.5.3 Text for HP disabling
The system excludes the heat pump in heating mode if the outdoor temperature is below the set value.

1.5.4 Hp disabling out temp DHW
The system excludes the heat pump in domestic hot water mode if the outdoor temperature is below the set value.

1.5.5 External temperature correction
Compensation of the temperature reading of the outdoor sensor.

1.5.10 Ext temp. for disabling DHW Boiler
The system excludes the boiler in domestic hot water mode if the outdoor temperature is above the set value.

1.5.11 Ext. temp. for disabling backup resistance
The system excludes the integrated heating element in domestic hot water mode if the outdoor temperature is above the set value.

1.5.12 Ext. temp. for disabling DHW backup resistance
The system excludes the electric heating element in the DHW tank and the supplementary heating element in DHW mode if the outdoor temperature is above the set value.

1.5.13 HHP thermostating control reactivity level
This parameter defines the reactivity levels of the heat pump's temperature control logic.
Press the selector. Turn the selector to choose the desired item.
1 Customizable.
2 Slow represents the slowest response, with a more gradual variation of the frequency. This setting prioritises stability, but may take more time to reach the target power.
3 Medium offers a balanced response, with moderate speed in frequency adjustments. It offers a compromise between stability and reaction time.
4 Fast represents the fastest response, with more abrupt frequency changes. This setting allows for quick power adjustments, but may involve more fluctuations and noise.
Press the selector to confirm.

1.5.14 Max overshoot
It defines the maximum over-elongation of the heat pump with respect to the target.

1.5.15 Max undershoot
It defines the maximum under-elongation of the heat pump with respect to the target.

1.5.16 Min. thermostating integral
The parameter is used only when 1.5.13 HHP thermostating control reactivity level = 1 (Customizable). It defines the minimum value of the threshold of the thermostat integral.

1.5.17 Max. thermostating integral
The parameter is used only when 1.5.13 HHP thermostating control reactivity level = 1 (Customizable). It defines the maximum value of the threshold of the thermostat integral.

1.6 WATER CIRCULATION

1.6.0 CH pump prerun time
Defines the pre-circulation time of the primary circulation pump to detect the presence of flow in the heating circuit.

1.6.1 Time for prerun new attempt
Defines the stand-by time of the circulation pump between successive pre-circulation attempts.

1.6.2 CH pump overrun
Post-circulation time.

1.6.3 Pump speed control
Press the selector. Turn the selector to choose the desired item.
Select the circulation pump speed:
0 Low speed
1 High speed
2 Modulating
Press the selector to confirm.

1.6.4 Antifreeze HP circulator control
Press the selector. Turn the selector to choose the desired item.
Select the circulation pump speed during the heat pump anti-freeze cycle:
0 Low speed
1 Med speed
2 High speed
Press the selector to confirm.

1.6.6 Max PWM Pump
Parameter that defines the maximum power of the primary circulation pump.

1.6.7 Min PWM Pump
Parameter that defines the minimum power of the primary circulation pump.

1.6.8 Delta T heating pump setpoint
Parameter that defines the target temperature delta between the flow and return temperatures of the heat pump (HHP) for the circulator pump in heating mode.

1.6.9 Delta T cooling pump setpoint
Parameter that defines the target temperature delta between the flow and return temperatures of the heat pump (HHP) for the circulator pump in cooling mode.

1.7 HEATING CYCLE

1.7.1 Boost Time

Defines the delay with which the water delivery set-point during heating is increased in AUTO mode. Intervenes only when the temperature control is active and set to "Devices ON/OFF" (see parameters 4.2.1 Thermoregulation/5.2.1 Thermoregulation/6.2.1 Thermoregulation).
Defines the delay with which the delivery set-point temperature is increased by 4°C (up to maximum 12°C). If the value is 0 the function is not active.

1.7.2 FlowT HP Offset

Defines the value in °C to be added to the delivery set-point temperature of the heat pump to offset the heat losses along the plumbing connections between the outdoor unit and the hydraulic module.

1.7.4 Heating reaction level

Parameter that defines the level of reactivity of the compressor in heating mode.
Press the selector. Turn the selector to choose the desired item.

0 Slow.
1 Medium.
2 Fast.

Press the selector to confirm.

1.7.5 Ch mode activation

Parameter that defines whether the heat pump is enabled to operate in heating mode.
Press the selector. Turn the selector to choose the desired item.

0 Provisioned - Not active.
1 Active.

Press the selector to confirm.

1.8 COOLING

1.8.0 Cooling mode activation

Parameter that defines whether the heat pump is enabled to operate in cooling mode.
Press the selector. Turn the selector to choose the desired item.

0 Provisioned - Not active.
1 Active.

Press the selector to confirm.

1.8.2 Cooling FlowT HP Offset

Defines the value in °C to be subtracted from the delivery set-point temperature of the heat pump to offset the heat losses along the plumbing connections between the outdoor unit and the hydraulic module.

1.8.3 Humidity control threshold

Defines the threshold to activate the humidity alarm if at least one zone reports a humidity over the value.
Defines the humidity percentage value beyond which the humidistat alert will be generated (see Par. 1.2.0 AUX output 1).

1.8.4 Humidity control hysteresis

Defines the hysteresis to de-activate the humidity control if some of the zones report a humidity under the value of the hysteresis.
Defines the hysteresis percentage value for resetting the humidistat control (see Par. 1.2.0 AUX output 1 - 1.8.3 Humidity control threshold).

1.8.5 Cooling reaction level

Parameter that defines the level of reactivity of the compressor in cooling mode.
Press the selector. Turn the selector to choose the desired item.

0 Slow.
1 Medium.
2 Fast.

Press the selector to confirm.

1.9 DHW CYCLE

1.9.0 DHW comfort setpoint temp.

Defines the comfort DHW set-point temperature.

1.9.1 DHW reduced setpoint temp.

Defines the reduced DHW set-point temperature.

1.9.2 Comfort Function

Press the selector. Turn the selector to choose the desired item.
Configures the domestic hot water production mode as follows:

0 Disabled.
1 Timer based (starts the comfort function for time periods that can be adjusted according to the DHW time schedule).
2 Always active.

Press the selector to confirm.

1.9.3 DHW operation mode

Press the selector. Turn the selector to choose the desired item.

0 Standard.

1 Green.

NOTE:

uses only the heat pump in the periods configured with the domestic water auxiliary time schedule.

2 HC - HP.

NOTE:

the DHW storage tank is heated only by the heat pump when the EDF input is enabled (see Par. 1.1.0 HV input 1 (input configurable to 230 V)) and switches to 230 V (electricity off-peak hours).

3 HC - HP 40.

NOTE:

function similar to HC - HP, during electricity peak hours (EDF input = 0 V) the hot water storage tank is heated to 40°C.

Press the selector to confirm.

1.9.5 Max HP charging time

Defines the filling time, carried out only with the heat pump, after which the auxiliary integration sources are switched on when there is no sensor in the tank but only the thermostat (Par. 1.0.2 Tank management = 2).

1.9.6 Thermal cleanse function

Press the selector. Turn the selector to choose the desired item.

0 OFF.

1 ON.

NOTE:

when the function is enabled, the DHW tank is heated and maintained at 60°C for one hour starting from the function start time (see Par. 1.9.7 Thermal Cleanse start time [hh:mm]), only if there is a tank sensor (Par. 1.0.2 Tank management = 1). The operation is repeated after a time period defined by Par. 1.9.8 Thermal Cleanse Cycle frequency.

Press the selector to confirm.

1.9.7 Thermal Cleanse start time [hh:mm]

Defines the start time of the DHW tank sanitisation function.

1.9.8 Thermal Cleanse Cycle frequency

Sets the period of time after which the DHW tank sanitisation function is repeated.

1.9.9 Offset DHW setpoint temperature

Increase that is added to the value of the parameter 1.9.0 DHW comfort setpoint temp. to define the HHP setpoint in DHW mode.

1.9.10 DHW reaction level

Parameter that defines the level of compressor reactivity in DHW mode.

Press the selector. Turn the selector to choose the desired item.

0 Slow.

1 Medium.

2 Fast.

Press the selector to confirm.

1.9.11 Dhw mode activation

Parameter that enables the mode for production of domestic hot water for the system.

Press the selector. Turn the selector to choose the desired item.

0 Provisioned - Not active.

1 Active.

Press the selector to confirm.

1.10 MANUAL MODE - 1

Manual activation of the system components (circulation pumps, diverter valves, heating elements, etc.).

1.10.0 Manual mode activation

Manual activation of the system components (circulation pumps, diverter valves, heating elements, etc.).

Press the selector. Turn the selector to choose the desired item.

0 OFF.

1 ON.

Press the selector to confirm.

1.10.1 HP circulator control

It manages operation of the circulation pump of the heat pump.

Press the selector. Turn the selector to choose the desired item.

0 OFF.

1 Low speed.

2 High speed.

Press the selector to confirm.

1.10.2 Diverter valve control

It manages operation of the diverter valve in DHW and heating mode.

Press the selector. Turn the selector to choose the desired item.

0 DHW cycle.

1 Heating cycle.

Press the selector to confirm.

1.10.3 Diverter valve COOLING
It manages operation of the diverter valve in cooling mode.
Press the selector. Turn the selector to choose the desired item.
0 Heating cycle.
1 Cooling.
Press the selector to confirm.

1.10.4 Auxiliary circulator 2
Check the operation of the auxiliary circulation pump.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.10.8 All output AUX contact
It manages activation or deactivation of all the auxiliary contacts (AUX) of the system.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.10.9 Anode output
Activates or deactivates the Protech anode used in the DHW tank.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.10.10 Auxiliary circulator
It controls operation of the auxiliary circulation pump 1.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.11 MANUAL MODE - 2
1.11.0 Manual mode activation
Manual activation of the system components (circulation pumps, diverter valves, heating elements, etc.).
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.11.1 Force Hp Heat
Activates the heat pump in heating mode.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.11.2 Force Hp Cool
Activates the heat pump in cooling mode.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.11.6 Tank electric heater
Activates the heating element immersed in the cylinder in DHW tank mode.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.12 TEST & UTILITIES
1.12.0 Air-purge function
Activates deaeration of the system; the operation can last up to 18 minutes.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.12.1 Antiblocking function enable
Activates the anti-lock function of the primary circulation pump.
The circulation pump is activated for 30 seconds every 23 hours of inactivity and the diverter valve is set to DWH production.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.12.3 Quiet mode start time HHP [hh:mm]
Press the selector. Turn the selector to choose the desired item.
Press the selector to confirm.

1.12.4 Quiet mode end time HHP [hh:mm]
Press the selector. Turn the selector to choose the desired item.
Press the selector to confirm.

1.12.5 Floor drying cycle

Defines the floor drying programme for under-floor systems using the following values:

Press the selector . Turn the selector to choose the desired item.

0 OFF.

1 Functional Heating (screed heating at a fixed temperature of 25°C for 3 days, then at the temperature defined by Par 1.12.6 Floor drying Flow Set Point T).

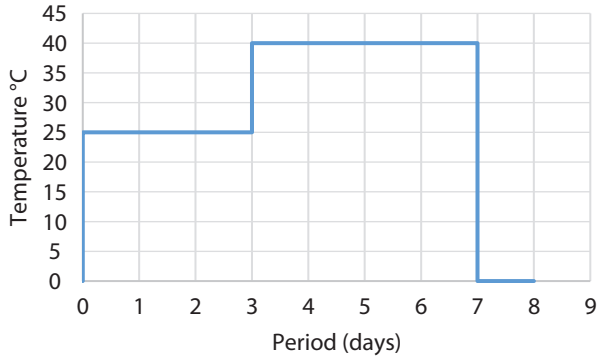


Fig. 82

2 Curing Heating (screed heating at a variable temperature from 25°C to the temperature defined by Par. 1.12.6 Floor drying Flow Set Point T, according to the period specified as an example in the chart for an 18-day period)

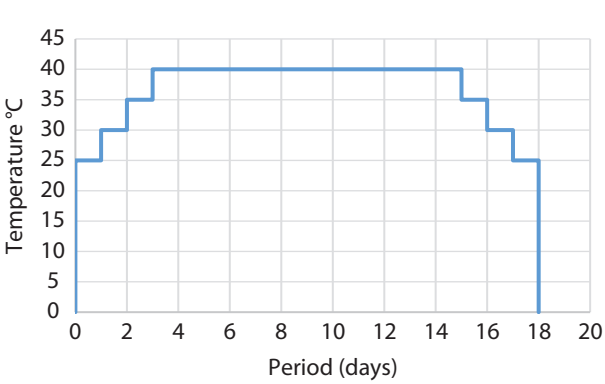


Fig. 83

3 Functional Heating + Curing Heating (screed heating at a fixed temperature of 25°C for 3 days, then for a further 4 days at the temperature defined by Par. 1.12.6 Floor drying Flow Set Point T, then at a variable temperature from 25°C to the temperature defined by Par. 1.12.6 Floor drying Flow Set Point T, according to the period specified as an example in the chart for an 18-day period)

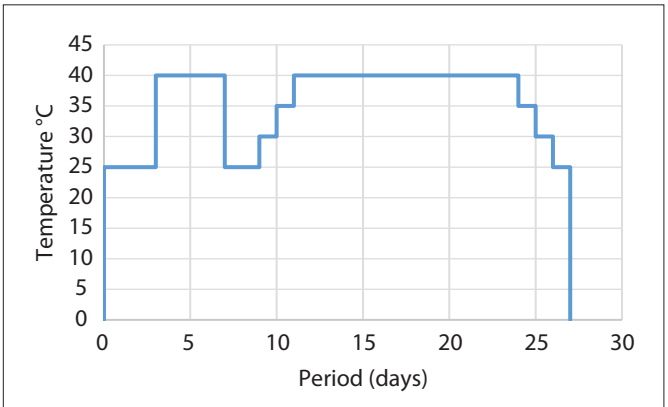


Fig. 84

4 Curing Heating + Functional Heating (screed heating at a variable temperature from 25°C to the temperature defined by Par. 1.12.6 Floor drying Flow Set Point T, according to the period specified as an example in the chart for an 18-day period, then at a fixed temperature of 25°C for a period of 3 days, then for a further 4 days at the temperature defined by Par. 1.12.6 Floor drying Flow Set Point T)

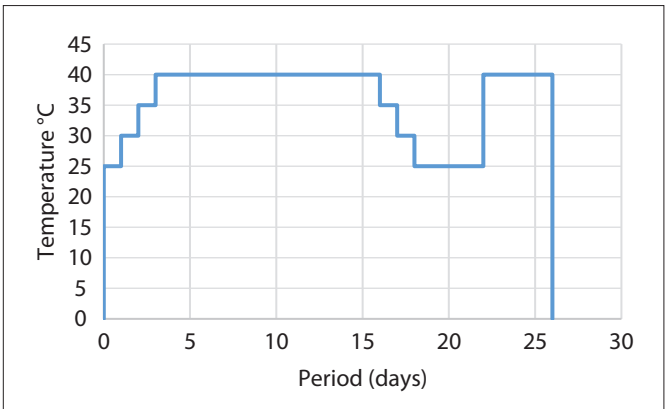


Fig. 85

5 Manual (screed heating at the temperature set in Par. 1.12.6 Floor drying Flow Set Point T)

Press the selector to confirm.

