

HP-E ACS

Heater | heat pump heater



EN Installation Manual

Dear heating engineer,

We would like to congratulate you on having recommended a **Beretta** unit: a modern product that's capable of ensuring maximum comfort at length, with a high degree of reliability, efficiency, quality and safety.

This manual provides information that is essential to the installation of the appliance. Used in conjunction with your own knowledge and expertise it will enable you to install the appliance quickly, easily, and correctly.

Please accept our thanks and our congratulations on your choice of product.

Beretta

CONFORMITY

Units **Beretta HP-E ACS** comply with the European Directives:

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility Directive 2014/30/EU
- Machinery Directive 2006/42/EC
- Directive 2011/65/EU on hazardous substances in electrical and electronic equipment
- Directive 2012/19/EU on waste of electrical and electronic equipment.



RANGE

Model	Code
HP-E 260 ACS	20125646
HP-E 260 ACS S	20125647
HP-E 260 ACS SC	20125648

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The following symbols are used in this manual:



CAUTION = Identifies actions that require caution and adequate preparation.



STOP = Identifies actions that you MUST NOT do.

This manual, Code Doc-0081368 Rev. 1 (06/2017) comprises 28 pages.

1 GENERAL

1.1 General description

This publication must always be carefully preserved, since it is an integral part of the unit, and must ALWAYS accompany it, even in the event that it is sold to another owner or user, or is transferred to another system. Preserve the product purchase documents to be presented to the authorised Technical Service Centre **Beretta** to require the intervention under warranty.

Interventions under Warranty must be carried out only through the Authorised Technical Service Centres **Beretta**, otherwise the Conventional Warranty is not valid. Do not modify or tamper with the appliance as dangerous situations can be created and the appliance manufacturer will not be liable for any damage caused.

After having removed the packaging ensure the integrity and completeness of the content. If this is not the case, contact **Beretta** which sold the appliance.

Beretta appliances must be installed by enabled companies in compliance with the current local and national regulations which, at the end of the job issues a declaration of conformity regarding installation to the owner, i.e. in compliance with the Standards in force and the indications supplied by **Beretta** in this booklet.

Any **Beretta** contractual or extracontractual liability of the Manufacturer is excluded for injury/ damage to persons, animals or objects owing to installation, regulation and maintenance errors or improper use.

1.2 Basic safety rules

It should be noted that the use of this product requires certain essential safety regulations to be respected, including the following:

- This appliance must not be used by children and unaided disabled persons.
- It is prohibited to touch the appliance when you are barefoot and with parts of the body that are wet or damp.
- It is prohibited to modify the safety or adjustment devices without the manufacturer's authorisation and precise instructions.
- It is prohibited to pull, detach or twist the electrical cables coming from the unit even if it is disconnected from the electrical mains.
- It is prohibited to climb onto the unit, sit on it and/or rest any type of object on it.
- It is prohibited to spray or jet water directly onto the unit.
- It is prohibited to open the doors for accessing the internal parts of the appliance without first having switched off the master switch of the "system".
- It is prohibited to disperse, abandon or leave the packing materials within the reach of children, as they are a potential source of danger.
- If the heat pump heater has no channelisations, installation in rooms with other units that use the same air (natural draught gas boilers, solid fuel fireplaces, suction units, etc.) is forbidden.

If the unit is channelled, the air intakes shall not communicate with rooms provided with units that use the same air (natural draught gas boilers, solid fuel fireplaces, suction units, etc.)

It is prohibited to perform any maintenance or cleaning operation before having disconnected the appliance from the mains electricity network, by positioning the plant master switch at "off".

THE installation of the heat pump heaters in rooms where the air is mixed and/or altered by other gaseous compounds and/or solid particles or toxic or flammable gases is forbidden.

In case of fluid leakage:

- shut off the unit
- ventilate the room
- do not use naked flame or activate electric contacts or switches
- contact the Technical service Centre.

1.3 Identification

The unit can be identified through the technical label available in two copies: the first copy is positioned on the outer isolation, the second copy is positioned inside (on the sheet support) and can be accessed by removing the upper cover:

Beretta	
Via Risorgimento, 23 A 23900 - Lecco	
MODELLO	A
N° di serie	B
Tensione Nominale	C
Frequenza	D
Corrente Nominale	E
Tipo Refrigerante	F
Carica Refrigerante	G
Resistenza Elettrica	H
Sovrapressione di Esercizio	N
GWP	Q
IP	P
Contiene gas fluorurati ad effetto serra Contains fluorinated greenhouse gases R	
Made in Italy	

- A** Model
- B** Serial number
- C** Voltage in V
- D** Mains frequency in Hz
- E** Electrical input current in A
- F** Refrigerant type
- G** Refrigerant charge Kg
- H** Additional electrical resistance
- I** EC Marking
- L** Mark of the manufacturer
- M** Compliance with European Directive 2002/96/EC
- N** Operating overpressure
- P** Degree of protection
- Q** GWP: global warming potential / CO₂: equivalent CO₂ tons
- R** Contains fluorinated greenhouse gases

If these plates or any other means of clearly identifying the product are defaced, removed or lost, proper installation and servicing may be rendered difficult.

1.4 General description

The heat pump heaters **Beretta HP-E ACS** use the thermal energy of the air to produce domestic hot water.

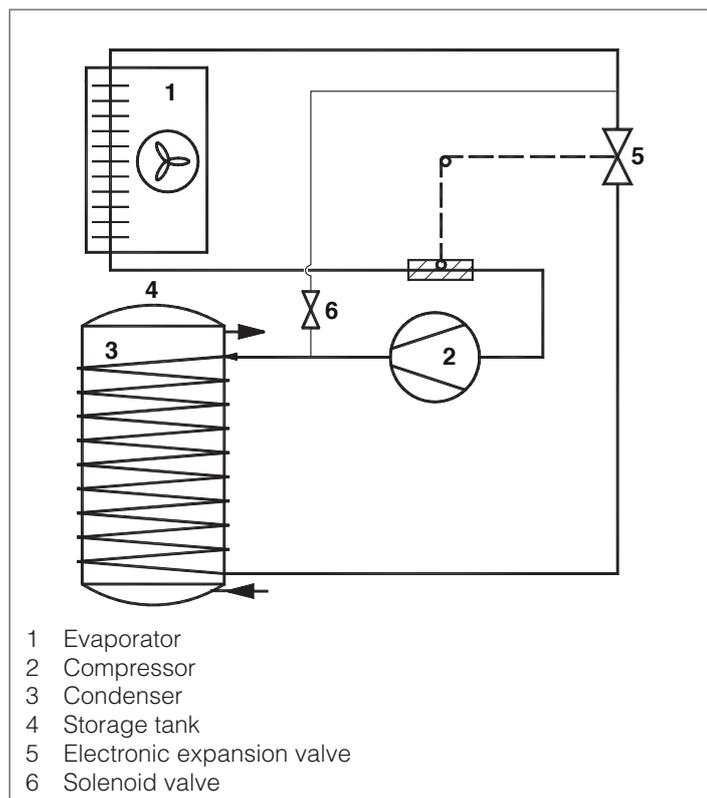
Ease of installation, noiseless and reliable operation and minimum maintenance requirements complete the advantages of this ecological and economical system.

The unit is suitable for indoor installation and uses as standard alternative energy source a 1.5 kW single-phase electric heating element. The accumulation tank is made of carbon steel, with internal 2-layer glazing, magnesium anode, internal coating in rigid plastic material (ABS).

1.5 Operating principle of the heat pump

The operating principle of the heat pump is the following:

- The refrigerating fluid changes its state in the evaporator (1) taking heat from the low temperature source (the external air).
- The compressor (2), that is the heart of the system, makes the energy level of the taken heat higher: in fact, the refrigerating fluid, by increasing its pressure, reaches temperatures near to 90°C.
- In the condenser (3) it is possible to give thermal energy to the domestic hot water, warming it until 60°C.
- The storage tank (4) (300 litres) allows storing up and keeping for a long time the heat, thanks to insulating shell in polyurethane 50mm thick.
- Crossing in the end the expansion element (5), the fluid returns to low pressure, cools down and it is available to "load" other "ecological" heat again from external air.
- the solenoid valve (6) allows to equalize pressures during the starting phase and, if necessary, allows the evaporator defrost.