1.12.6 Floor drying Flow Set Point T
Defines the set-point temperature of the space heating flow during the floor drying function (see Par. 1.12.5 Floor drying cycle).

1.12.7 Floor drying total Remaining Days
Defines the days remaining for the floor drying function.

1.12.9 Outdoor temperature antifreeze
Enables integration of the anti-freeze kit.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.12.10 Outdoor temp. antifreeze zone activation
Parameter that allows activation of the zones in the event of an anti-freeze cycle linked to outdoor temperatures.
Press the selector. Turn the selector to choose the desired item.
0 Provisioned - Not active.
1 Active.
Press the selector to confirm.

1.12.11 Quiet mode activation HHP
Selection of the noise reduction mode, available on several levels.
Press the selector. Turn the selector to choose the desired item.
0 Not defined.
1 Silent.
2 More silent.
3 Very silent.

NOTE:
Please note that activating the Silent mode reduces the system's output capacity, which may result in diminished thermal comfort; this reduction becomes more significant as higher silent-mode levels are selected.
Press the selector to confirm.

1.14 ENERGY MANAGER STATISTICS
Shows the duration of the system operation in hours.

1.16 EM DIAGNOSTICS - 1 INPUT
Displays the values of the system's board inputs.

1.16.1 Hydraulic scheme diagnostic
Press the selector. Turn the selector to choose the desired item.
0 None.
1 Hybrid combi.
2 Hybrid system.
3 Hybrid system with thermostat.
4 Heat pump Plus.
5 Heat pump Flex.
6 Heat pump Flex with thermostat.
7 Heat pump Lightbox Plus.
8 Heat pump Lightbox Flex.
9 Heat pump Flex with thermostat.
Press the selector to confirm.

1.17 EM DIAGNOSTICS - 2 INPUT

1.18 EM DIAGNOSTICS - 1 OUTPUT
Displays the values of the system's board outputs.

1.19 SERVICE
1.19.0 SW Version main
Shows the SW version of the Energy Manager board.

1.20 SYSTEM INTEGRATION
1.20.2 Tank solar integration
Activates integration of the solar heating system. In this case, the high sensor of the solar heating tank is used as a DHW tank sensor.
Press the selector. Turn the selector to choose the desired item.
0 Absent.
1 Present.
Press the selector to confirm.

1.20.3 OpenTherm gateway activation
Activates the Opentherm gateway.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.20.4 OT heat / cool control
Heating/cooling control via OpenTherm.
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

1.20.5 OT thermostat zone number
Assignment of OpenTherm thermostat zone.

1.21 ERROR HISTORY

1.21.0 Last 10 errors

Displays the last 10 errors.

1.21.1 Reset error list

Press the selector . Turn the selector  to choose the desired item.

0 Do you really want to perform the reset ? If you press OK button, the reset command will be executed otherwise, by way of ESC, the previous page is shown..

Press the selector  to confirm.

1.22 RESET MENU

1.22.0 Reset factory settings

Restores the default settings.

Press the selector . Turn the selector  to choose the desired item.

0 Do you really want to perform the reset ? If you press OK button, the reset command will be executed otherwise, by way of ESC, the previous page is shown..

Press the selector  to confirm.

1.23 DOMESTIC HOT WATER - 2

1.23.0 Thermal Cleanse target temp

Defines the setpoint of thermal cleanse cycle.

1.23.1 Antilegionella target temperature duration

Defines the time in which the Thermal cleanse Target temp has to be mantained.

1.23.2 Max Duration Antilegionella

Defines the Max time in which the system can perform and complete the Thermal cleanse cycle.

1.24 ENERGY METER

1.24.0 Energy pulse unit

Press the selector . Turn the selector  to choose the desired item.

Define if the S0 input is used or not:

0 None: S0 signal input is not used.

1 kWh: S0 signal input is used.

Press the selector  to confirm.

1.24.1 Energy pulse value number

1.24.2 Energy pulse value factor

The multiplication of Energy pulse value factor and the Energy pulse value number gives the number of pulses representing an energy consumption of 1 kWh. These parameters must be set according to the connected pulse meter. Specifications.

Press the selector . Turn the selector  to choose the desired item.

0 /1000

1 /100

2 /10

3 1

4 x10

5 x100

6 x1000

Press the selector  to confirm.

1.24.3 Energy pulse measuring type

Defines if the S0 input signals measures the HP consumption (0) or the sum HP and heating elements consumption (1).

Press the selector . Turn the selector  to choose the desired item.

0 Only HP.

1 HP + Electric Heater.

Press the selector  to confirm.

1.24.5 Tank electric heaters nominal power

DHW tank electric heaters nominal power consumption.

1.24.7 Tank electric heaters efficiency

DHW tank electric heaters nominal efficiency.

1.25 PHOTOVOLTAIC PARAMETERS -1

1.25.0 DHW activation

Enables Photovoltaic system for DHW cycle:

Press the selector . Turn the selector  to choose the desired item.

0 Provisioned - Not active
1 Active

Press the selector  to confirm.

1.25.1 Heating activation

Enables Photovoltaic system for heating cycle:

Press the selector . Turn the selector  to choose the desired item.

0 Provisioned - Not active
1 Active

Press the selector  to confirm.

1.25.2 Cooling activation

Enables Photovoltaic system for cooling cycle:

Press the selector . Turn the selector  to choose the desired item.

0 Provisioned - Not active
1 Active

Press the selector  to confirm.

1.25.3 Buffer heating activation

Enables Photovoltaic system for buffer heating cycle:

Press the selector . Turn the selector  to choose the desired item.

0 Provisioned - Not active
1 Active

Press the selector  to confirm.

1.25.4 Buffer cooling activation

Enables Photovoltaic system for buffer cooling cycle:

Press the selector . Turn the selector  to choose the desired item.

0 Provisioned - Not active
1 Active

Press the selector  to confirm.

1.25.7 Tank electric heater

Selects the operating logic of the integrated heating element immersed in the DHW tank during photovoltaic integration. When this heating element is in use, the heating elements in the hydraulic module cannot be used in DHW mode:

Press the selector . Turn the selector  to choose the desired item.

0 Absent
1 Disabled: heating element present but disabled.
2 Alone electric heater: the heat pump is not used in DHW mode for photovoltaic production. Only the electric heating element heats the DHW tank for the photovoltaic system.
3 Auxiliary: The heat pump and the electric heating element work in tandem to reach the DHW setpoint of the tank. If there is demand for cooling/heating, the heat pump meets this in priority mode, while the tank heating element continues photovoltaic integration.
4 Integration: The heat pump and electric heating element together attain the setpoint of the domestic hot water tank.

Press the selector  to confirm.

1.25.8 Max power limitation activation

Enables power control to limit the absorption of the heat pump:

Press the selector . Turn the selector  to choose the desired item.

0 Provisioned - Not active
1 Active

Press the selector  to confirm.

1.25.9 Max power limitation consumption

The parameter is used when 1.25.8 Max power limitation activation = 1 (active). It defines the maximum absorption of the heat pump in photovoltaic mode.

1.26 PHOTOVOLTAIC PARAMETERS -2

1.26.0 PV offset DHW setpoint temperature

Press the selector. Rotate the selector to set the desired value to increase the DHW set-point during integration from the photovoltaic system.

Press the selector to confirm.

1.26.1 DHW aux heat source activation logic

Press the selector. Turn the selector to choose the desired item.

0 Heat integr. and backup: for photovoltaic DHW cycles, auxiliary sources (electric heating elements) can be activated either in integration together with the heat pump or when the heat pump is not available.

1 HP failure backup: for photovoltaic DHW cycles, auxiliary sources (electric heating elements) can only be activated when the heat pump is not available.

Press the selector to confirm.

1.26.2 DHW delay timer

Time required to start calculation of the DHW integration during the photovoltaic cycle with the electric heating elements.

1.26.3 DHW release integral threshold

DHW integration activation threshold during photovoltaic cycle in °C*min.

7.7 Temperature adjustment

Simultaneously press the "Esc" and "Menu" buttons until "Insert Code" appears on the display.
Turn the selector to enter the technical code (234) then press the selector to confirm; the display will show TECHNICAL AREA.
Turn the selector to choose the desired item.

– COMPLETE MENU

Press the selector. Turn the selector to choose the desired item.

4 ZONE 1 PARAMETERS
4.0 SETPOINT
4.0.0 T Day

4.0.1 T Night

4.0.2 T set Z1

4.0.3 Zone frost temperature

4.1 AUTOMATIC WINTER MODE
4.1.0 Automatic winter mode activation [ON, OFF]
Press the selector. Turn the selector to choose the desired item.
0 OFF.
1 ON.
Press the selector to confirm.

4.1.1 Automatic winter mode threshold
Turn the selector and set the auto summer/winter switching delay.

4.1.2 Automatic winter mode delay time
Turn the selector and set the auto summer/winter switching delay.

4.2 SETTINGS
4.2.0 Zone temperature range
Press the selector. Turn the selector to choose the desired item.
0 Low Temp.
1 High Temp.
Press the selector to confirm.

4.2.1 Thermoregulation
Press the selector. Turn the selector to choose the desired item.
0 Fix Flow T.
1 Basic Thermoreg.
2 Room T Only.
3 Outdoor T Only.
4 Room+Outdoor T.
Press the selector to confirm.

4.2.3 Offset
Press the selector. Turn the selector and set the most suitable value. Press the selector to confirm.
IMPORTANT:
If the room temperature is higher than the desired value, the curve must be shifted lower. If the room temperature is too low, the curve should be shifted upwards. If the temperature of the room corresponds with the desired value, the curve is correct.

4.2.5 Max T
Turn the selector then set the most suitable value and press the selector to confirm.

4.2.6 Min T
Turn the selector then set the most suitable value and press the selector to confirm.

4.2.7 Thermoregulation logic
Turn the selector then set the most suitable value and press the selector to confirm.
Turn the selector and select:
1 Smart: Smart temperature control (in this mode, the water flow set-point is calculated using the information provided in parameter 4.7 Zone regulation parameters)
2 Classic.

4.2.8 Quick night setback

Turn the selector then set the most suitable value and press the selector to confirm.
Turn the selector and select:

0 OFF.
1 ON.

4.2.9 Heat request mode

Turn the selector then set the most suitable value and press the selector to confirm.
Turn the selector and select:

0 Standard.
1 RT Time Programs Exclusion (In this mode, the heat requests generated by the RT remain active also during the night-time period in programmed mode).
2 Forcing Heat Demand (The activation of this function generates a constantly active heat request).

Repeat the steps described previously to set the values for zone 2 (where present), by selecting the 5 Zone 2 parameters menu.

NOTE:
For correct operation of the temperature adjustment types: 2. Room sensor only: 3. Outdoor sensor only: 4. Room sensor plus outdoor sensor, parameter 1.0.6 Thermoregulation should be set to value 1, or the AUTO function must be activated.

4.3 DIAGNOSTICS

4.4 ZONE MODULE SETTINGS

4.4.0 Zone pump modulation

Press the selector . Turn the selector to choose the desired item.

0 Fixed.
1 Modulating on DeltaT.
2 Modulating on pressure.

Press the selector to confirm.

4.4.1 Target deltaT for pump modulation

4.4.2 Pump fixed speed

4.5 COOLING

4.5.0 T Set Cool

Press the selector . Turn the selector and set the delivery set-point temperature value, if temperature control is deactivated or with fixed point.

4.5.1 Cooling Temp Range

Press the OK button. Turn the selector and select the temperature range:

0 Fan Coil.
1 Underfloor.

4.5.2 Thermoregulation

Press the selector , turn the selector and set the type of temperature control installed:

0 ON/OFF Thermostat (Fixed water flow set-point specified in Par. 4.5.0 T Set Cool).
1 Fix Flow T (Fixed water flow set-point specified in Par. 4.5.0 T Set Cool).
2 Outdoor T Only (Water flow set-point according to the outdoor temperature).

4.5.3 Slope

Press the selector . Turn the selector and set the curve on the basis of the type of cooling system.
Press the selector to confirm.

- Fan coil units (curve from 18 to 33).
- Under-floor heating system (curve from 0 to 60).

The checking process for the suitability of the curve requires a long period of time during which several adjustments may be necessary.

Fan coil units

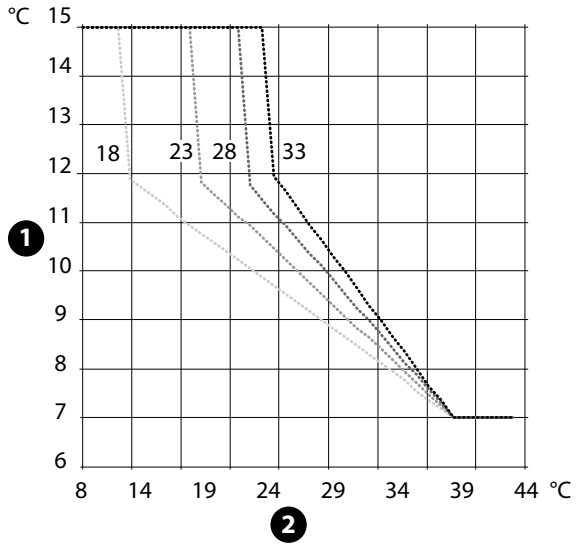


Fig. 86

1 Delivery temperature to the system flow
2 Outside air temperature

Under-floor system

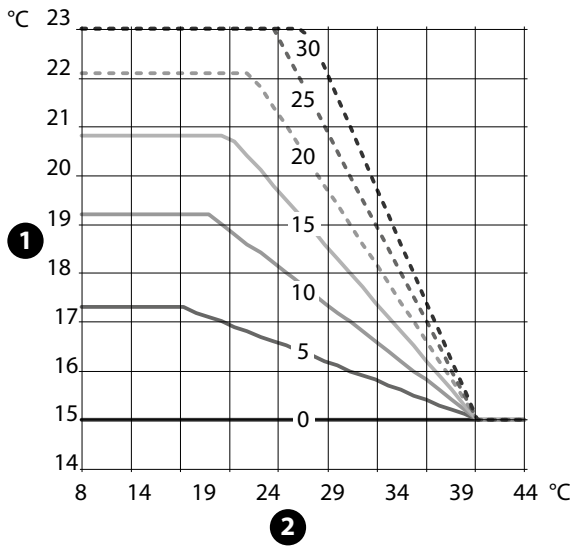


Fig. 87

1 Delivery temperature to the system flow
2 Outside air temperature

When the outdoor temperature rises (summer), three conditions may arise:

- The room temperature increases, indicating that a gentler curve must be set.
- The room temperature decreases, indicating that a steeper curve must be set.
- The temperature of the room remains constant, indicating that the set curve is exactly right.

Once you have found the curve which maintains the room temperature at a constant level, check the actual temperature value.

IMPORTANT:

If the room temperature is higher than the desired value, the curve must be shifted lower. If the room temperature is too low, the curve should be shifted upwards. If the temperature of the room corresponds with the desired value, the curve is correct.

In the above graph, the curves have been divided into two groups:

- **Fan-coil systems**
- **Under-floor systems**

4.5.4 Offset

Turn the selector then set the most suitable value and press the selector to confirm.

4.5.6 Max T

Turn the selector then set the most suitable value and press the selector to confirm.

4.5.7 Min T

Repeat the steps described previously to set the values for zone 2 (where present), by selecting the 5 Zone 2 parameters menu.

4.5.8 Target deltaT for pump modulation

4.7 ZONE REGULATION PARAMETERS

4.7.0 Heating Type

Press the selector . Turn the selector to choose the desired item.

0 Floor Heating.
1 Radiators.
2 Floor Heating (main) + Radiators.
3 Radiators (main) + Floor Heating.
4 Convection.
5 Air Heating.

Press the selector to confirm.

4.7.1 Room Influence

Press the selector . Turn the selector to choose the desired item.

0 OFF.
1 Less.
2 Medium.
3 More.

Press the selector to confirm.

4.7.2 Building Isolation Level

Press the selector . Turn the selector to choose the desired item.

0 Poor.
1 Medium.
2 Good.

Press the selector to confirm.

4.7.3 Building Size

Press the selector . Turn the selector to choose the desired item.

0 Small.
1 Medium.
2 Large.

Press the selector to confirm.

4.7.4 Climatic Zone

4.7.5 Auto Slope Adaptation

Press the selector . Turn the selector to choose the desired item.

0 OFF.
1 ON.

Press the selector to confirm.

4.7.6 Preheating function

Activates the pre-heating function.

Press the selector . Turn the selector  to choose the desired item.

0 OFF.

1 ON.

Press the selector  to confirm.

4.8 ADVANCED SETTINGS

4.8.3 Heating controller

Press the selector . Turn the selector  to choose the desired item.

0 None.

1 Room thermostat.

2 Room Sensor.

Press the selector  to confirm.

4.8.4 Cooling controller

Press the selector . Turn the selector  to choose the desired item.

0 None.

1 Room thermostat.

2 Room Sensor.

Press the selector  to confirm.

4.8.7 Humidity alarm threshold

4.8.8 Humidity alarm hysteresis

4.8.9 Humidity alarm

Press the selector . Turn the selector  to choose the desired item.

0 None.

1 Stop.

Press the selector  to confirm.

4.9 DIAGNOSTICS - 2

4.9.0 Pump modulation

Displays the percentage of the PWM signal sent to the zone pump.

4.9.1 Mixing valve opening

This parameter displays the percentage of mixing of water that is sent to the zone.

NOTE:

0% = water flowing to the zone comes entirely from the return of the same zone; 100% = water flowing to the zone comes entirely from the generator; in the intermediate positions, mixing is carried out by the valve.

4.9.2 Zone setpoint offset

Parameter for displaying the temperature offset that is added to the heat generator setpoint.

4.10 SETTINGS 2

4.10.0 Zone reaction level

This parameter is used to select the level of responsiveness of the thermoregulation curve, based on thermoregulation with indoor sensor and indoor + outdoor sensor, by acting on both the proportional coefficient and the integral coefficient of the formula.

Press the selector . Turn the selector  to choose the desired item.

0 Customizable: it is possible to manually select the proportional coefficient in parameter 4.2.4 Room Influence Proportional, and the integral coefficient in parameter 4.10.1 Integral coefficient of the thermoregulation formula.

1 Only proportional: resets the integral coefficient of the temperature control formula to zero. The proportional coefficient can be selected in parameter 4.2.4 Room Influence Proportional.

2 Slow

3 Medium

4 Fast

NOTE:

PROPORTIONAL COEFFICIENT: with the same measured and set temperature difference in the room, the temperature of the water supply instantaneously increases in line with the increase of the proportional coefficient.

INTEGRAL COEFFICIENT: with the same measured and set temperature difference in the room, in a given time interval, the water supply temperature increases in line with the increase of the integral coefficient.

Press the selector  to confirm.

4.10.1 Integral coefficient

The parameter is used when 4.10.0 Zone reaction level = 0 (Customizable). It defines the integral coefficient of the temperature control formula.

4.10.2 Multiplier 1

The parameter is used when 4.10.0 Zone reaction level = 0 (Customizable). It defines the multiplicative constant of the integral coefficient of the temperature control formula used to reach the room setpoint, when the measured temperature is at **below** the setpoint temperature.

4.10.3 Multiplier 2

The parameter is used when 4.10.0 Zone reaction level = 0 (Customizable). It defines the multiplicative constant of the integral coefficient of the temperature control formula used to limit any rise in temperature **above** the set temperature.

4.10.4 Slope

Press the selector. Turn the selector and set the curve in accordance with the type of heating system.

Press the selector to confirm.

Low temperature system (floor panels) and high temperature system (radiators) curve from 0.25 to 4.

The verification of suitability of the chosen curve can take a long time and may require some adjustments. The calculation of the setpoint temperature is also influenced by the variation of the parameter 4.10.5 Building constant time, i.e. the inertia time of the building.

As the outdoor temperature (winter) decreases, three conditions may occur:

- The temperature of the room may fall, indicating that a steeper curve should be set.
- The temperature of the room may rise, indicating that a gentler curve should be set.
- The temperature of the room remains constant, indicating that the set curve is exactly right.

Once you have found the curve which maintains the room temperature at a constant level, check the actual temperature value.

A value of the temperature control curve corresponds to each option.

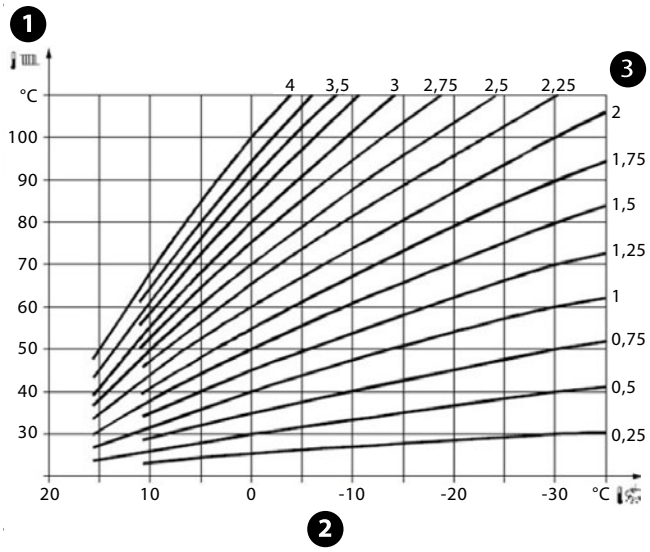


Fig. 88

1 Delivery temperature setpoint (°C)
2 Outside air temperature (°C)
3 Slope of the heating curve of zone i

Curves obtained with room setpoint temperature of 18 °C.

4.10.5 Building constant time

It measures the rate (in hours) at which the internal temperature changes in response to changes in the outdoor temperature.

20 BUFFER

20.0 CONFIGURATION

20.0.0 Buffer activation

Activates or deactivates the buffer service.

Press the selector. Turn the selector to choose the desired item.

0 OFF.
1 ON.

Press the selector to confirm.

20.0.1 Buffer charge mode

Defines buffer charging conditions:

- Partial Charge using exclusively by the buffer temperature probe (high sensor)
- Full Charge using both the buffer probe (high sensor) and the RET probe (low sensor)

Press the selector. Turn the selector to choose the desired item.

1 Partial charge.
2 Full charge.

Press the selector to confirm.

20.0.2 Buffer setpoint temperature hysteresis

Defines the temperature differential below the buffer heating setpoint that triggers the activation of a buffer charging cycle in heating mode.

20.0.3 Buffer comfort setpoint heating

Defines the buffer comfort set point in heating.

20.0.4 Buffer comfort setpoint cooling

Defines the buffer comfort set point in cooling.

20.0.7 Buffer setpoint mode

Defines how the buffer setpoint is determined:

- Fixed: Setpoint is defined by Menu 20 parameters and time programming
- Variable: Setpoint is dynamically calculated based on zone thermoregulation algorithms

Press the selector. Turn the selector to choose the desired item.

0 Fixed.
1 Variable.

Press the selector to confirm.

20.0.8 Buffer hysteresis cooling

Defines the temperature differential above the buffer cooling setpoint that triggers the activation of a buffer charging cycle in cooling mode.

20.0.9 Buffer cooling control probe
Defines which temperature probe is used as the reference for controlling buffer charging in cooling mode.
Press the selector. Turn the selector to choose the desired item.
1 Buffer high.
2 Buffer low.
Press the selector to confirm.

20.1 DIAGNOSTICS
20.1.0 Low sensor temperature
Defines the temperature value read by low sensor (RET).

20.1.2 High sensor temperature
Defines the temperature value read by high sensor (buffer probe).

20.1.4 Buffer status
Defines the current status of buffer service.
Press the selector. Turn the selector to choose the desired item.
0 Absent.
1 Disabled.
2 OFF.
3 Charged.
4 Charge request.
5 Antifreeze cycle.
6 Antifreeze cycle.
7 Buffer high probe error.
8 Buffer overtemperature.
9 Electric charge request.
10 Photovoltaic charge request.
Press the selector to confirm.

20.2 STATISTICS
20.2.2 Buffer charge hours Heating (/10)
Defines the value of hours of buffer charge in heating (x10).

20.2.3 Buffer charge hours Cooling (/10)
Defines the value of hours of buffer charge in cooling (x10).

20.3 TIME PROGRAM
20.3.0 Control mode
Defines the buffer charge time programming.
Press the selector. Turn the selector to choose the desired item.
0 Disabled.
1 Timer based.
2 Always active.
Press the selector to confirm.

20.3.1 Reduced Setpoint heating
Defines the buffer reduced set point in heating.

20.3.2 Reduced Setpoint cooling
Defines the buffer reduced set point in cooling.

20.4 SYSTEM SETTINGS
20.4.0 Buffer integration scheme
Defines which is the buffer integration scheme.
Press the selector. Turn the selector to choose the desired item.
0 Series.
1 Parallel.
Press the selector to confirm.

20.4.1 Buffer solar integration
Defines if buffer service is integrated by thermal solar system managed by Solar Manager.
Press the selector. Turn the selector to choose the desired item.
0 NO.
1 YES.
Press the selector to confirm.

20.4.2 Buffer offset compensation heating
Defines an offset applied to the calculated buffer setpoint in heating mode when operating with variable setpoint control.

20.4.3 Buffer offset compensation cooling
Defines an offset applied to the calculated buffer setpoint in cooling mode when operating with variable setpoint control.

20.4.4 Buffer electric integration offset
Defines the buffer offset to be covered by HP when PV or SG ready functions are active.

20.4.5 CH switch off offset
NOTE:
this parameter works when Par. 50.8.10 (Aux ntc 4) and 50.8.11 (Aux ntc 7) = 0 (None) (t flow not present).

20.4.6 Cooling switch off offset
NOTE:
this parameter works when Par. 50.8.10 (Aux ntc 4) and 50.8.11 (Aux ntc 7) = 0 (None) (t flow not present).

7.8 Standard SG ready

The SG ready function is activated from the technical menu Par. 1.1.0 (=3) and Par. 1.1.1 (=3).