1.6 Constructive characteristics

The main constructive features of the heat pump heaters **Beretta HP-E ACS** are:

- carbon steel tank with double-layer glazing
- capacitor externally wrapped to the accumulation tank free from limescale deposits and gas-water contamination
- auxiliary coil for the use in combination with boilers (**HP-E 260 ACS SC**) or solar panels (**HP-E 260 ACS S, HP-E 260 ACS SC**)
- NTC integrated probe for the control of water temperature.
- NTC outdoor temperature sensor for automatic insertion of the electrical heater with temperature not favourable to the heat pump.
- evaporating coil input/output NTC probes
- electronic thermostatic valve
- solenoid valve for hot gas injection and pressure equalisation
- anti-corrosion magnesium anode
- hydraulic connections on the back side
- condensate drain integrated in the isolation
- thermal insulation with injected polyurethane with high thickness
- external coating in RAL 9006 grey plastic
- use of refrigerant gas R134A
- single phase 1.5 kW electrical heater
- safety devices for high pressure
- high efficiency rotary compressor
- variable speed radial fan
- support handles for easy and safe transport.

The management, fully electronic, is provided with:

- User interface for setting the operative mode and set the parameters with different levels of accessibility protected by password
- self-diagnosis and display of alarms (high pressure, high temperature of water, probes disconnected)
- storage of runtime and clock function
- water set-point adjustment for automatic and/or manual operation
- outdoor air temperature display
- modulating fan speed control
- dynamic set point function
- management of minimum time intervals between successive starts of the compressor
- remote ON/OFF for complete unit (timer)
- remote ON/OFF for electrical heater (energy twin rate)
- electrical heater management in manual or automatic integration mode with low outdoor temperature
- command to an external boiler as an alternative to the electric heating element
- insertion of the cyclic antibacterial treatment to eliminate and prevent the formation of legionella
- defrost management through hot gas by-pass.

1.7 Configurations

To adapt at different installation requirements, **Beretta HP-E ACS** is available in the following versions:

- **STANDARD**: the heat pump and the electric heating element are the sources of heating (**HP-E 260 ACS**)
- **WITH AUXILIARY COIL**: use in combination with solar panels (**HP-E 260 ACS S**)
- **WITH DOUBLE AUXILIARY COIL**: use in combination with solar panels and integration with a boiler (**HP-E 260 ACS SC**).



1.8 Technical data

Description	HP-E 260 ACS			
	ACS	ACS S	ACS SC	
Tank capacity	273	268	265	l
Auxiliary coil surface	-	1,5	0,6 / 1,5	m ²
Auxiliary coil water flow ⁽⁶⁾	-	0,4	1,1 / 0,4	m ³ /h
Coil water content	-	8,6 / -	8,6 / 3	l
Heat loss according to EN 12897:2006 $\Delta T=45$ °C (ambient temp. 20°C; tank temp. 65°C)	-	85	-	W
Maximum pressure of auxiliary coil	-	6	6	bar
Maximum operating pressure	-	6	-	bar
Maximum cooling circuit pressure	-	25	-	bar
Power supply	-	230/1/50	-	V/Ph/Hz
Max water temperature	-	60	-	°C
Ambient Temperature (min/max. in heat pump)	-	8 ⁽³⁾ / 32 (-5 ⁽³⁾ / 32)	-	°C
Electrical heater capacity	-	1500	-	W
Heating capacity ⁽¹⁾	-	1950	-	W
Power input ⁽¹⁾	-	488	-	W
Power input (maximum)	-	700	-	W
Absorbed power in stand-by mode	-	43	-	W
Efficiency Energy WH ⁽⁵⁾	-	124	-	%
Annual consumption AEC ⁽⁵⁾	-	826	-	kWh
Daily consumption QELEC ⁽⁵⁾	-	4000	-	Wh
Maximum power input	-	10	-	A
Load profile	-	L	-	
Energy class	-	A+	-	
Refrigerant	-	R134A	-	tipo
Refrigerant charge	-	1500	-	g
Sound power level (LwA)	-	60	-	db(A)
Sound pressure level (Lpa) at 1 meter ⁽⁴⁾	-	49	-	db(A)
C.O.P. ⁽²⁾	-	2,92	-	-
Rated air flow	-	450	-	m ³ /h
Heating time ⁽¹⁾	-	7:22	-	h:mm
Useful static pressure	-	80	-	Pa
Maximum equivalent length of aeraulic channels	-	10	-	m
Minimum duct diameter	-	160	-	mm

(1) Intake water temperature = 10°C - Output water temperature = 54°C - Air temperature = 15°C - Air relative temperature = 71% - according to EN16147

(2) Value obtained on the whole L-type drawing cycle, to the reference temperature of 54°C, in accordance with the provisions of EN16147

(3) Minimum external air temperature (that can be changed through parameter H05) under which the domestic hot water heating takes place with boiler or heating element; default: 8°C if defrost function disabled, -5°C if defrost function enabled

(4) In a free field with non channelled suction/outlet inlets

(5) European Regulation 814/2013

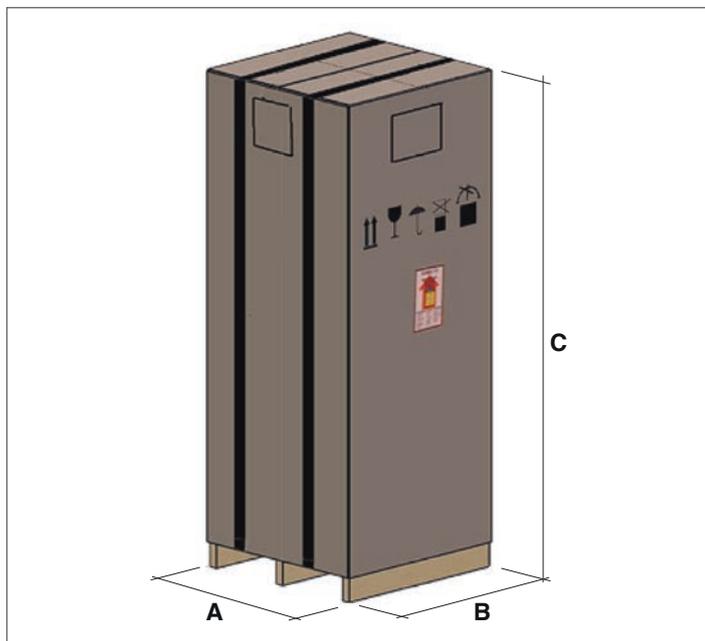
(6) Solar coil water input/output temperature 10°C / 45°C, boiler coil water input/output temperature 60°C/80°C according to DIN 4708

2 INSTALLATION

2.1 Transport and unpacking the product

2.1.1 Packaging

Heat pump heaters **Beretta HP-E ACS** are fitted on pallet and wrapped with suitable wrapping.



	HP-E 260 ACS			
	ACS	ACS S	ACS SC	
A	770			mm
B	770			mm
C	1980			mm
Transport weight	122	137	155	kg

2.1.2 Inspection on receipt

On receipt of the unit please control all parts in order to check that they have not been damaged during transport; any damage must be communicated to the carrier, affixing the reserve clause on the way bill, specifying the type of damage.

The product is provided with tilt detection device "TILT WATCH", visible on the packaging from the outside. If the relevant indication is red, the product has been overturned in the application direction with a tilt angle not permitted, therefore it might be damaged; it mustn't be rejected but it has to be clearly stated in the delivery bill.

2.1.3 Unpacking and handling

Wear suitable personal protection equipment when moving the boiler and removing the packing. Only use lifting equipment that is suitable for the weight involved.

For handling use, depending on the weight, appropriate means as required by Directive 2006/42/EC and subsequent amendments.

The machine covering cannot withstand significant stress, therefore it cannot be used as supporting surface.

The packaged unit can be handled with a hand truck or with a forklift. Always use the wood pallet as support.

During transport and handling, do not exceed the maximum allowed tilt of 45° with respect to the vertical axis. After a transport in tilt position, activate the unit at least one hour after its final positioning.

Transport the packed section as close as possible to the installation place.

Unpacking

Perform the following unpacking operations:

- Cut the straps that fasten the cardboard box to the wood pallet.
- Remove the cardboard box and the nylon bag.
- Remove the 3 screws M10 that fasten the unit to the wood pallet.

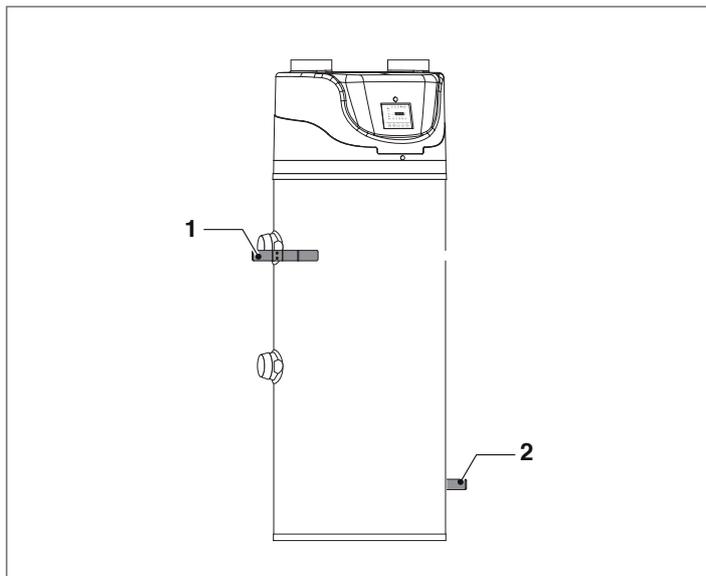
The packaging elements must be kept out of the reach of children, since they are sources of suffocation hazard.

Comply with all applicable laws in force in the country where the machine is installed, as regards the use and disposal of the package.



	HP-E 260 ACS			
	ACS	ACS S	ACS SC	
D (diameter)	660			mm
E	1845			mm
Net weight	104	119	137	kg

The unit is provided with two handles (1) and (2) for manual handling. Handles are installed and fastened with two screws M8 each.



A minimum of two persons are required to carry out manual handling operations.

2.1.4 Storage

In case of long term storage keep the unit protected from dust, and away from sources of vibration and heat. Storage temperatures must be within -20°C and +60°C.

Beretta declines all liability for damage due to bad unloading or non-protection from atmospheric agents.

STORING the unit filled with water is forbidden.

Do not place tools or weights on the packaged unit.

2.1.5 Material supplied with the unit

The unit is supplied with a document envelope, containing the following material:

- Instruction booklet for the installer and the Technical Support Centre (languages: Italian, English, Polish)
- The warranty/spare parts labels
- Declaration of conformity

2.2 Safety standards

Beretta declines all responsibility for the failure to comply with the Safety and Accident-prevention Standards described below. It also declines all liability for damage caused by improper use of the **HP-E ACS** unit and/or modifications performed without authorisation.

- Specialised staff must perform installation.
- Wear suitable and accident-prevention clothing during installation, for example: goggles, gloves etc. as indicated in the standard 686/89/EEC and subsequent amendments
- During installation operate in complete safety, clean environment and free from obstructions.
- Comply with all applicable laws in force in the country where the machine is installed, as regards the use and disposal of the products used for machine cleaning, and follow the recommendations contained in this booklet.
- Before starting the unit, check the perfect integrity of the various components of the entire plant.
- Do not touch moving parts or intervene between these.

The installer must consider and remedy all the other types of risks related to the system. For example, risks deriving from the entry of foreign bodies or risks due to the conveying of dangerous inflammable or toxic gases at a high temperature.

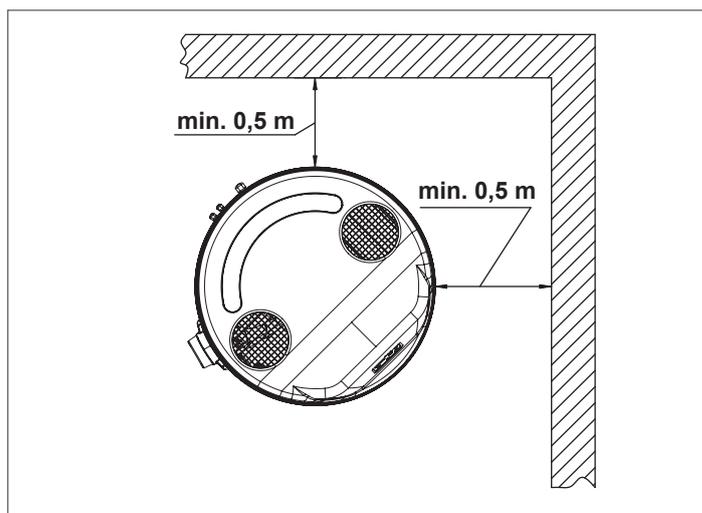
2.3 Choice of installation place

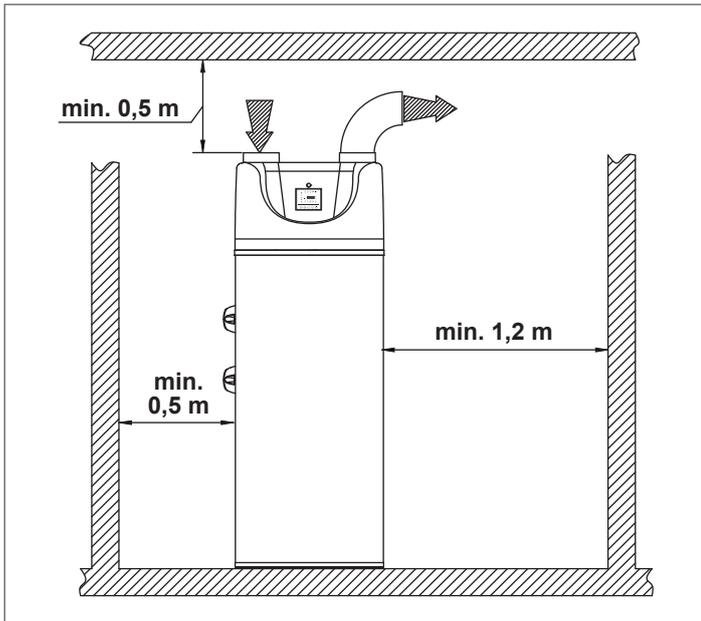
Do not place the unit in rooms containing vapours, dust, flammable gases, acid, aggressive and corrosive substances that may irreparably damage the various components.

Do not install the unit in an environment that can reach conditions conducive to ice formation.

Do not install the unit outdoors. In such a case performance and safety of the product are not guaranteed.

- Place the unit on a flat surface capable of supporting the weight of the product and its contents.
- Check that the installation room, if the unit is used without exhaust air duct, has a suitable volume, with a suitable air circulation. Note that the outlet air temperature is 5-10 ° C lower than the inlet, therefore, if not ducted, running the unit can cause a sensible reduction of the temperature of installation room.
- Verify that installation environment, electrical and plumbing, to which the unit will be connected, comply with regulations.
- The intake air must not contain dust.
- Leave a minimum clearance as shown in the figure, in order to make possible the installation and ordinary and extraordinary maintenance.





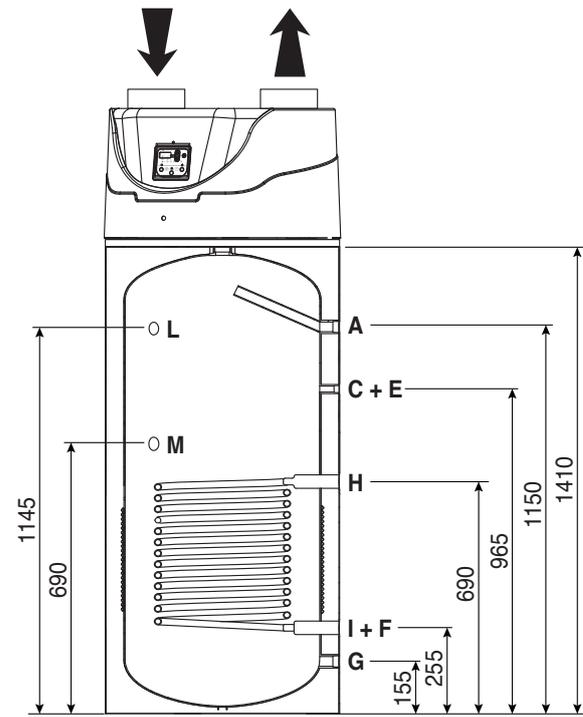
! If the unit is channelled, do not exceed the equivalent length of 10 metres (sum of suction and outlet channels) with rated diameter of the ducts equal to 160 mm.