SG Ready 1 Input	SG Ready 2 Input	Description
0 V	0 V	The system works with the normal logics, without any impact from the Smart Grid function.
230 V	0 V	The electrical loads (heat pumps and heating elements) are disabled. The external resources are enabled in heating mode but not in cooling mode.
0 V	230 V	For domestic hot water production, in time scheduling, the set-point is set to Comfort in the reduced-rate band. If the DHW charge has been completed or if there is no DHW storage indirect tank, the buffer DHW tank set-point is increased/decreased in heating/cooling mode by a value defined by parameter 20.4.4 Buffer electric integration offset. Therefore, if the buffer mode is not active, the SG function will manage the room heating cycle so as to store the available energy. In this case, all zones with time scheduling that are currently in the reduced-rate band will be regarded as Comfort zones.
230 V	230 V	For domestic hot water production, in time scheduling, the set-point is set to Comfort in the reduced-rate band. If the DHW charge has been completed or if there is no DHW storage indirect tank, the buffer DHW tank set-point is increased/decreased in heating/cooling mode by a value defined by parameter 20.4.4 Buffer electric integration offset. Therefore, if the buffer mode is not active, the SG function will manage the room heating cycle so as to store the available energy. In this case, all zones with time scheduling that are currently in the reduced-rate band will be regarded as Comfort zones.

7.9 Parameter table

Parameter			Description	Default	Range - Value
0			Network		
0.	6		System settings		
0.	6.	0	Currency	0	0 = Euro (€) ¦ 1 = Pounds (£) ¦ 2 = Switzerland Franc (CHF) ¦ 3 = US Dollar ($) ¦ 4 = Canada dollar ($) ¦ 5 = Ruble (₽) ¦ 6 = Forint (Ft) ¦ 7 = Dinar (Дин.) ¦ 8 = Renminbi (¥) ¦ 9 = Zloty (zl) ¦ 10 = Turkey lira (₺) ¦ 11 = Kuna (kn) ¦ 12 = Peso ($) ¦ 13 = Leu (lei) ¦ 14 = Hryvnia (₴)
0.	6.	1	Gas Type	0	0 = NG ¦ 1 = LPG ¦ 2 = G230 ¦ 3 = G130 ¦ 4 = Propane
0.	6.	2	Gas units	0	0 = kWh ¦ 1 = GJ ¦ 2 = MMBtu ¦ 3 = Therm ¦ 4 = smc ¦ 5 = m^3 ¦ 6 = liters ¦ 7 = gallons
0.	6.	3	Gas cost	0	
0.	6.	4	Electric units	0	0 = kWh ¦ 1 = GJ
0.	6.	5	Electricity cost	0	
0.	6.	6	Electricity cost (low tariff)	0	
1			Energy Manager		
1.	0		Basic parameters		
1.	0.	0	IDU type	3	0 = None ¦ 1 = Hybrid Mode ¦ 2 = Hydraulic module ¦ 3 = Light
1.	0.	1	ODU type	1	1 = Heat Pump
1.	0.	2	Tank management	0	0 = None ¦ 1 = Storage with NTC ¦ 2 = Storage with Thermostat
1.	0.	6	Thermoregulation	1	0 = Not active ¦ 1 = Active
1.	1		Input configuration		
1.	1.	0	HV input 1	1	0 = Not defined ¦ 1 = Absent ¦ 2 = EDF ¦ 3 = SG1 ¦ 4 = External switch off signal ¦ 5 = Photovoltaic integration
1.	1.	1	HV input 2	1	0 = Not defined ¦ 1 = Absent ¦ 2 = DLSG ¦ 3 = SG2 ¦ 4 = External switch off signal ¦ 5 = Photovoltaic integration
1.	1.	3	AUX input 1	6	0 = None ¦ 1 = Humidistat sensor ¦ 2 = Heat / Cool by external control ¦ 4 = Safety thermostat ¦ 5 = Photovoltaic integration ¦ 6 = Room thermostat HC1
1.	1.	4	AUX input 2	6	0 = None ¦ 1 = Humidistat sensor ¦ 2 = Heat / Cool by external control ¦ 4 = Safety thermostat ¦ 5 = Photovoltaic integration ¦ 6 = Room thermostat HC2
1.	1.	5	Electric heat sources blocking type	0	0 = None ¦ 1 = Soft lockout ¦ 2 = Hard lockout ¦ 3 = Hybrid lockout
1.	1.	7	CH Press Detection Device	0	0 = Not defined
1.	1.	8	System flow T selection	0	0 = HP water flow temp ¦ 1 = System flow T
1.	1.	9	Humidity input zone	0	0 = All zones ¦ 1 = Zone 1 ¦ 2 = Zone 2 ¦ 3 = Zone 3 ¦ 4 = Zone 4 ¦ 5 = Zone 5 ¦ 6 = Zone 6 ¦ 7 = Zones 1 , 2 ¦ 8 = Zones 3 , 4 ¦ 9 = Zones 5 , 6 ¦ 10 = Zones 1,2,3 ¦ 11 = Zones 4,5,6 ¦ 12 = No zone set
1.	1.	10	Aux ntc 3	0	0 = None ¦ 1 = Buffer low
1.	1.	11	Aux ntc 4	0	0 = None ¦ 1 = Buffer low
1.	1.	12	Aux ntc 7	0	0 = None ¦ 1 = Buffer low
1.	1.	13	Aux input 3	0	0 = None ¦ 1 = Humidistat sensor ¦ 2 = Heat / Cool by external control ¦ 4 = Safety thermostat ¦ 5 = Photovoltaic integration ¦ 6 = Room thermostat HC3
1.	1.	14	Aux input 4	0	0 = None ¦ 1 = Humidistat sensor ¦ 2 = Heat / Cool by external control ¦ 4 = Safety thermostat ¦ 5 = Photovoltaic integration ¦ 6 = Room thermostat HC4
1.	2		Output configuration		
1.	2.	0	AUX output 1	0	0 = None ¦ 1 = Fault alarm ¦ 2 = Humidity control ¦ 3 = External heat and DHW request ¦ 4 = Cooling request ¦ 5 = DHW request ¦ 6 = Heat / Cool mode ¦ 7 = CH request ¦ 8 = Cooling serving
1.	2.	1	AUX output 2	0	0 = None ¦ 1 = Fault alarm ¦ 2 = Humidity control ¦ 3 = External heat and DHW request ¦ 4 = Cooling request ¦ 5 = DHW request ¦ 6 = Heat / Cool mode ¦ 7 = CH request ¦ 8 = Cooling serving
1.	2.	2	AUX output 3	0	0 = None ¦ 1 = Fault alarm ¦ 2 = Humidity control ¦ 3 = External heat and DHW request ¦ 4 = Cooling request ¦ 5 = DHW request ¦ 6 = Heat / Cool mode ¦ 7 = CH request ¦ 8 = Cooling serving
1.	2.	3	AUX output 4	0	0 = None ¦ 1 = Fault alarm ¦ 2 = Humidity control ¦ 3 = External heat and DHW request ¦ 4 = Cooling request ¦ 5 = DHW request ¦ 6 = Heat / Cool mode ¦ 7 = CH request ¦ 8 = Cooling serving
1.	2.	4	AUX P1 circulator setting	6	0 = Auxiliary circulator ¦ 1 = Cooling circulator ¦ 2 = Buffer circulator ¦ 3 = DHW circulator ¦ 4 = Time programmed output ¦ 5 = De-stratification pump ¦ 6 = None
1.	2.	5	AUX P2 circulator setting	6	0 = Auxiliary circulator ¦ 1 = Cooling circulator ¦ 2 = Buffer circulator ¦ 3 = DHW circulator ¦ 4 = Time programmed output ¦ 5 = De-stratification pump ¦ 6 = None
1.	2.	6	Pro-Tech anode active	0	0 = OFF ¦ 1 = ON
1.	3		CH secondary heat source activation		
1.	3.	0	CH aux heat source activation logic	1	0 = Heat integr. and backup ¦ 1 = HP failure backup
1.	3.	2	ECO / COMFORT	2	0 = Eco Plus ¦ 1 = Eco ¦ 2 = Average ¦ 3 = Comfort ¦ 4 = Comfort Plus ¦ 5 = Customizable
1.	3.	3	Delay timer	30sec	[0 - 120]sec
1.	3.	4	Release integral threshold	100°C*min	[0 - 600]°C*min
1.	3.	5	Reset integral threshold	30°C*min	[0 - 600]°C*min
1.	4		DHW secondary heat source activation		
1.	4.	0	DHW aux heat source activation logic	0	0 = Heat integr. and backup ¦ 1 = HP failure backup
1.	4.	2	Delay timer	120min	[10 - 120]min
1.	4.	3	Release integral threshold	200°C*min	[15 - 200]°C*min
1.	4.	4	Tank electric heater	0	0 = Absent ¦ 1 = Disabled ¦ 2 = Alone electric heater ¦ 3 = Auxiliary
1.	4.	6	DHW high priority temp. threshold	20°C	[20 - 80]°C
1.	5		Energy manager parameter 1		
1.	5.	2	Text for boiler disabling	50°C	[par 1.5.3 - 55]°C
1.	5.	3	Text for HP disabling	-25°C	[-25 - par 1.5.11]°C
1.	5.	4	Hp disabling out temp DHW	-25°C	[-25 - par 1.5.12]°C
1.	5.	5	External temperature correction	0°C	[-3 - 3]°C
1.	5.	10	Ext temp. for disabling DHW Boiler	50°C	[par 1.5.4 - 55]°C

Parameter			Description	Default	Range - Value
1.	5.	11	Ext. temp. for disabling backup resistance	50°C	[par 1.5.3 - 55]°C
1.	5.	12	Ext. temp. for disabling DHW backup resistance	50°C	[par 1.5.4 - 55]°C
1.	5.	13	HHP thermostating control reactivity level	3	1 = Customizable ¦ 2 = Slow ¦ 3 = Medium ¦ 4 = Fast
1.	5.	14	Max overshoot	5°C	[3 - 20]°C
1.	5.	15	Max undershoot	5°C	[3 - 20]°C
1.	5.	16	Min. thermostating integral	500	
1.	5.	17	Max. thermostating integral	2000	
1.	6		Water circulation		
1.	6.	0	CH pump prerun time	30sec	[30 - 255]sec
1.	6.	1	Time for prerun new attempt	90sec	[0 - 100]sec
1.	6.	2	CH pump overrun	3min	[0 - 16]min
1.	6.	3	Pump speed control	2	0 = Low speed ¦ 1 = High speed ¦ 2 = Modulating
1.	6.	4	Antifreeze HP circulator control	1	0 = Low speed ¦ 1 = Med speed ¦ 2 = High speed
1.	6.	6	Max PWM Pump	100%	[par 1.6.7 - 100]%
1.	6.	7	Min PWM Pump	40%	[0 - par 1.6.6]%
1.	6.	8	Delta T heating pump setpoint	5°C	[5 - 20]°C
1.	6.	9	Delta T cooling pump setpoint	5°C	[5 - 20]°C
1.	7		Central Heating		
1.	7.	1	Boost Time	16min	[0 - 60]min
1.	7.	2	FlowT HP Offset	0°C	[0 - 10]°C
1.	7.	4	Heating reaction level	2	0 = Slow ¦ 1 = Medium ¦ 2 = Fast
1.	7.	5	Ch mode activation	1	0 = Not active ¦ 1 = Active
1.	8		Cooling		
1.	8.	0	Cooling mode activation	0	0 = Not active ¦ 1 = Active
1.	8.	2	Cooling FlowT HP Offset	0°C	[-10 - 0]°C
1.	8.	3	Humidity control threshold	70%	[40 - 100]%
1.	8.	4	Humidity control hysteresis	10%	[0 - 30]%
1.	8.	5	Cooling reaction level	2	0 = Slow ¦ 1 = Medium ¦ 2 = Fast
1.	9		Domestic hot water		
1.	9.	0	DHW comfort setpoint temp.	55°C	[35 - 65]°C
1.	9.	1	DHW reduced setpoint temp.	35°C	[35 - par 1.9.0]°C
1.	9.	2	Comfort Function	2	0 = Disabled ¦ 1 = Time Based ¦ 2 = Always active
1.	9.	3	DHW operation mode	1	0 = Standard ¦ 1 = Green ¦ 2 = HC - HP ¦ 3 = HC - HP 40
1.	9.	5	Max HP charging time	120min	[30 - 240]min
1.	9.	6	Thermal cleanse function	0	0 = OFF ¦ 1 = ON
1.	9.	7	Thermal Cleanse start time [hh:mm]	01.00 [hh:mm]	[00.00 - 23.45][hh:mm]
1.	9.	8	Thermal Cleanse Cycle frequency	30d	
1.	9.	9	Offset DHW setpoint temperature	5°C	[2 - 20]°C
1.	9.	10	DHW reaction level	2	0 = Slow ¦ 1 = Medium ¦ 2 = Fast
1.	9.	11	Dhw mode activation	1	0 = Not active ¦ 1 = Active
1.	10		Manual Mode - 1		
1.	10.	0	Manual mode activation	0	0 = OFF ¦ 1 = ON
1.	10.	1	HP circulator control	0	0 = OFF ¦ 1 = Low speed ¦ 2 = High speed
1.	10.	2	Diverter valve control	0	0 = DHW ¦ 1 = CH
1.	10.	3	Diverter valve COOLING	0	0 = CH ¦ 1 = COOLING
1.	10.	4	Auxiliary circulator 2	0	0 = OFF ¦ 1 = ON
1.	10.	8	All output AUX contact	0	0 = OFF ¦ 1 = ON
1.	10.	9	Anode output	0	0 = OFF ¦ 1 = ON
1.	10.	10	Auxiliary circulator	0	0 = OFF ¦ 1 = ON
1.	11		Manual Mode - 2		
1.	11.	0	Manual mode activation	0	0 = OFF ¦ 1 = ON
1.	11.	1	Force Hp Heat	0	0 = OFF ¦ 1 = ON
1.	11.	2	Force Hp Cool	0	0 = OFF ¦ 1 = ON
1.	11.	6	Tank electric heater	0	0 = OFF ¦ 1 = ON
1.	12		Test & Utilities		
1.	12.	0	Air-purge function	0	0 = OFF ¦ 1 = ON
1.	12.	1	Antiblocking function enable	1	0 = OFF ¦ 1 = ON
1.	12.	3	Quiet mode start time HHP [hh:mm]	22:00	[00:00 - 23:45][hh:mm]
1.	12.	4	Quiet mode end time HHP [hh:mm]	06:00	[00:00 - 23:45][hh:mm]
1.	12.	5	Floor drying cycle	0	0 = OFF ¦ 1 = Functional Heating ¦ 2 = Curing Heating ¦ 3 = Functional Heating + Curing Heating ¦ 4 = Curing Heating + Functional Heating ¦ 5 = Manual
1.	12.	6	Floor drying Flow Set Point T	40°C	[25 - 60]°C
1.	12.	7	Floor drying total Remaining Days		
1.	12.	9	Outdoor temperature antifreeze	1	0 = OFF ¦ 1 = ON
1.	12.	10	Outdoor temp. antifreeze zone activation	1	0 = Not active ¦ 1 = Active
1.	12.	11	Quiet mode activation HHP	0	0 = Not defined ¦ 1 = Silent ¦ 2 = More silent ¦ 3 = Very silent
1.	14		Energy Manager Statistics		
1.	14.	1	Heating running hours (h/10)		h/10
1.	14.	2	DHW running hours (h/10)		h/10
1.	14.	6	Cooling running hours (h/10)		h/10
1.	16		EM diagnostics - 1 input		
1.	16.	0	Energy Manager status		0 = Standby ¦ 1 = Antifreeze cycle ¦ 2 = Heating cycle ¦ 3 = Heating temperature reached ¦ 4 = DHW cycle ¦ 5 = Thermal cleanse function ¦ 6 = Air purge function ¦ 7 = Chimney function ¦ 8 = Floor drying cycle ¦ 9 = No heat generation ¦ 10 = Manual mode ¦ 11 = Error ¦ 12 = Initialization ¦ 13 = OFF ¦ 14 = Cool mode ¦ 15 = DHW antifreeze ¦ 16 = Photovoltaic integration ¦ 17 = Dehumidification ¦ 18 = Pump Down ¦ 19 = Defrost ¦ 20 = Buffer Heating+DHW Serving ¦ 21 = Buffer Cooling+DHW Serving ¦ 22 = Buffer Heating Serving ¦ 23 = Buffer Cooling Serving ¦ 24 = Automatic calibration ¦ 25 = Water circulation ¦ 26 = Special heating cycle ¦ 27 = Special cooling cycle