2.4 Water connections

2.4.1 Dimensions of hydraulic connections

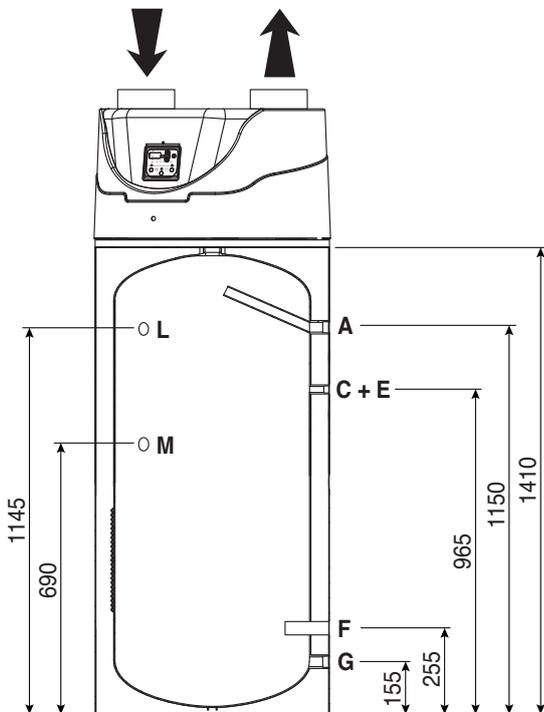
For the position and dimensions of the hydraulic connections, refer to the figures below.

HP-E 260 ACS S



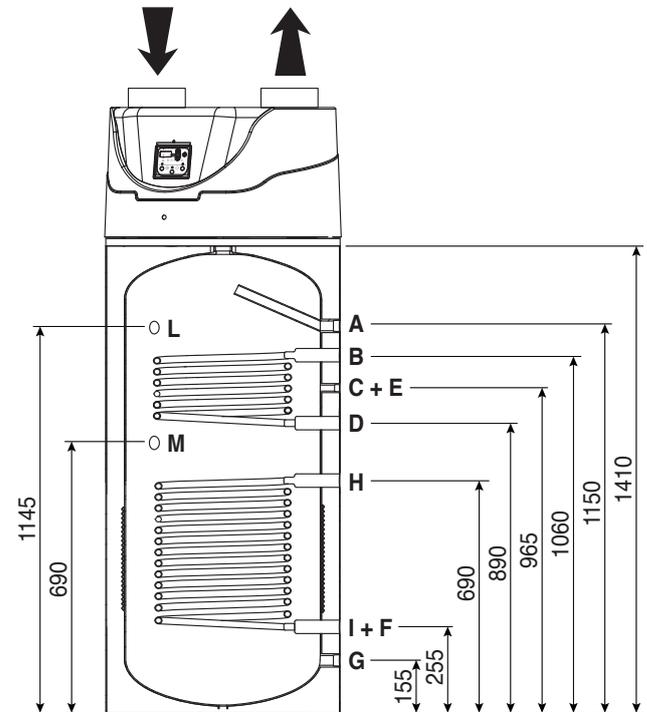
- | | |
|-------------------------------|--|
| A Hot water Ø 1" F | delivery Ø 1" F |
| C Probe well | I Alternative energy return line Ø 1" F |
| E Recirculation Ø 1" F | L Anode Ø 1" 1/4 F |
| F Probe well | M Electrical heater Ø 1" 1/4 F |
| G Cold water Ø 1" F | |
| H Alternative energy | |

HP-E 260 ACS



- | | |
|-------------------------------|---------------------------------------|
| A Hot water Ø 1" F | L Anode Ø 1" 1/4 F |
| C Probe well | M Electrical heater Ø 1" 1/4 F |
| E Recirculation Ø 1" F | |
| F Probe well | |
| G Cold water Ø 1" F | |

HP-E 260 ACS SC



- | | |
|------------------------------------|--|
| A Hot water Ø 1" F | H Alternative energy delivery Ø 1" F |
| B Boiler delivery Ø 1" F | I Alternative energy return line Ø 1" F |
| C Probe well | L Anode Ø 1" 1/4 F |
| D Boiler return line Ø 1" F | M Electrical heater Ø 1" 1/4 F |
| E Recirculation Ø 1" F | |
| F Probe well | |
| G Cold water Ø 1" F | |

Make water connections to the plant ensuring that:

- they do not rest on the unit
- maintenance operations of the unit are allowed
- access to and removal of accessories is allowed

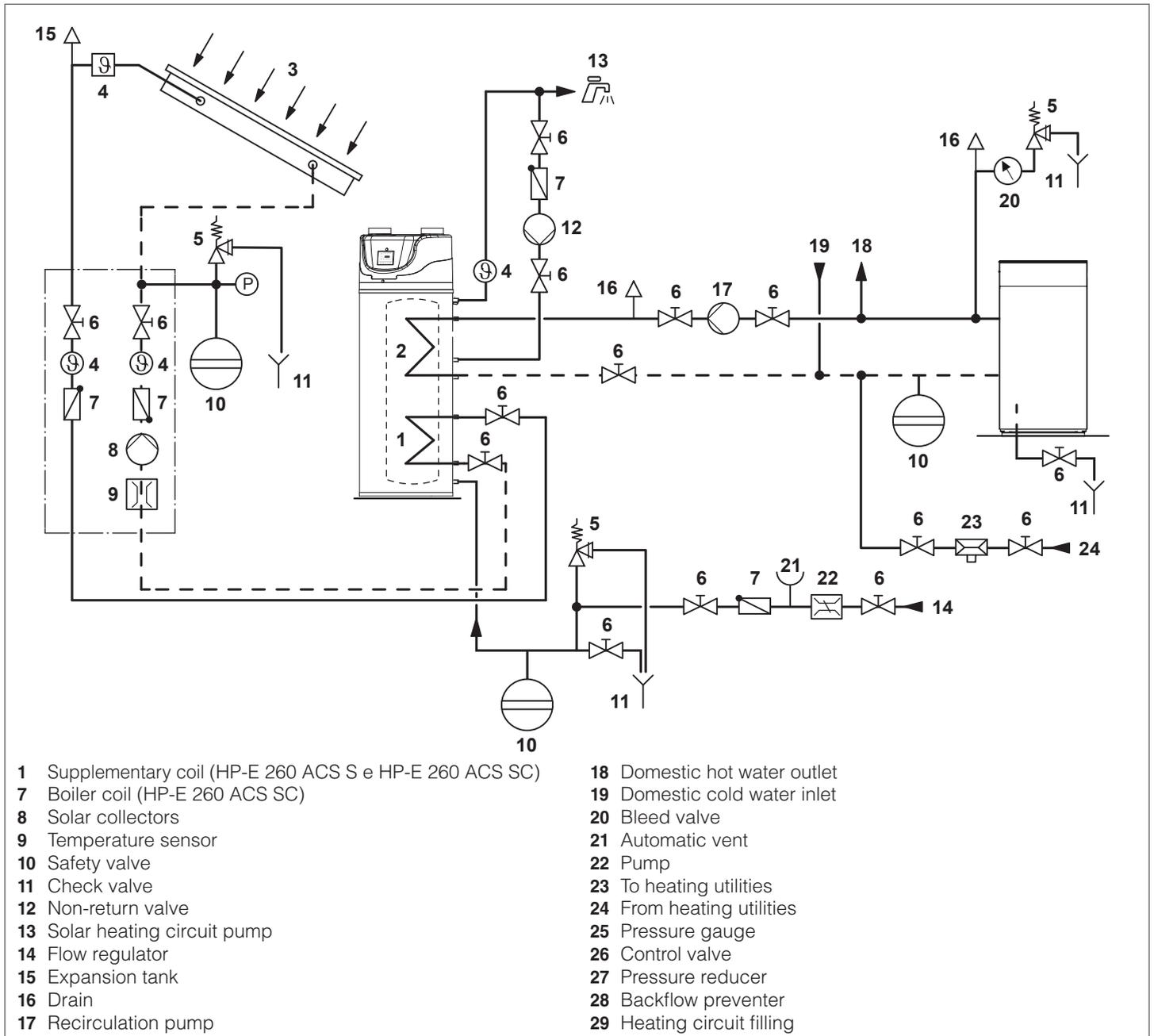
A correct installation requires to:

- disconnect the unit from the system before carrying out electric welding
- wash the system thoroughly before carrying out the hydraulic connections of the unit
- install a safety valve and an expansion tank dimensioned in compliance with the current regulations. The unit installation must necessarily provide for a device against overpressure connected to the cold water tube, whose maximum calibration must be equal to the maximum operating pressure value indicated in the technical features. The device must comply with the regulations in force in the country where the installation takes place

- Check the hardness of the water, which must not be less than 12 ° F. With particularly hard water, it is recommended the use of a water softener in such a way that the residual hardness not exceeding 30 ° F.

- ⚠ For water treatment, refer to the prevailing regulations.
- ⚠ Hot water is supplied with a temperature over 50° C on the faucet of use can cause serious burns. It therefore requires the use of a thermostatic mixing valve.
- ⚠ This valve will be required for solar panel installations.
- ⚠ The use of hoses too short or too rigid facilitates the transmission of vibrations and the generation of noise.
- ⚠ Provide the hydraulic connections to copper pipes with a di-electric connector to prevent corrosion due to iron/copper galvanic currents

2.4.2 Example of system diagram

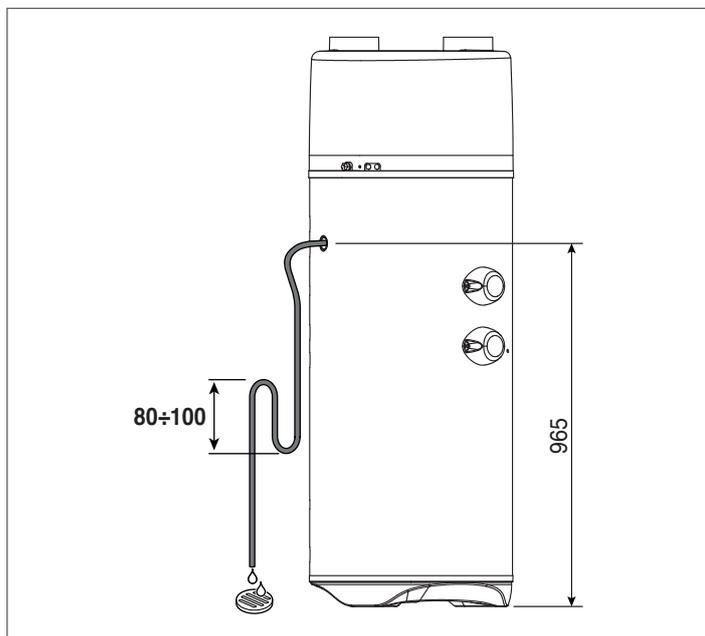


The diagram above is only a general schematic and does not replace the technical design according to the state of the art.

2.5 Condensate drain connection

The condensate that forms during operation of the heat pumps flows through the exhaust pipe positioned inside the insulation that exits on the rear of the unit with threaded by 1/2".

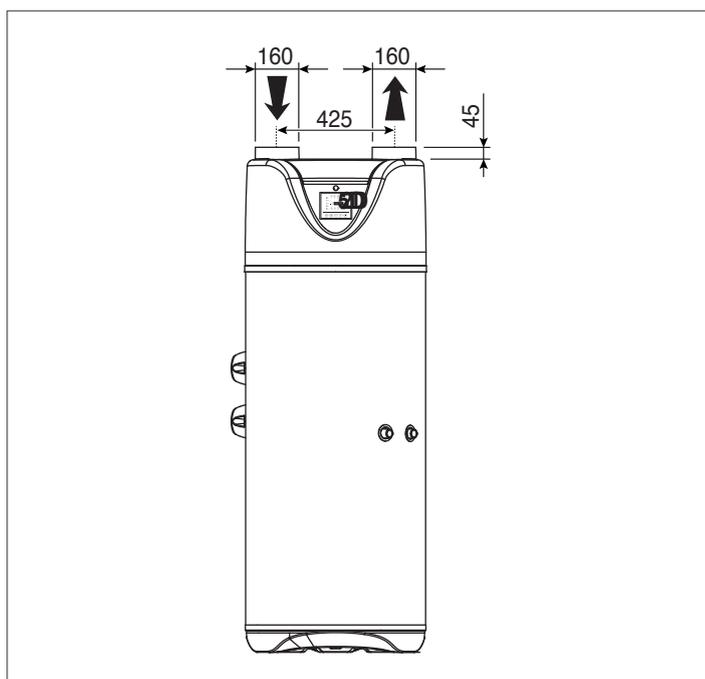
It must be connected to a pipe that allows the condensate to exit regularly. THIS flue tube must also be provided with a siphon to avoid that the depression created by the fan draws water from the condensate tube in the fan compartment.



2.6 Aeraulic connections

If the installation of aeraulic channels is required:

- they do not rest on the unit
- unit maintenance operations, access to and removal of accessories are allowed
- recirculation of air between inlet and outlet of the unit is avoided
- they are adequately protected to prevent accidental intrusion of materials inside the unit.

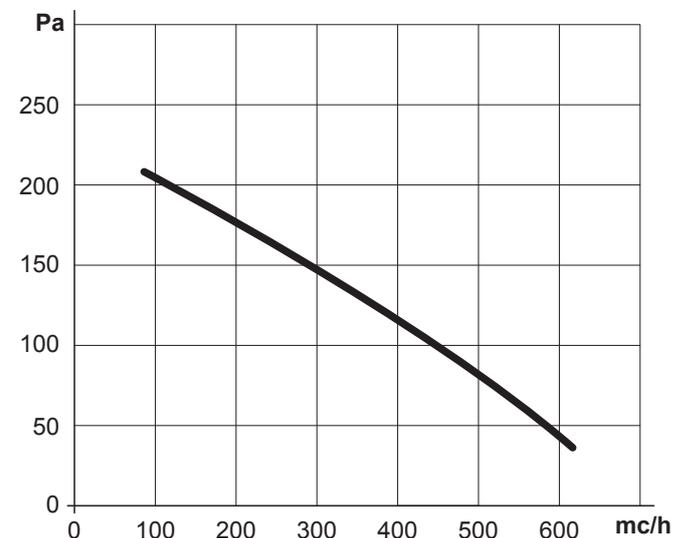


In particular environmental conditions, duly insulate the aeraulic tubes to prevent condensation on the tubes.

Do not use external grilles with high pressure drop, such as anti-insects grids. The grids used must grant a good air flow.

The pressure drop of the ducts (including grids, and any other items) at rated air flow must not exceed the external static pressure of the unit (80Pa). In any case the ducts must not exceed a total length of 10 meters (sum of suction and outlet, with diameter of the ducts equal to 160 mm)

Fan useful static head



2.7 Electrical connections

Before starting any operation, ensure that the main power supply is disconnected.

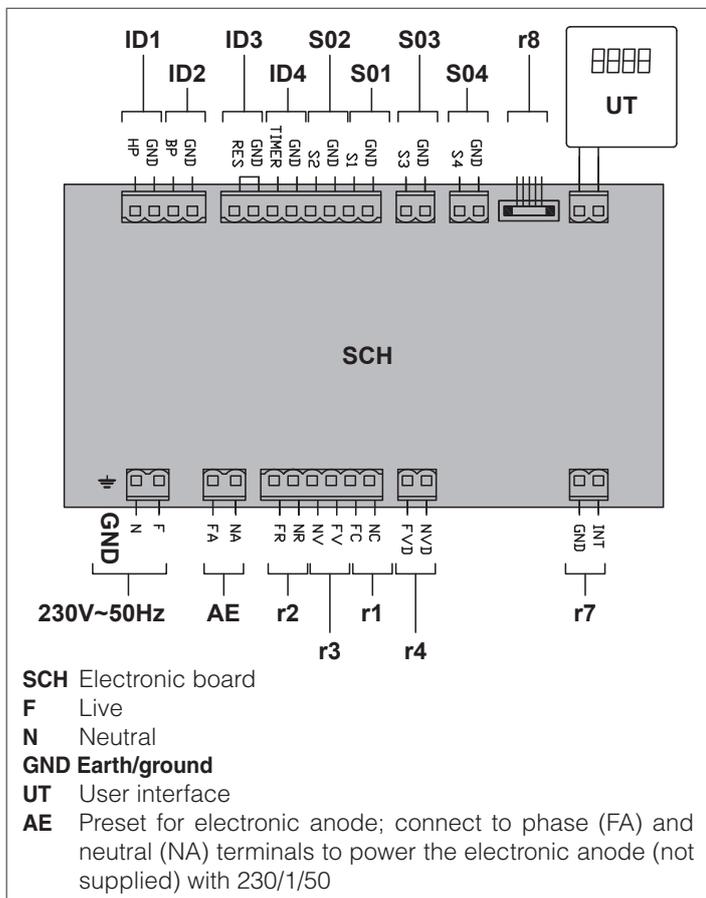
- Check the electrical system by verifying compliance with applicable standards.
- Check that the system is suitable for the maximum power consumption of the unit.
- Make sure that the voltage and frequency shown on the rating plate is the same as the main line connection.
- Make the connection using cables of adequate section for the committed power and in compliance with local standards (in any event, not lower than 1.5 sq.mm 3G). Furthermore, their dimension must be suitable to perform a voltage drop during starting phase lower than the 3% of the rated one.
- For the main power supply of the heat pump heater the use of adapters, multiple sockets and/or extension cables is not permitted.
- It is good practise to provide for the installation as close as possible to the supply disconnecting switch unit and what required for protection of the electric parts.
- Connect the unit to an efficient ground connection.
- To exclude it from the main power supply, a bipolar switch 16A in compliance with current CEI-EN and a residual-current circuit breaker of 30mA must be used.