Parameter			Description	Default	Range - Value
1.	16.	1	Hydraulic scheme diagnostic		0 = None ¦ 1 = Hybrid combi ¦ 2 = Hybrid system ¦ 3 = Hybrid system with thermostat ¦ 4 = Heat pump Plus ¦ 5 = Heat pump Flex ¦ 6 = Heat pump Flex with thermostat ¦ 7 = Heat pump Lightbox Plus ¦ 8 = Heat pump Lightbox Flex ¦ 9 = Heat pump Flex with thermostat
1.	16.	2	CH flow set T		°C
1.	16.	3	CH flow temperature		°C
1.	16.	5	DHW storage temperature		°C
1.	17		EM diagnostics - 2 input		
1.	17.	2	AUX input 1		0 = Open ¦ 1 = Close
1.	17.	3	AUX input 2		0 = Open ¦ 1 = Close
1.	17.	4	HV input 1		0 = OFF ¦ 1 = ON
1.	17.	5	HV input 2		0 = OFF ¦ 1 = ON
1.	17.	6	Aux input 3		0 = Open ¦ 1 = Close
1.	17.	7	Aux input 4		0 = Open ¦ 1 = Close
1.	18		EM diagnostics - 1 output		
1.	18.	1	Tank electric heater		0 = OFF ¦ 1 = ON ¦ 2 = Integration ¦ 3 = Lockout
1.	18.	2	Aux P2		0 = OFF ¦ 1 = ON
1.	18.	3	Diverter Valve (CH/DHW)		0 = DHW ¦ 1 = CH
1.	18.	4	Diverter Valve 2 (CH/Cooling)		0 = CH ¦ 1 = COOLING
1.	18.	8	AUX output 1		0 = Open ¦ 1 = Close
1.	18.	9	AUX output 2		0 = Open ¦ 1 = Close
1.	18.	10	AUX output 3		0 = Open ¦ 1 = Close
1.	18.	11	AUX output 4		0 = Open ¦ 1 = Close
1.	18.	12	Aux P1		0 = OFF ¦ 1 = ON
1.	19		Service		
1.	19.	0	SW Version main		
1.	20		System integration		
1.	20.	2	Tank solar integration	0	0 = Absent ¦ 1 = Present
1.	20.	3	OpenTherm gateway activation	0	0 = OFF ¦ 1 = ON
1.	20.	4	OT heat / cool control	0	0 = OFF ¦ 1 = ON
1.	20.	5	OT thermostat zone number	1	
1.	21		Error History		
1.	21.	0	Last 10 errors		
1.	21.	1	Reset error list		0 = Do you really want to perform the reset ? If you press OK button, the reset command will be executed otherwise, by way of ESC, the previous page is shown.
1.	22		Reset Menu		
1.	22.	0	Reset factory settings		0 = Do you really want to perform the reset ? If you press OK button, the reset command will be executed otherwise, by way of ESC, the previous page is shown.
1.	23		Domestic hot water - 2		
1.	23.	0	Thermal Cleanse target temp	60°C	[60 - 70]°C
1.	23.	1	Antilegionella target temperature duration	1h	[1 - 2]h
1.	23.	2	Max Duration Antilegionella	6h	[4 - 12]h
1.	24		Energy meter		
1.	24.	0	Energy pulse unit	0	0 = None ¦ 1 = kWh
1.	24.	1	Energy pulse value number	1	
1.	24.	2	Energy pulse value factor	6	0 = /1000 ¦ 1 = /100 ¦ 2 = /10 ¦ 3 = 1 ¦ 4 = x10 ¦ 5 = x100 ¦ 6 = x1000
1.	24.	3	Energy pulse measuring type	1	0 = Only HP ¦ 1 = HP + Electric Heater
1.	24.	5	Tank electric heaters nominal power	2Kw	[1 - 3]Kw
1.	24.	7	Tank electric heaters efficiency	95%	[0 - 100]%
1.	25		Photovoltaic parameters -1		
1.	25.	0	DHW activation	1	0 = Not active ¦ 1 = Active
1.	25.	1	Heating activation	1	0 = Not active ¦ 1 = Active
1.	25.	2	Cooling activation	1	0 = Not active ¦ 1 = Active
1.	25.	3	Buffer heating activation	1	0 = Not active ¦ 1 = Active
1.	25.	4	Buffer cooling activation	1	0 = Not active ¦ 1 = Active
1.	25.	7	Tank electric heater	0	0 = Absent ¦ 1 = Disabled ¦ 2 = Alone electric heater ¦ 3 = Auxiliary ¦ 4 = Integration
1.	25.	8	Max power limitation activation	1	0 = Not active ¦ 1 = Active
1.	25.	9	Max power limitation consumption		kW (According to ODU size)
1.	26		Photovoltaic parameters -2		
1.	26.	0	PV offset DHW setpoint temperature	10°C	[0 - 20]°C
1.	26.	1	DHW aux heat source activation logic	0	0 = Heat integr. and backup ¦ 1 = HP failure backup
1.	26.	2	DHW delay timer	120Min	[10 - 120]Min
1.	26.	3	DHW release integral threshold	200°C*min	[15 - 200]°C*min
4			Zone 1 parameters		
4.	0		Setpoint		
4.	0.	0	T Day	19°C Heat - 24°C Cool	[10 - 30]°C
4.	0.	1	T Night	13°C Heat - 30°C Cool	[10 - 30]°C
4.	0.	2	T set Z1	40°C [HT] - 20°C [LT]	[20 - 60]°C
4.	0.	3	Zone frost temperature	5°C	[2 - 15]°C
4.	1		Automatic winter mode		
4.	1.	0	Automatic winter mode activation	0	0 = OFF ¦ 1 = ON
4.	1.	1	Automatic winter mode threshold	20°C	[0 - 30]°C
4.	1.	2	Automatic winter mode delay time	300min	[0 - 600]min
4.	2		Settings		
4.	2.	0	Zone temperature range	1	0 = Low Temp ¦ 1 = High Temp
4.	2.	1	Thermoregulation	0	0 = Fix Flow T ¦ 1 = Basic Thermoreg ¦ 2 = Room T Only ¦ 3 = Outdoor T Only ¦ 4 = Room+Outdoor T
4.	2.	3	Offset	0°C	[-7 - 7]°C

Parameter			Description	Default	Range - Value
4.	2.	5	Max T	60°C [HT] or 45°C [LT]	[35[HT] or 25[LT] - 75 [HT] or 45 [LT]]°C
4.	2.	6	Min T	35°C[HT] or 25°C[LT]	[20 - 75 [HT] or 45[LT]]°C
4.	2.	7	Thermoregulation logic	2	1 = Smart ¦ 2 = Classic
4.	2.	8	Quick night setback	0	0 = OFF ¦ 1 = ON
4.	2.	9	Heat request mode	0	0 = Standard ¦ 1 = RT Time Programs Exclusion ¦ 2 = Forcing Heat Demand
4.	3		Diagnostics		
4.	3.	0	Room T		°C
4.	3.	1	Room T setpoint		°C
4.	3.	2	Flow temperature		°C
4.	3.	3	Return temperature		°C
4.	3.	4	Heat Request Z1		0 = OFF ¦ 1 = ON
4.	3.	5	Pump status		0 = OFF ¦ 1 = ON
4.	3.	7	Relative humidity		%
4.	3.	8	Zone flow temperature setpoint		°C
4.	4		Zone module settings		
4.	4.	0	Zone pump modulation	1	0 = Fixed ¦ 1 = Modulating on DeltaT ¦ 2 = Modulating on pressure
4.	4.	1	Target deltaT for pump modulation	20°C [HT] or 7°C [LT]	[4 - 25]°C
4.	4.	2	Pump fixed speed	%	%
4.	5		Cooling		(always visible by setting par 1.8.0 = 1)
4.	5.	0	T Set Cool	7°C[FC] or 18°C[UFH]	[par 4.5.7 - par 4.5.6]°C
4.	5.	1	Cooling Temp Range	0	0 = Fan Coil ¦ 1 = Underfloor
4.	5.	2	Thermoregulation	0	0 = ON/OFF Thermostat ¦ 1 = Fix Flow T ¦ 2 = Outdoor T Only
4.	5.	3	Slope	25 [FC] or 20 [UFH]	
4.	5.	4	Offset	0°C	[-2,5 - 2,5]°C
4.	5.	6	Max T	12°C [FC] 23°C [UFH]	[7 [FC] or 18 [UFH] - 15 [FC] or 23°[UFH]]°C
4.	5.	7	Min T	7°C [FC] 18°C [UFH]	[7 [FC] or 15 [UFH] - 12 [FC] or 23 [UFH]]°C
4.	5.	8	Target deltaT for pump modulation		°C
4.	7		Zone regulation parameters		(visible by setting par 4.2.7 = 1)
4.	7.	0	Heating Type	0	(visible by setting par 4.2.7 = 1) 0 = Floor Heating ¦ 1 = Radiators ¦ 2 = Floor Heating (main) + Radiators ¦ 3 = Radiators (main) + Floor Heating ¦ 4 = Convection ¦ 5 = Air Heating
4.	7.	1	Room Influence	0	(visible by setting par 4.2.7 = 1) 0 = OFF ¦ 1 = Less ¦ 2 = Medium ¦ 3 = More
4.	7.	2	Building Isolation Level	0	(visible by setting par 4.2.7 = 1) 0 = Poor ¦ 1 = Average ¦ 2 = Good
4.	7.	3	Building Size	0	(visible by setting par 4.2.7 = 1) 0 = Small ¦ 1 = Average ¦ 2 = Large
4.	7.	4	Climatic Zone	0°C	[-20 - 30]°C (visible by setting par 4.2.7 = 1)
4.	7.	5	Auto Slope Adaptation	0	(visible by setting par 4.2.7 = 1) 0 = OFF ¦ 1 = ON
4.	7.	6	Preheating function		(visible by setting par 4.2.7 = 1) 0 = OFF ¦ 1 = ON
4.	8		Advanced settings		
4.	8.	3	Heating controller	2	0 = None ¦ 1 = Room thermostat ¦ 2 = Room Sensor
4.	8.	4	Cooling controller	2	0 = None ¦ 1 = Room thermostat ¦ 2 = Room Sensor
4.	8.	7	Humidity alarm threshold	70%	[40 - 100]%
4.	8.	8	Humidity alarm hysteresis	10%	[0 - 30]%
4.	8.	9	Humidity alarm	0	0 = None ¦ 1 = Stop
4.	9		Diagnostics - 2		(Visible only with Zone Module)
4.	9.	0	Pump modulation		%
4.	9.	1	Mixing valve opening		%
4.	9.	2	Zone setpoint offset		°C
4.	10		Settings 2		
4.	10.	0	Zone reaction level	3	0 = Customizable ¦ 1 = Only proportional ¦ 2 = Slow ¦ 3 = Medium ¦ 4 = Fast
4.	10.	1	Integral coefficient	50	
4.	10.	2	Multiplier 1	8	
4.	10.	3	Multiplier 2		
4.	10.	4	Slope	2	0 = 0,25 ¦ 1 = 0,5 ¦ 2 = 0,75 ¦ 3 = 1 ¦ 4 = 1,25 ¦ 5 = 1,5 ¦ 6 = 1,75 ¦ 7 = 2 ¦ 8 = 2,25 ¦ 9 = 2,5 ¦ 10 = 2,75 ¦ 11 = 3 ¦ 12 = 3,25 ¦ 13 = 3,5 ¦ 14 = 3,75 ¦ 15 = 4
4.	10.	5	Building constant time	0h	[0 - 50]h
13			Heat Pump TDM		
13.	2		Output configuration		
13.	2.	1	HP Electric Heater Config	0	0 = OFF ¦ 1 = ON
13.	4		Water circulation		
13.	6		Test & Utilities		
13.	6.	1	Defrost	0	0 = OFF ¦ 1 = ON
13.	7		Statistics		
13.	7.	0	HP running hours (h/10)		h/10
13.	7.	1	HP on cycles (n/10)		n/10
13.	7.	2	HP defrost hours (h/10)		h/10
13.	8		HP diagnostics - input 1		
13.	8.	0	Outside air temperature		°C
13.	8.	1	HP water flow temp		°C
13.	8.	2	HP water return temp		°C
13.	8.	3	HP Evaporator temp		°C
13.	8.	4	HP Suction temp		°C
13.	8.	5	HP Discharge temp		°C