It is forbidden to use the pipes of the water, heating or gas systems to ground the appliance.

⚠ The manufacturer will not be held responsible for any damage caused by failure to earth the system or by abnormal power supply.

Electrical connections to the control panels must be carried out by specialised personnel.

2.7.1 Electronic board



Digital inputs

Initials	Description	Status	Default	Notes
ID1	High pressure	1 open (alarm) 0 close	0	Connected
ID2	Low pressure	0 close	0	Preset only, not available
ID3	Electrical heater remote ON/OFF	1 enabled 0 standby	0	-
ID4	Unit remote ON/OFF	1 standby 0 enabled	0	-

Analogue inputs

Initials	Description	Notes
S01	water temperature probe	Connected
S02	outdoor air temperature probe	Connected
S03	evaporator intake temperature probe	Connected
S04	evaporator output temperature probe	Connected

Relays output

Initials	Description	Status	Default	Note
r1	compressor ignition enabling	1 enabled 0 disabled	1	Connected
r2	electrical heater ignition enabling	1 enabled 0 disabled	1	Connected
r3	fan ignition enabling	1 enabled 0 disabled	1	Connected
r4	solenoid valve enabling	1 enabled 0 disabled	1	Connected

Other digital outputs

Initials	Description	Status	Default	Notes
r7	volt-free contact for boiler enabling	1 enabled 0 disabled	0	-
r8	valve opening steps electronic expansion	-	-	Connected

2.8 Filling of the accumulation tank

To fill the accumulation tank of the unit:

- open the domestic hot water tap
- open the shut-off valve or the tap of domestic cold water, located on the safety unit. Check that the drain valve of the assembly is in closed position

When the water flows through the hot water tap, the unit is full. Close the hot water tap.

2.9 Controls before start-up

Before starting the unit, check:

- the correct connection of the ground wire.
- the presence of electrical protections
- that safety devices operate correctly
- that the system has been correctly filled.

3 STARTING AND USE

3.1 Commissioning

Commissioning must be carried out only by the Technical Service Centre **Beretta** or a qualified professional.

Perform starting operations in the following order:

- connect the unit to the electrical network
- check that no error codes or messages are displayed, otherwise see paragraph “3.23 Alarms” on page 22. Domestic hot water setpoint temperature is set to 55°C
- switch on the unit as indicated in paragraph “3.4 Switching on and off” on page 14.

If the intervention of the heat pump is required, the compressor will start after 180 seconds.

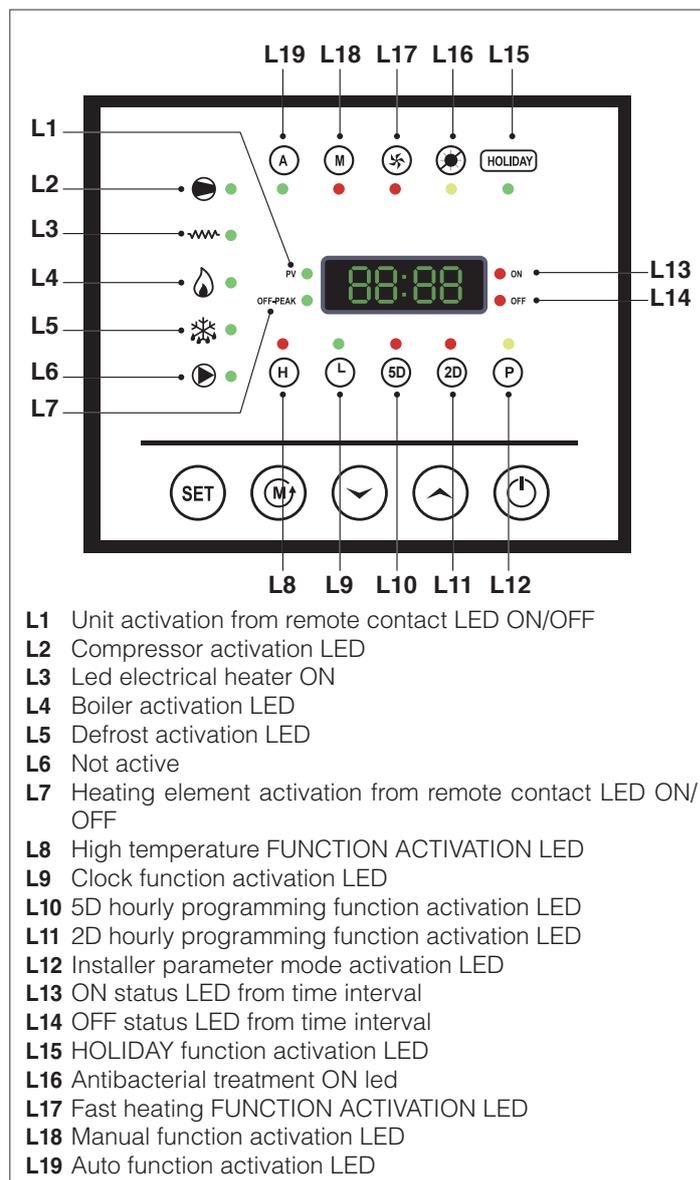
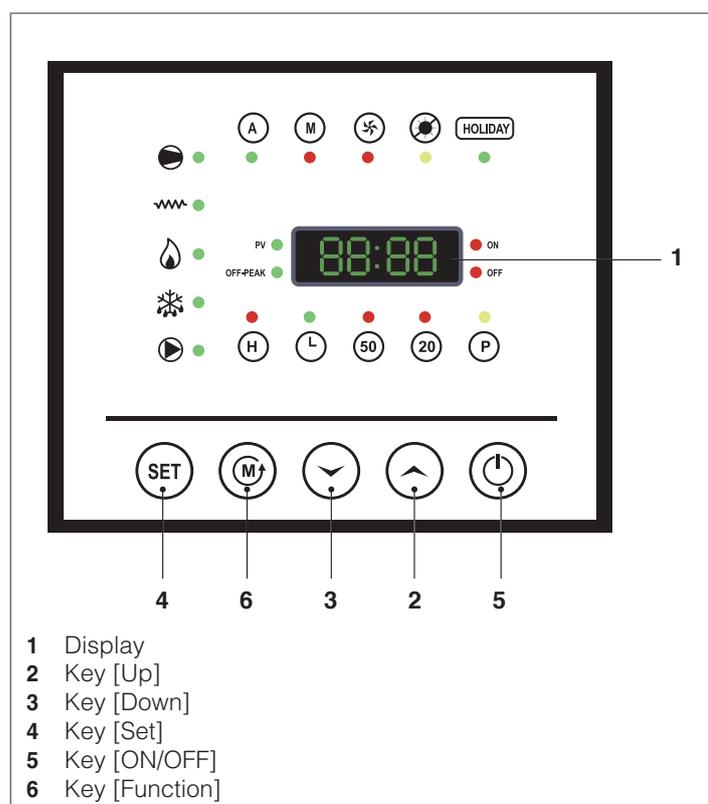
3.2 Controller operation

3.2.1 Description of controller logic

The controller allows to:

- set the operating mode
- set the functions described in the following chapters
- display and change the operation parameters
- manage the alarms.

3.3 User interface



3.3.1 Display



The 4-digit 7-segment display allows to display:

- regulating temperature
- outdoor air temperature
- alarm code (in case of active alarm)
- operating hours
- current time
- current water temperature
- status of the Inputs / Outputs.

3.3.2 Key

When the device is powered, the display shows the current time. Press [ON/OFF] key to set the unit in Stand by mode; the display shows the water temperature inside the accumulation tank (probe S01).

Press [ON/OFF] key again to get the unit back to OFF.

Key	Description
	<p>KEY [ON/OFF] When the device is powered, the display shows the current time. Press [ON/OFF] key to set the unit in Stand by mode; the display shows the water temperature inside the accumulation tank (probe S01). Press [ON/OFF] key again to get the unit back to OFF.</p>
	<p>KEY [FUNCTION] It allows the cyclical selection of the various operating modes. Every time you press the key, a different operating mode is selected, indicated by the corresponding LED which switches on in flashing mode.</p> <p>A → M → → → HOLIDAY → H → L → 5D → 2D → P</p> <p>Then the selection must be confirmed by pressing [SET].</p>
 	<p>KEYS [UP] and [DOWN] These keys allow to:</p> <ul style="list-style-type: none"> - scroll the parameter list (upwards [UP] or downwards [DOWN]) - change the parameter value (increase [UP], decrease [DOWN]) - press [DOWN] key for 3 seconds to reset the counter of heat pump, heating element, and total runtime - [UP] key stops the flashing of the LED relevant to anti-legionella treatment and resets the relevant counter.
	<p>KEY [SET] Allows to:</p> <ul style="list-style-type: none"> - confirm the selection of the operating mode selected - view the parameters list - view the selected parameter - confirm the modification of the parameter - reset an alarm, once its cause has been removed.