Parameter			Description	Default	Range - Value
13.	8.	6	HP condenser outlet temp		°C
13.	8.	7	TEO		°C
13.	9		HP diagnostics - input 2		
13.	9.	1	Last inverter error		
13.	9.	2	Safety thermostat		0 = Open ¦ 1 = Close
13.	9.	3	Flowmeter		l/min
13.	9.	6	Evaporator pressure P		bar
13.	9.	7	Condenser pressure P		bar
13.	9.	8	HP external setpoint temp		°C
13.	9.	9	Heat pump mode		0 = Initialization ¦ 1 = Standby ¦ 2 = Cooling ¦ 3 = Heating ¦ 4 = Booster Heating ¦ 5 = Booster Cooling ¦ 6 = Rating Heating Mode ¦ 7 = Rating Cooling Mode ¦ 9 = Defrost ¦ 11 = Waiting to start () ¦ 12 = System Fail () ¦ 13 = Hard System Fail () ¦ 14 = Pump Down () ¦ 15 = Soft Fail Mode () ¦ 16 = Reserved () ¦ 17 = Defrost
13.	10		HP diagnostics - output 1		
13.	10.	1	HP actual compressor frequency		Hz
13.	10.	2	HP set compressor modulation		%
13.	10.	3	Electric Heater 1		0 = OFF ¦ 1 = ON
13.	10.	4	Main circulator status		[0 - 1]%
13.	10.	5	Measured rpm fan 1		rpm
13.	10.	6	Measured rpm fan 2		rpm
13.	10.	7	Expansion valve		
13.	10.	8	Expansion valve 2		
13.	10.	10	Inverter Capacity		kW
13.	11		HP diagnostics - output 2		
13.	11.	0	Compressor on/off		0 = OFF ¦ 1 = ON
13.	11.	1	Compressor preheating		0 = OFF ¦ 1 = ON
13.	11.	2	Current fan 1 status		0 = OFF ¦ 1 = ON
13.	11.	3	Current fan 2 status		0 = OFF ¦ 1 = ON
13.	11.	4	4way valve heat / cool		0 = Heating ¦ 1 = Cooling
13.	11.	5	Base panel heater status		0 = OFF ¦ 1 = ON
13.	12		Service		
13.	12.	0	SW Version main		
13.	13		Error History		
13.	13.	0	Last 10 errors		
13.	13.	1	Reset error list		0 = Do you really want to perform the reset ? If you press OK button, the reset command will be executed otherwise, by way of ESC, the previous page is shown.
13.	14		Reset Menu		
13.	14.	0	Reset factory settings		0 = Do you really want to perform the reset ? If you press OK button, the reset command will be executed otherwise, by way of ESC, the previous page is shown.
13.	14.	1	Service reset		0 = Do you really want to perform the reset ? If you press OK button, the reset command will be executed otherwise, by way of ESC, the previous page is shown.
13.	14.	2	Cmp timer reset		0 = Do you really want to perform the reset ? If you press OK button, the reset command will be executed otherwise, by way of ESC, the previous page is shown.
20			Buffer		
20.	0		Configuration		
20.	0.	0	Buffer activation	0	0 = OFF ¦ 1 = ON
20.	0.	1	Buffer charge mode	1	1 = Partial charge ¦ 2 = Full charge
20.	0.	2	Buffer setpoint temperature hysteresis	5°C	[0 - 20]°C
20.	0.	3	Buffer comfort setpoint heating	40°C	[20 - 75]°C
20.	0.	4	Buffer comfort setpoint cooling	18°C	[7 - 23]°C (always visible by setting par 1.8.0 = 1)
20.	0.	7	Buffer setpoint mode	0	0 = Fixed ¦ 1 = Variable
20.	0.	8	Buffer hysteresis cooling	5°C	[0 - 20]°C (visible with par. 20.0.0 = 1 and par 1.8.0 = 1)
20.	0.	9	Buffer cooling control probe	1	1 = Buffer high ¦ 2 = Buffer low
20.	1		Diagnostics		
20.	1.	0	Low sensor temperature		°C
20.	1.	2	High sensor temperature		°C
20.	1.	4	Buffer status		0 = Absent ¦ 1 = Disabled ¦ 2 = OFF ¦ 3 = Charged ¦ 4 = Charge request ¦ 5 = Anti-freeze cycle ¦ 6 = Antifrost ¦ 7 = Buffer high probe error ¦ 8 = Buffer overtemperature ¦ 9 = Electric charge request ¦ 10 = Photovoltaic charge request
20.	2		Statistics		
20.	2.	2	Buffer charge hours Heating (/10)		h
20.	2.	3	Buffer charge hours Cooling (/10)		h
20.	3		Time program		
20.	3.	0	Control mode	2	0 = Disabled ¦ 1 = Time Based ¦ 2 = Always active
20.	3.	1	Reduced Setpoint heating	35°C	[20 - par 20.0.3]°C
20.	3.	2	Reduced Setpoint cooling	23°C	[par 20.0.4 - 23]°C (always visible by setting par 1.8.0 = 1)
20.	4		System settings		
20.	4.	0	Buffer integration scheme	0	0 = Series ¦ 1 = Parallel
20.	4.	1	Buffer solar integration	0	0 = NO ¦ 1 = YES
20.	4.	2	Buffer offset compensation heating	0°C	[0 - 20]°C
20.	4.	3	Buffer offset compensation cooling	0°C	[0 - 20]°C (always visible by setting par 1.8.0 = 1)
20.	4.	4	Buffer electric integration offset	0°C	[0 - 20]°C
20.	4.	5	CH switch off offset	0°C	[0 - 10]°C
20.	4.	6	Cooling switch off offset	0°C	[0 - 10]°C (always visible by setting par 1.8.0 = 1)

8. Diagnostics

Errors are displayed on the interface of the indoor unit (see section "System interface Sensys HD 2").

8.1 Indoor unit errors

Code	Description	Resolution
114	Outside temperature not available	Temperature control activation based on the outdoor sensor Outdoor sensor not connected or damaged. Check the sensor's connection and replace it, if necessary.
730	Buffer high probe error	Buffer filling inhibited. Check the hydraulic diagram. Buffer sensor not connected or damaged. Check the sensor's connection and replace it, if necessary.
731	Buffer overtemperature	Buffer filling inhibited. Check the hydraulic diagram. Buffer sensor not connected or damaged. Check the sensor's connection and replace it, if necessary.
732	Buffer charge config. error	Buffer filling inhibited. Check the hydraulic diagram. Buffer sensor not connected or damaged. Check the sensor's connection and replace it, if necessary.
733	Buffer low probe error	Low sensor of the Buffer not present or malfunctioning. Check the correct setting of the low sensor of the Buffer, otherwise replace it.
804	Decoupling Clip-In required	The "Decoupler kit" needs to be installed to decouple the eBUS2 between the Energy Manager and the Solar Manager
902	System flow sensor damaged	Delivery sensor not connected or defective. Check the sensor's connection and replace it, if necessary.
923	Heating circuit pressure error	Check for any water leakages in the hydraulic circuit Faulty pressure switch Defective cabling of the pressure switch. Check the connection of the pressure switch and replace it, if necessary.
924	Communication error	Check the cabling between the TDM board and the Energy Manager
926	Low pressure warning	Check the water pressure in the circuit and, if necessary, check for any leaks in the hydraulic system. Check the connection and operation of the pressure sensor.
927	AUX inputs correspondence error	Verify the configuration of parameters 1.1.3 and 1.1.4
928	Energy supply stoppage configuration error	Check the configuration of parameter 1.1.5
933	Flow sensor overtemperature	Check the flow in the primary circuit. Delivery sensor not connected or defective. Check the sensor's connection and replace it, if necessary.
934	DHW tank sensor damaged	Domestic hot water tank sensor not connected or defective. Check the sensor's connection and replace it, if necessary.
935	Tank overtemperature	Check whether the 3-way valve is locked in the DHW position. Check the connection of the domestic hot water tank's sensor and replace it, if necessary.
936	Floor thermostat 1 error	Check the flow of the under-floor system. Check the connection of the thermostat on the IN-AUX2 STE terminal block of the Energy Manager and/or STT of the TDM. If the thermostat of the under-floor system is not present, apply an electrical jumper to terminal block IN-AUX2 STE of the Energy Manager and/or STT of the TDM.
937	No circulation error	Check that the main circuit has activated
938	Anode fault	Check the connection of the anode Check whether there is any water in the domestic hot water tank Check the condition of the anode Check the configuration of parameter 1.2.6
940	Hydraulic scheme not defined	Hydraulic diagram not selected through parameter 1.0.0
955	Water flow check error	Check the connection of the flow and return temperature sensors
970	Aux. pump configuration mismatch	The error appears when there is an inconsistency between the buffer service settings and the circulation pump settings. Check both parameters 1.2.4 and 1.2.5.
2P2	Thermal cleanse not complete	Sanitisation temperature not reached in 6 h: Check the drawing of domestic hot water during the thermal sanitisation cycle Check the activation of the heating element
2P3	DHW setpoint not reached in boost	Domestic hot water set-point temperature not reached during the boost cycle Check the drawing of domestic hot water during the DHW boost cycle Check the activation of the heating element
2P4	Electr. heater thermos. (manual)	Check the activation of the main circulation pump Check the flow with the reading of the flowmeter through parameter 13.9.3 Check the condition of the safety thermostat and of the cabling
2P5	Electr. heater thermostat (auto)	Check the activation of the main circulation pump Check the flow with the reading of the flowmeter through parameter 13.9.3 Check the condition of the safety thermostat and of the cabling
2P7	Precirculation error	Check the connection of the flowmeter Run an automatic air-purge function 1.12.0
2P9	SG ready input config. err.	Only one of the parameters 1.1.0 or 1.1.1 is set as an SG Ready input
2P10	Dhw safety thermostat	The safety thermostat of the DHW tank has opened, to prevent operation of the electric heater until the circuit is closed.
2P11	Energy manager configuration mismatch	Inconsistent configuration of the parameters (1.0.2, 1.4.4, 1.9.3). The standalone tank heating element cannot be used with DHW Operation mode = green.
9E26	Low water cut off fault	It detects and reports a hardware fault of the DHW backup interface.
9E27	Dhw heater stuck relay	The system detects that the status of the relay is not consistent with demand of the system.
9E45	Photovoltaic configuration mismatch	Inconsistent settings of the parameters 1.4.4 and 1.25.7. Parameter 1.4.4 set as 2 (Alone electric heater), while parameter 1.25.7 set as 3 (Auxiliary) or 4 (Integration). If this is the desired setting, press "OK" to resolve the error

Code	Description	Resolution
9E46	Photovoltaic power limitation mismatch	Parameter 1.25.7 set to 2 (Alone electric heater) and parameter 1.25.9 set to a value smaller than the size of the electric heating element in the DHW tank (parameter 1.24.5). Set parameter 1.25.9 to a value consistent with the size of the heating element.
9E47	Incompatibility of multifunctional sensors	The error occurs when at least two of the parameters 1.1.10, 1.1.11 or 1.1.12 are set to the same value. Make sure that each multifunctional input is assigned to a single function.
9E48	Room thermostat high voltage error	This error occurs when mains voltage is detected at the input of aux inputs configured as thermostats (par. 1.1.3, 1.1.4, 1.1.13, 1.1.14 = 6 - Room thermostat).

8.2 Outdoor unit errors

Fault	Description	NO RESET	RESET		
		Volatile	User reset	HP Power OFF	Service reset
905	Compressor control error	-	-	X	-
906	HP fan mismatch error	-	-	X	-
907	HP 4-way valve mismatch error	-	-	X	-
908	Expansion valve mismatch error	-	-	X	-
909	HP zero fan speed	-	-	X	-
910	HP communication error	X	-	-	-
912	4-way valve error	-	-	-	X
913	LWT sensor error	X	-	-	-
914	Refrigerant temp. sensor error	X	-	-	-
917	LWT or TR low temp. error				X
922	Freeze error		X		
931	Inverter error	X			-
947	4-way valve error		X		-
950	TD overtemperature				X
951	TD overtemperature error		X		-
956	HP compressor model mismatch			X	
957	HP fan model mismatch			X	
960	HP EWT sensor error	X			-
962	Defrost energy	X			-
968	ATGBUS TDM-EM communication error	X			-
994	Machine empty error		X		
997	Compressor overcurrent			X	
998	Compressor overcurrent				X
9E18	Floor thermostat 1 error	X			
9E21	Low refrigerant charge		X		
9E22	Low refrigerant charge				X
9E31	Klixon protection		X		
9E32	Klixon protection				X
9E34	Low pressure switch protection		X		
9E35	Low pressure switch protection				X
9E36	Compressor phase current unbalanced		X		
9E37	Compressor phase current unbalanced				X
9E38	Compressor current change too fast		X		
9E39	Compressor current change too fast				X
989	Low refrigerant flow				X
9E27	High-pressure pressure switch	X			
948	TD sensor error	X			
911	TE sensor error	X			
916	TEO sensor error	X			
949	TS sensor error	X			
9E65	Outdoor temp. sensor error	X			
9E63	HP zero fan speed			X	
9E81	Inverter input AC overvoltage		X		
9E80	DC bus overvoltage		X		
9E74	Compressor loss of phase		X		
9E42	Pin not short circuited		X		
9E43	Pin not short circuited				X
953	Compressor heater mismatch error	X			
954	Base panel heater mismatch error	X			

8.3 Inverter error

Description	Code (for inverter errors falling within error code 931)	NIMBUS 5 EXT R290	
		30 M / 50 M / 80 M & M-T	120 M & M-T / 150 M & M-T
Inverter output current sensor error	1	x	x
DC bus capacitors pre-charge error	2	x	
Inverter input voltage sensor error	3	x	
Inverter heat sink temperature sensor error	4	x	x
DSP&MCU communication error	5	x	
Inverter input AC overcurrent	6	x	x
Inverter PFC current sensor error	7		x
Inverter PFC temperature sensor error	8		x
Corrupt EPROM	9		x
PFC HW overcurrent	10		x
PFC SW overcurrent	11		x
Inverter PFC overvoltage	12		x
A/D error	13		x
Addressing error	14		x
Compressor inverse rotation	15		x
No current variation on compressor phase	16		x
Misalignment between real and calculated speed	17	x	x
Vaux inverter error	18		
Vstep Inverter/Control Board error	19		
Inrush circuit error	20		
PFC inverter error	21		
DC bus overcurrent	22		
Inverter module error	23		
Compressor loss of synchronism	24		
PCB overheating	25		
HW interruption	26		
Absence of configuration	27	x	x
SW error	28		

9. Service

Maintenance is the set of operations required to keep the heat pump and entire system in safe and good working order.
It must be carried out in accordance with applicable regulations.

The manufacturer's maintenance and assistance guidelines must be observed at all times. In case of doubts, contact the Technical Assistance Centre.

Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

Once maintenance operations have been completed, mount all previously removed components back on again and secure them adequately.

9.1 Routine maintenance

It is necessary to verify the refrigerant gas pressure during annual maintenance operations.
Before beginning maintenance work:

- Disconnect the power supply to the system.
- If they are present, close the water taps of the space heating and domestic hot water circuits.

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks:

- check that the capacitors are empty; this must be done safely to prevent possible sparks; wait at least 10 minutes for the capacitor to discharge before performing further interventions;
- check that no live component and electrical wiring are exposed during charging, recovery or purging of the system;
- check that the earthing connection is uninterrupted.

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.

If any work must be carried out on hot cooling equipment or on any other associated part, adequate fire-safety equipment must be on hand. Keep a dry powder or CO_2 fire extinguisher close to the charging area.

The ventilation system must safely disperse the released refrigerant and preferably expel it out of the building.

Check that the ventilation openings are present and not obstructed.

A degree of ventilation shall continue during the period that the work is carried out.

The repair and maintenance of electrical components should include initial safety checks and component inspection procedures.

Soldered electrical components do not need to be protected.

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.

If there is a fault that could compromise safety, do not connect the power supply to the circuit until it has been satisfactorily resolved. If the fault cannot be corrected immediately but it is necessary to continue operating the appliance, an appropriate temporary solution should be adopted. This must be reported to the owner of the equipment owner so that all relevant parties can be notified.



During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.



The area should be checked with a dedicated refrigerant leak detector before and after work to ensure that every technician is aware of potentially toxic or flammable atmospheres. Make sure that the leak detector you use is suitable for use with the refrigerant in the unit, e.g. it is non-sparking, properly sealed or intrinsically safe.



Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.



Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.



Keep all ignition sources away from the product, in particular, open flames, hot surfaces (at a temperature above 370°C), electrical appliances not free of ignition sources, and static discharges.



Replacement parts shall be in accordance with the manufacturer's specifications.



The check must also take into account the effects of ageing or the continuous vibrations generated by sources such as compressors or fans.



Appropriately calibrated electronic leak detectors can be used to detect refrigerant leaks. Make sure that the detector is not a potential source of ignition and that it is suitable for the refrigerant used.



Fluids for detecting leaks are also suitable for use with most refrigerants, however detergents containing chlorine must be avoided, as chlorine may react with the refrigerant and corrode the copper pipes.



If you suspect a leak, remove / extinguish all sources of ignition.



Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.



Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.



Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.



Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.



However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration.

9.1.1 Annual maintenance

Check the following elements at least once a year:

- **Visual inspection of the general state of the system.**
- **Carry out a general inspection of the system operation.**
- **Outdoor unit heat exchanger.**
  The heat exchanger of the outdoor unit may be obstructed by dust, dirt, leaves, etc.
  A heat exchanger lock-out can lower or raise the pressure levels excessively; if the unit works in these conditions, the performances will deteriorate with respect to the declared values. Remove the obstructions, if present.
- **Integrated Water Filter (if present)**
  Clean the integrated water filter to remove any residue. Follow this procedure:
- Loosen the nut **(1)** located between the circulation pump **(2)** and the anti-freeze kit **(3)**;

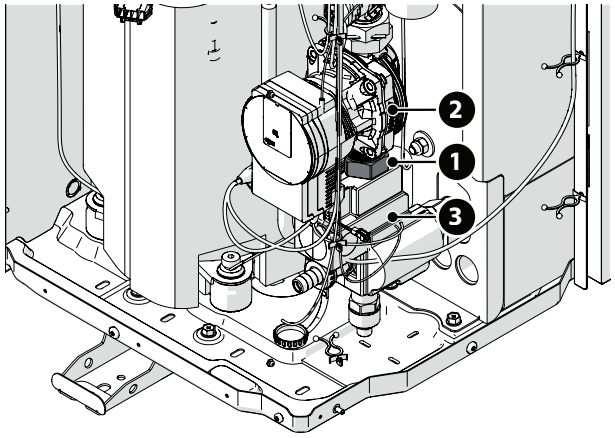


Fig. 89

- Remove the filter **(4)** and the gasket **(5)** and rinse these carefully with clean water;
- Put all the parts back in place, following the above procedure in reverse order;
- Tighten the fixing nut.

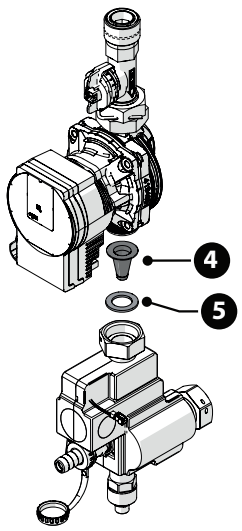


Fig. 90

- **Outdoor Water Filter**
  Clean the water filter to remove any residue. Follow this procedure:
- Close the shut-off valves **(1)** to isolate the filter.
- Loosen the cap of the filter **(2)**.
- Remove the metal mesh and magnet and clean them with water.
- Put everything back in place following the above procedure in reverse order.

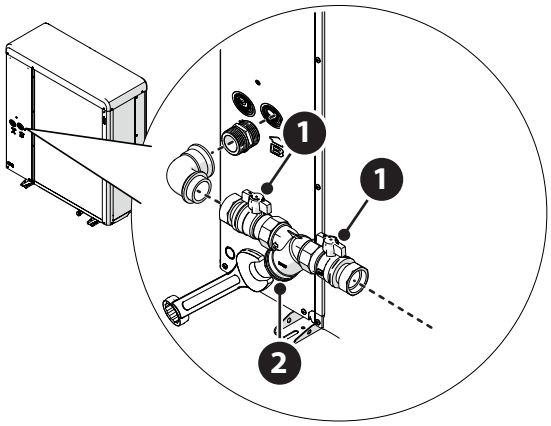


Fig. 91

- **Front grille of the outdoor unit.**
  The front grille of the outdoor unit can get clogged. Remove the obstructions, if present.
- **Plumbing connections.**
  Visually inspect the entire insulation of the pipe and plumbing connections to identify any leakages. Replace the seals if necessary.
- **Water pressure.**
  Check the water pressure on the gauge and verify, when the system is cold, that the pressure is between 0.05 MPa (0.5 bar) and 0.15 MPa (1.5 bar).
- **Drain holes of the outdoor unit**.
  Check the holes in the base under the anti-freeze are free to drain. Also check that the drain hole of the drain socket is not obstructed.
- **Expansion vessel.**
  Check the pre-charge pressure of the expansion vessel and replenish it if it is too low or replace it if damaged.

– **Abnormal noises/vibrations of the outdoor unit.**
Check the noise level of the outdoor unit: if it appears to be abnormal (for example, due to contacts or rubbing between metal parts), check the tightness of the screws and of the vibration dampers and the spacing between pipes (especially those with reduced diameter, such as the capillary pipes in the evaporator).
– **Automatic deaeration function.**
Upon the initial start-up, an automatic air-purge function of the system will start. During the maintenance phase it is possible to set the 1.12.0 Air-purge function to start an automatic air-purge function.
The air purge cycle should be repeated whenever the deaeration does not appear to have been sufficient.

9.1.2 Annual maintenance of the electrical connections

Check the following elements at least once a year:

– **Electrical panels**
Open the electrical panels of the outdoor and indoor units and perform a visual inspection to verify that there are no evident defects, particularly with regard to the terminal blocks. Check the tightness of the connection wire by wire so as to avoid potential loosening of any connection. In no case must there be any wires that are not connected to a terminal block.
– **Cabling**
Check that all cable connectors are appropriately connected to their respective boards and that no elements are disconnected.
– **Supply voltage check.**
– **Electrical absorption check.**

9.1.3 Annual maintenance of the DHW storage tank (If included in the system)

Check the following elements at least once a year:

– **Limescale removal.**
When using the device with very hard water, it is advisable to use an adequate scale remover.
– **Safety valve (if installed).**
The safety valve is used to protect the storage tank and the heat exchanger for domestic hot water production against overpressure. Consequently, its operation must be checked frequently and it must be inspected to ensure that it is not obstructed by limescale deposits of other residues. When expansion vessels are used, the safety valve is normally not subject to stress. However, over an extended period of time, it may stop working. Replace it if it is damaged.
It is normal that water drip from the overpressure safety device when the appliance is heating. For this reason one must install a drain, open to the air, with a continuously downwards sloping pipe, in an area not subject to subzero temperatures.
– **Active anode (if installed).**
Permanent protection is ensured by the PRO-TECH anode connected electrically. Replace it if it is damaged.
– **Passive anode (if installed).**
Dismantle the magnesium anode and check its condition. Replace it if it is very eroded.
– **Hydraulic safety assembly (if installed).**
For countries that have implemented the EN 1487 European standard, domestic storage water heaters and similar appliances must be connected to the mains water using an appropriate hydraulic safety assembly. The hydraulic safety assembly supplied with the appliance (if present) does not conform to this standard; it is therefore necessary to install an additional device supplied as an accessory. If installed, periodically check that the drainage pipe is adequately positioned for draining water (refer to the installation instructions) and remove any obstructions.
– **Risk of freezing.**
If there is a risk of frost, the domestic hot water tank must be heated or emptied completely.
– **Cleaning of external parts.**
The external parts must be cleaned with a damp cloth. Avoid using solvents or detergents.



Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.

9.1.4 Cleaning and inspecting the outdoor unit

It is necessary to carry out the following at least once a year:

- Inspection of the refrigerant gas circuit.
- Cleaning of the front grille.

Only use a soft and dry cloth to clean the unit.
If the unit is very dirty, it is possible to use a cloth dampened with lukewarm water.
If the evaporator **(1)** of the outdoor unit is clogged up, remove all leaves and debris, then clean off all dust from inside to outside with compressed air jet or some water. Repeat the same procedure with the front grille **(2)**.

Take care not to wet the electrical parts and other parts that should not come in contact with water.

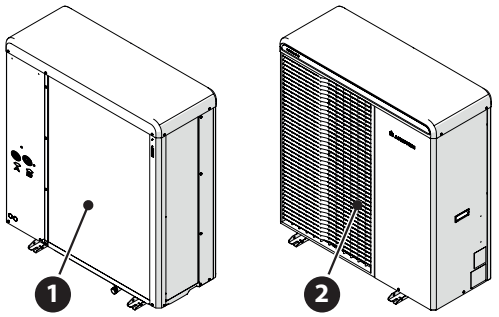


Fig. 92

9.1.5 Cleaning and inspecting the indoor unit

Do NOT replace burnt fuses with fuses of different amperage, as this may damage the circuit or trigger a fire.

Only use a soft and dry cloth to clean the unit.

9.2 Non-scheduled maintenance

9.2.1 Procedure for creating a vacuum and charging

If a component of the refrigerant circuit breaks, replace it as follows:

- Fully disconnect the system to be maintained from the power supply.
- Remove the screws from the panels to access the refrigerant circuit.
- Recover all the refrigerant in the system through the low pressure outlet using an ATEX recuperator and storage cylinders following the instructions of the recuperator.

The refrigerant recovery cylinders must be placed in high vacuum at first use, after which they can be used for storing the refrigerant.

The refrigerant recovery cylinders must not contain other refrigerants (do not mix different types of refrigerant in the recovery cylinders).

Remove the press pins from the service valves to evacuate any residual refrigerant mixed in with the compressor oil.
Connect the nitrogen cylinder to the low pressure connector (1) and let nitrogen flow at 20 barg for 0.5 seconds.
Further reduce the pressure until a very small amount of nitrogen is released from the service valves, then detach the old component and solder on the new one.

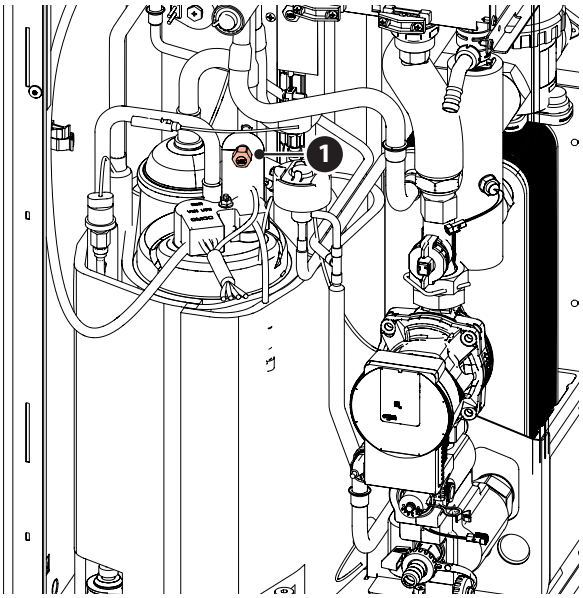


Fig. 93

Soldering of the new component should be carried out by a properly trained worker and as soon as possible to limit the ingress of moisture into the refrigerant circuit.