3.4 Switching on and off

3.4.1 OFF mode

When the unit is OFF, the current time is displayed.

3.4.2 STAND BY mode

Press [ON/OFF] key to set the unit in STAND BY mode. The display shows the current temperature of the accumulation tank water (S01).

3.5 Selection of the operating modes

Press [FUNCTION] key to access the various operating modes. Every time you press the key, a different operating mode is selected, indicated by the corresponding LED which switches on in flashing mode. Press [SET] key to confirm the activation of the selected mode. The corresponding LED turns steady on.



Led	Description
	AUTO
	MANUAL
	FAST HEATING
	ANTI-LEGIONELLA
	HOLIDAY
	HIGH TEMPERATURE
	CLOCK
	5-DAY TIME INTERVAL (MONDAY-FRIDAY)
	2-DAY TIME INTERVAL (SATURDAY-SUNDAY)
	INSTALLER PARAMETERS

3.6 List of parameters

3.6.1 Parameters of electronic board inputs/outputs

Starting from the current water temperature display, by pressing SET [SET] key it is possible to display the information on machine status, such as probe temperature, inputs/outputs status, runtime (see Navigation diagram). The access to this branch is indicated by the steady illumination of a point on the right end of the display.

To exit the display mode, press and hold SET [SET] key (about 10 seconds); otherwise the display mode is interrupted after a time $t=60\text{sec}$ from the last release of \uparrow [UP], \downarrow [DOWN] or SET [SET] keys.

Parameter	Default	Status	Description	Type
ID1	0	1 open (alarm) 0 close	High pressure	Digital input
ID2	0	0 close	Low pressure preset	Digital input
ID3	0	1 enabled 0 standby	Electrical heater remote ON/OFF	Digital input
ID4	0	1 standby 0 enabled	Unit remote ON/OFF	Digital input
S01	-	-	Water temperature probe	Analogue input
S02	-	-	Outdoor air temperature probe	Analogue input
S03	-	-	Evaporator intake temperature probe	Analogue input
S04	-	-	Evaporator output temperature probe	Analogue input
r1	-	1 enabled 0 disabled	Compressor ignition enabling	Relay output
r2	-	1 enabled 0 disabled	Electrical heater ignition enabling	Relay output
r3	-	1 enabled 0 disabled	Fan ignition enabling	Relay output
r4	-	1 enabled 0 disabled	Solenoid valve enabling	Relay output
r7	-	1 enabled 0 disabled	Volt-free contact for boiler enabling	Digital output
r8	-	-	Electronic expansion valve opening steps	Digital output

3.6.2 User parameters (Utt)

User parameters are the setpoints set in the different operating modes. From the selected operating mode, press \uparrow [UP] or \downarrow [DOWN] key to display the setpoint set. Press again \uparrow [UP] or \downarrow [DOWN] keys to change the parameter; the change is automatically confirmed without pressing any other key; the setpoint flashes for several seconds and the display shows the water temperature detected by the probe S01.

Parameter	Default	Limits	Unit	Description	Level
Ut1	55	15-H01	°C	Accumulation tank water setpoint in AUTO operation	0
Ut2	55	15-H27	°C	Accumulation tank water setpoint in MANUAL operation	0
Ut3	55	Ut1-H01	°C	Accumulation tank water setpoint in FAST HEATING MODE (AUTO only)	0
Ut4	60	(Ut1+H28-2)-60	°C	Accumulation tank water setpoint in HIGH TEMPERATURE MODE	0

3.6.3 Installer parameters

The access to installer parameters is indicated by LED L12 on.

To access branches CFn, dFr, Fan, ALL, EXV follow the navigation diagram (see "3.7 Navigation diagram" on page 18).

The route of each branch is cyclical: the first variable can be reached from the last one and vice versa by pressing \uparrow [UP] and \downarrow [DOWN] keys.

Inside each branch, by pressing and holding \uparrow [UP] and \downarrow [DOWN] keys, it is possible to scroll quickly the variables displayed. Once the parameter to be changed has been detected:

- press SET [SET] key to display its value
- press \uparrow [UP] or \downarrow [DOWN] keys to change its value
- press SET [SET] key again to confirm the change and go back to the parameter display.

From any position inside the navigation diagram, press and hold SET [SET] key to go back and display the current water temperature. To go back from the parameter selection inside a branch to the selection of branches CFn, dFr, Fan, ALL, EXV press and hold [SET] key until a beep is emitted, then release.

For the Installer branch parameters an access password is required (default parameter H18 = 000).

To exit, press and hold SET [SET] key (about 10 seconds); otherwise the display mode is interrupted after a time $t=60\text{sec}$ from the last release of \uparrow [UP], \downarrow [DOWN] or SET [SET] keys. The first method confirms any parameter change made with \uparrow [UP] and \downarrow [DOWN] keys, the second method does not store any change to the variable.

Configuration branch (CFn)

Parameter	Default	Limits	Unit	Description	Level
H01	55	15 - 60	°C	Max DHW setpoint value that can be reached with pdc	2
H05	8 (-5)	-20 - 30	°C	External air setpoint for activation of alternative source to heat pump	2
H07	65	60 - 70	°C	Thermal shock Setpoint	2
H08	365	1 - 365	giorni	Anti-legionella treatment cyclical frequency	2
H09	3	1 - 5	Num(1)	Number of cycles for each anti-legionella treatment	2
H10	15	15 - 30	min	Duration of treatment cycle (time of staying at thermal shock temperature)	2
H11	6	6 - 24	ore	Time between two cycles	2
H15	0	-5 - 5	°C	Offset probe S01	2
H16	0	-5 - 5	°C	Offset probe S02	2
H18	000	0 - 255	Num(3)	Manufacturer Password (to access parameter 2nd level)	2
H19	0	0 - 1	Num(1)	Internal parameter	2
H20	18	0 - 255	sec*10	Minimum time between switching off and switching on - Time OFF-ON [expressed in ten-second intervals]	2
H21	20	0 - 255	sec*10	Minimum time between two successive starts -Time ON-ON [expressed in ten-second intervals]	2
H22	30	0 - 255	sec	Permanence time of probe S01 at accumulation setpoint value	2
H23	1	0 - 1	Num(1)	Enable Auto start function[0=disabled; 1=enabled]	2
H26	5	0,0 - 15,0	°C	Differential activation Heat Pump (Automatic mode)	2
H27	55	30 - 70	°C	Accumulation water setpoint maximum value (Manual Function)	2
H28	3	0,0 - 15,0	°C	Differential activation electrical heater (Manual mode)	2
H29	1	0 - 1	numero	Enable air probe S02 [0=disabled; 1=enabled]	2
H30	1	0 - 1	numero	Enable digital input ID2 [0=disabled - 1=enabled]	2
H32	1	0 - 1	Num(1)	Anti-legionella treatment activation	2
H33	0	0 - 1	Num(1)	Enable dynamic setpoint	2
H34	1	0.5 - 2	Num(1)	Slope of the compensation	2
H35	20	15 - 25	°C	Outdoor air temperature above which the compensation starts	2
H36	10	5 - 10	°C	Excursion of outdoor air temperature on which the setpoint works	2
H50	1	1 - 2	Num(1)	Selection of integrative source [1=Electrical heater; 2 = Boiler]	2
H60	0	0 - 1	Num(1)	Enable electrical heater ON OFF [0=disabled; 1 = enabled]	2
H70	0	0 - 1	Num(1)	Enable remote ON OFF [0=disabled; 1 = enabled]	2
H80	0	0 - 1	Num(1)	Not available	2

Electronic expansion valve branch (EHu)

Parameter	Default	Limits	Unit	Description	Level
U00	1	0 - 1	Num(1)	Electronic expansion valve control activation [0= disabled; 1=enabled]	2
U01	250	60 - 500	Num(3)	Valve opening upon starting	2
U02	7	1 - 20	°C	Overheating value	2

Menu Alarms (ALL)