- Stop the flow of nitrogen and put all the press pins of the Schrader valves back in place.
- Start the flow of nitrogen at a pressure of 35 barg and, using the gauge, check the seal of the soldering.
- Evacuate the nitrogen and put the refrigerant circuit under vacuum.
- Connect the vacuum pump to the low pressure connector of the refrigerant circuit.
- Create a vacuum up to at least 0.50 mbar and continue for another 20 minutes.
- Stop the vacuum and check that the pressure does not exceed 1.2 mbar and stabilises after a while. The constant increase of pressure over time, instead, indicates that there is a leak in the circuit that must be found and eliminated. If there is a leak in the circuit, the vacuum procedure will need to be repeated.
- Weigh and connect the refrigerant cylinder and restore the design charge.
- Disconnect the pipes and cylinder from the refrigerant circuit.
- Put the caps back on the valves of the pressure connectors.
- Put the panels back on the machine with the screws.

If components of the refrigerant circuit need to be replaced when the ambient temperature is below 10°C or there is high humidity, disconnect the vacuum pump at the low pressure connector of the refrigerant circuit and follow this procedure:

- Create a vacuum up to 1.33 mbar and continue for another 5 minutes.
- Stop the vacuum pump and introduce nitrogen at a pressure of 1 barg and create a vacuum up to 0.67 mbar and continue for another 10 minutes.
- Stop the vacuum pump and introduce nitrogen at a pressure of 1 barg and create a vacuum up to at least 0.50 mbar and continue for another 10 minutes.
- Stop the vacuum and check that the pressure does not increase within the next 10 minutes (if it does, there is a leak; in which case, eliminate the leak and repeat the previous step).
- Weigh and connect the refrigerant cylinder and restore the design charge.
- Disconnect the pipes and cylinder from the refrigerant circuit.
- Put the caps back on the valves of the pressure connectors.
- Put the panels back on the machine with the screws.

If there is accidental leaking of the refrigerant due to a break, locate the leak in the refrigerant circuit using a R290 leak detector with a sensitivity of 2 g/year.

Make sure the vacuum pump outlet is not close to potential ignition sources and that ventilation is available.

Ensure that contamination of different refrigerants does not occur when using the charging equipment. The pipes or lines should be as short as possible to minimise the amount of refrigerant they contain.

Cylinders shall be kept in an appropriate position according to the instructions.

Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.

Extreme care shall be taken not to overfill the refrigerating system.

The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

As a good practice, it is recommended that all refrigerants be recovered in the correct recovery cylinders. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

Disconnect the product from the power supply, but make sure that the product's grounding is maintained.

Make sure that no air enters the refrigerant circuit, tools or appliances used to transport the refrigerant, or the refrigerant cylinder.

Damage due to freezing may occur during removal of the refrigerant. If there is no separation of the system, remove the heating water from the condenser (heat exchanger), before removing the refrigerant.

If it is suspected that the refrigerant has got into the heating circuit, all electrical ignition sources in the rooms where the hydraulic system relief valves are located must be deactivated. Avoid any other ignition sources (open flames, electrostatic discharges, etc.). Ensure that there is adequate ventilation in all rooms where gas may be emitted.

In order to remove the refrigerant from the heating system, replace all the heating water and drain the system properly. Please note that flammable refrigerant may be released during venting of the heating system.

10. Decommissioning

Working on the refrigerant circuit R290 is strictly prohibited for anyone who does not meet the following requirement: expertise in accordance with the F-Gas (UE) 2024/573 Regulation and the Enforcement Regulation (UE) 2024/2215, which includes training on the refrigerants A2L and A3. Proof of the required qualifications must be provided to ensure compliance with the safety and regulatory requirements. In addition, local or national regulations may impose additional requirements beyond the F-Gas Regulation, which must be complied with.

Prior to performing this procedure, it is imperative for the technician to fully understand the equipment and all its details.
If the appliance bears any signs of structural damage, remove the refrigerant charge before taking it out of service.
It is advisable to safely recover all the refrigerant.
Prior to performing the activity, a specimen of the oil and refrigerant must be drawn if these substances must be analysed before the recovered refrigerant is used again. Also check that there is sufficient ventilation in the room where the appliance is located.
Be aware that any malfunction of the appliance may be caused by a refrigerant leak possibly still in progress.
Electricity must be available before the activity starts.
Familiarise with the equipment and its operation.
Isolate the system electrically.

Before proceeding, make sure that:

- The mechanical equipment for handling refrigerant cylinders is available.
- All personal protective equipment is available and is used correctly.
- The recovery process is always supervised by a competent person.
- The recovery equipment and the cylinders comply with the relevant standards.

Pay particular attention to the following:

- Discharge the capacitors so as not to cause sparks.
- If possible, de-energise the refrigerating system.
- If possible, create a vacuum in the refrigerant system.
- If a vacuum cannot be created, make a manifold so that the refrigerant can be removed from the various parts of the system.
- Place the cylinder on the scale before carrying out recovery.
- Start the recovery system and operate as directed by the manufacturer.
- Do not overfill the cylinders (no more than 80% in volume of liquid charge).
- Do not exceed the cylinder's maximum operating pressure, even briefly.
- At the end of the process, ensure that the cylinders and equipment used are removed from the site in a timely manner and that all equipment isolation valves are closed.

The refrigerant recovered must not be poured into another refrigerating system unless the latter has been cleaned and checked.

When using flammable refrigerants such as propane, evacuate the refrigerant in the circuit, flush the refrigerant out of the circuit with nitrogen for 5 minutes, evacuate it again and fill with nitrogen up to atmospheric pressure. Place a label on the equipment to indicate that the refrigerant has been removed.

10.1 Draining the circuit and recovering the refrigerant

Use the PPE and keep a fire extinguisher to hand.
Make sure that no air enters the refrigerant circuit, tools or appliances used to transport the refrigerant, or the refrigerant cylinder.
Damage due to freezing may occur during removal. If there is no separation of the system, remove the heating water from the condenser (heat exchanger), before removing the refrigerant.
When removing refrigerant from a system, whether for maintenance or dismantling, it is recommended to remove all the refrigerant in a safe manner.

To correctly recover the refrigerant from the system, the following standard indications must be observed:

- When the refrigerant is transferred to the cylinders, make sure that only appropriate refrigerant recovery cylinders are used, and label them for that refrigerant. Make sure that the correct number of cylinders is available for maintaining the system's total charge. The cylinders must be complete with the pressure limiting valve and the relative shut-off valves in efficient working order. The vacuum recovery cylinders must be drained and, if possible, cooled before the recovery operations begin.
- The recovery equipment must be in good working order and accompanied by the relevant operating instructions. Moreover, a set of calibrated scales must be available and in good working order. The flexible hoses must be complete with the disconnection joints without leakages and in good working order. Before using the recovery machine, check that it is in efficient working order, that it has been adequately serviced and that all the associated electrical components are sealed to prevent ignition in case of refrigerant leakages. Contact the manufacturer in case of doubts. Check the tightness of the equipment with a suitable gas leak detector.
- The refrigerant recovered must be returned to the refrigerant supplier in the correct recovery cylinder and the relevant waste transfer note must be drawn up. Do not mix the refrigerants in the recovery units and, above all, in the cylinders.
- If the compressors or the compressor oils must be removed, make sure that they have been drained to an acceptable level so that no flammable refrigerant remains inside the lubricant. The drainage process must be carried out before returning the compressor to the suppliers. Only the electrical heating of the compressor body must be used to speed up this process. Whenever oil is drained from a system, the procedure must be carried out in safe conditions.

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.

The label shall be dated and signed.

For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

10.2 Disposal

The manufacturer is registered with the national EEE Register, in conformity to the implementation of Directive 2012/19/EU, and of the relative national regulations in force concerning waste electrical and electronic equipment.
This directive recommends the correct disposal of waste electrical and electronic equipment.
Equipment bearing the crossed-out wheelie bin symbol must be disposed of at the end of its life and sorted to avoid detrimental effects on human health and on the environment.

Electrical and electronic equipment must be disposed of together with all its constituent parts.
To dispose of "domestic" electrical and electronic equipment, the manufacturer recommends contacting an authorised dealer or an authorised ecological facility.
The disposal of "professional" electrical and electronic equipment must be made by authorised personnel through the specially instituted local consortiums.
To this aim, we include below the definition of domestic WEEE and professional WEEE.

WEEE deriving from households: WEEE deriving from households and WEEE deriving from commercial, industrial, institutional and other sources, similar by nature and quantity, to that deriving from households. WEEE that could be used both by households and by other types of users are nonetheless regarded as WEEE coming from households;

Professional WEEE: all WEEE other than that coming from households as mentioned above.
This equipment may contain:

- Refrigerant gas that must be fully recovered by specialised personnel and accompanied by the necessary authorisations in special containers;
- Lubricant oil contained in compressors and in the refrigeration circuit that must be collected;
- Mixtures with anti-freeze liquids contained in the water supply distribution network, the contents of which must be appropriately collected;
- Mechanical and electrical parts that must be sorted and disposed of in an authorised manner.

When machine components are removed for being replaced for maintenance purposes or when the entire unit reaches the end of its life and must be removed from the installation, we recommend sorting the waste according to type and ensuring that it is disposed of by authorised personnel at the existing waste collection facilities.

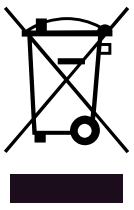


Fig. 94

11. Technical information

11.1 Data plate

Indoor unit

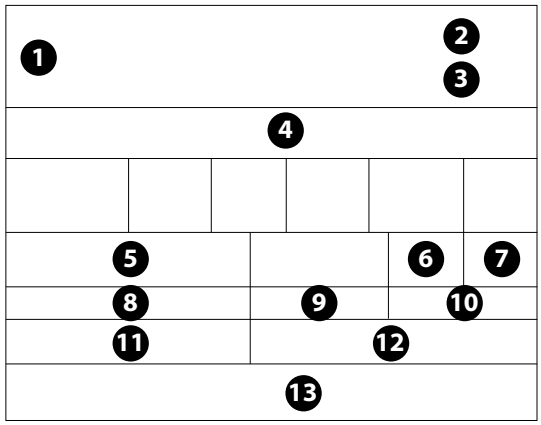


Fig. 95

1 Brand
2 Contact address
3 Place of manufacture
4 Model - Serial no.
5 Auxiliary power supply electrical data
6 Maximum heating circuit pressure
7 Domestic hot water distribution network maximum pressure (if present)
8 Electrical data
9 Domestic hot water tank indirect cylinder capacity (if integrated)
10 Electric max power
11 IP protection rating
12 Electrical data of optional kits
13 Certification

Outdoor unit

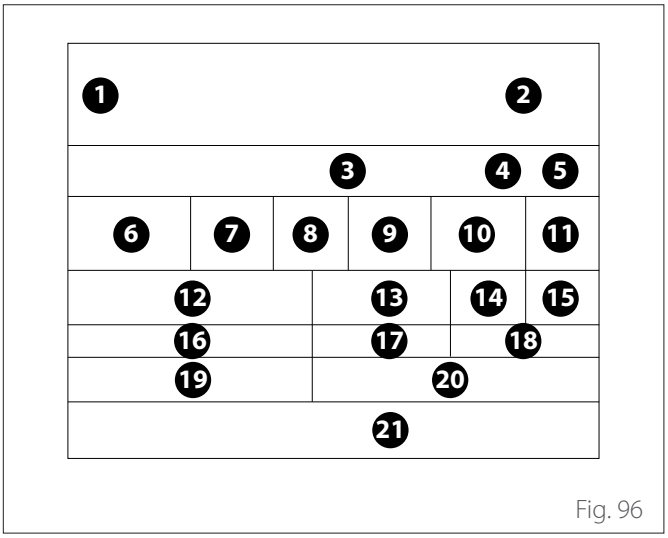


Fig. 96

1 Brand
2 Contact address
3 Model - Serial no.
4 IP protection rating
5 Place of manufacture
6 Heating data
7 Heating performance
8 Nominal heating data
9 Nominal heating performance
10 Cooling data
11 Cooling performance
12 Refrigeration circuit oil type
13 Refrigerant type - refrigerant filling
14 GWP. Global Warming Potential index
15 CO_2 equivalent
16 Electrical data
17 Degree of electrical protection
18 Electric max power
19 Maximum refrigeration circuit pressure
20 Minimum refrigeration circuit pressure
21 Certification

11.2 Technical data table for refrigerant

	NIMBUS 5 EXT R290			
	30 M	**50 M**	**80 M & M-T**	**120 M & M-T / 150 M & M-T**
Type of refrigerant	R290	R290	R290	R290
Refrigerant charge [g]	380	660	890	1410
GWP	0.02	0.02	0.02	0.02
CO2 Equivalent [t]	0.000008	0.000013	0.000018	0.000028
Compressor Oil - Type	PAG XS-601C1 Oil (VG60)	PAG XS-601C1 Oil (VG60)	PAG XS-601C1 Oil (VG60)	PAG XS-601C1 Oil (VG60)
Compressor Oil - Charge [ml]	300	600	830	1200

The outdoor unit belonging to the purchased product is supplied with the energy label relative to a specific configuration, in accordance with the Regulation (EU) No. 811/2013; if your configuration does not match the one on the label, you can find the correct label on the website www.ariston.com.

12. Annexes

420012013000 - 06/2026

ARISTON

Viale Aristide Merloni, 45
60044 Fabriano (AN) Italy
Tel. +39 0732 6011
Fax +39 0732 602331
www.ariston.com