Parameter	Default	Limits	Unit	Description	Level
AL1	120	0 - 255	sec	Low pressure alarm delay from compressor start	2
AL2	5	0 - 255	Num(3)	Number events/ hour Low pressure ---> reset switch, from automatic to manual reset	2
AL5	75	H01 - 90	°C	It sets the temperature value associated with the sensor S1 above which the high temperature alarm is active	2
AL6	10	0 - 255	sec	It sets the duration of the continuing condition S1>AL5, beyond which the high temperature alarm is activated	2
AL7	10	0 - 255	Num(3)	Number events/ hour High pressure --->reset switch from automatic to manual reset	2

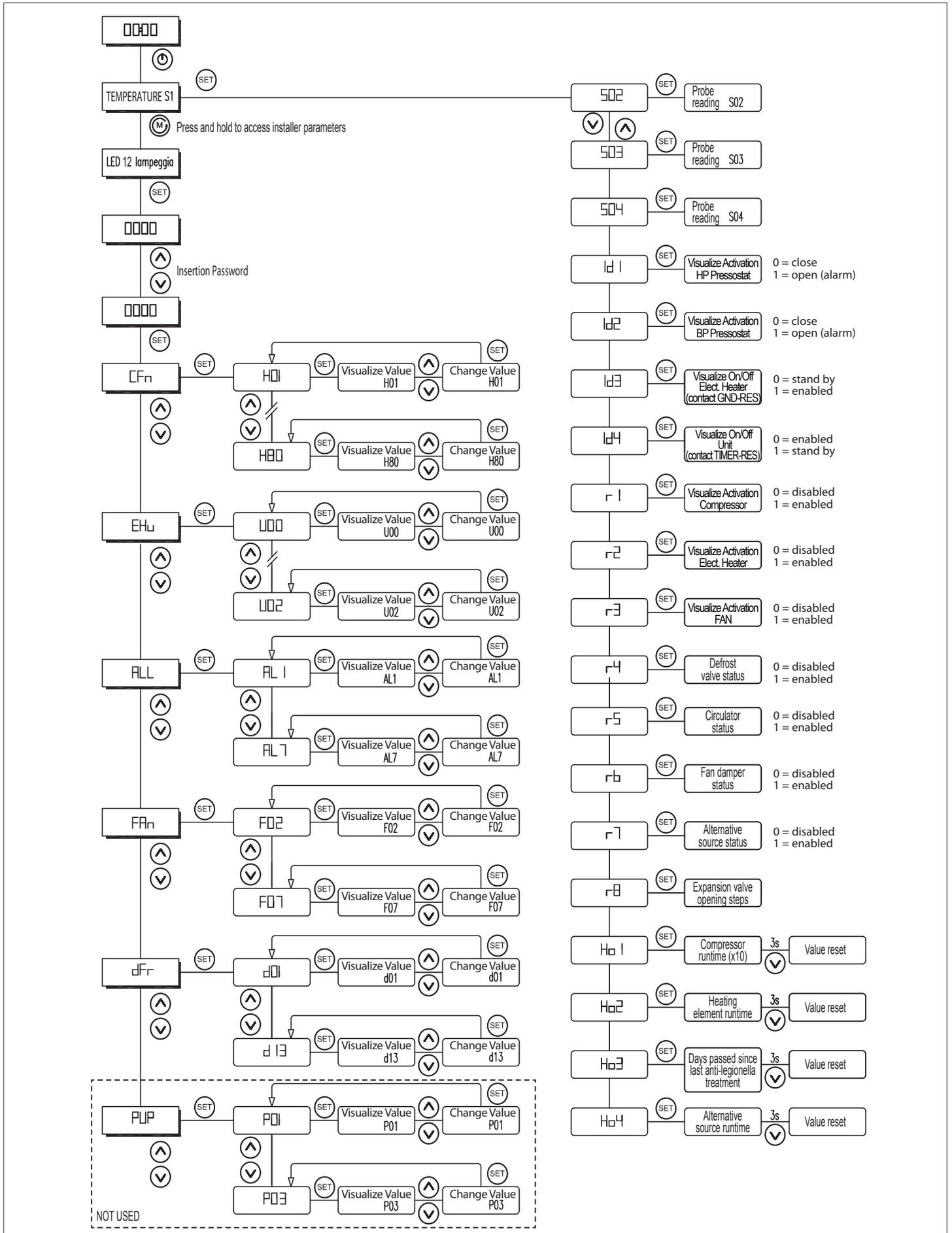
Menu fan (FAn)

Parameter	Default	Limits	Unit	Description	Level
F02	1	0 - 1	Num(1)	Sets the operating logic (0= ON/OFF) (1= modulating)	2
F03	50	40 - F04	Num(1)	Minimum fan speed. % of maximum voltage. From 40 to 100%	2
F04	100	F03 - 100	Num(1)	Maximum fan speed. % of maximum voltage. From F03 to 100%	2
F05	30	0 - 50	°C	Temperature above which the fan must run at minimum speed	2
F06	6	0 - 10	°C	Temperature differential on max speed of the fan	2
F07	15	10 - 60	°C	Water temperature above which the fan modulates between the values F04 and F03	2

Defrost branch (dFr)

Parameter	Default	Limits	Unit	Description	Level
d01	0	0 - 1 - 2	Num(1)	Defrost activation [0 = disabled; 1= active with hot gas; 2 not available]	2
d02	1	0 - 1	Num(1)	Defrost exit mode [0 = per time; 1 = per temperature]	2
d03	-3	-40 - d04	°C	Evaporation temperature under which a defrost cycle starts	2
d04	13	d03 - 40	°C	Evaporation temperature over which a defrost cycle ends	2
d05	10	10 - 150	sec	Minimum permanence time of probe S03 at defrost starting value	2
d07	5	2 - 150	min	Defrost cycle duration if d02=0, or max. cycle duration if d02=1	2
d08	45	15 - 120	min	Minimum delay between two consecutive defrosts	2
d09	0	0 - 1	Num(1)	Fan status during defrost [0 = OFF; 1 = ON]	2
d13	60	30 - 180	sec	Equalization time upon starting	2

3.7 Navigation diagram



3.8 Automatic operating mode

The control automatically activates the heat pump or the alternative source to heat pump according to the comparison between the intake air temperature (S02) and the external air value set for the activation of the alternative source to heat pump (parameter H05). Whereas the electric heating element activation is possible for all models, the boiler activation is possible only for model HP-E260ACSSC where a suitably dimensioned auxiliary exchanger is present. To activate AUTO mode, press and hold  [FUNCTION] key until LED L19 flashes, then press  [SET] key to confirm. LED L19 remains steady on. The reference setpoint Ut1 displayed can be changed by pressing  [UP] and  [DOWN] keys.

In heat pump mode the following warnings occur:

- if $S02 \geq H05$, domestic hot water is produced through the heat pump. In this case if water temperature \leq setpoint - differential, i.e. in terms of parameters: $S01 \leq (Ut1-H26)$, the heat pump can start. When the setpoint Ut1 is reached and is kept for a time equal to H22, the heat pump turns off. LED L19 is steady on
- if the temperature detected by probe S01 is lower than setpoint Ut1, but the delays set through parameters H20 (minimum time between compressor switching on and off) and H21 (minimum time between two consecutive compressor activations) are active, LED L2 will flash to indicate that the compressor is respecting the delay times
- if the heat pump is active and the temperature detected by probe S01 is lower than setpoint Ut1, LED L2 will be steady on
- if setpoint Ut1 is reached or exceeded, LED L2 will be off.

If $S02 < H05$, domestic hot water is produced through the heating element or the boiler, while the heat pump is forced to switch off. LEDs L3 or L4 turn on to indicate that the electric heating element or the boiler, respectively, is operating. The heat pump is reactivated (with subsequent heating element or boiler switching off) after 20 minutes, if $S02 \geq H05$.

NOTE: in the navigation diagram, near parameter Ho2, it is possible to see the electric heating element runtime whereas, near parameter Ho4, it is possible to see the boiler runtime.

3.9 Choice of the alternative energy source to the heat pump

The activation of the alternative energy source to the heat pump depends on parameter H50 (default value=0). In automatic mode, the adjustment is made according to the parameters of the hot water setpoint Ut1 and the heat pump activation differential H26. In manual mode, the adjustment is made according to the parameters of the hot water setpoint Ut2 and the alternative energy source to the heat pump activation differential H28.

If parameter H50 = 0, the electric heating element activates when required. LED L3 is steady on. When the setpoint is reached, LED L3 is OFF.

If parameter H50 = 1, the boiler activates when required. LED L4 is steady on. When the setpoint is reached, LED L4 is OFF.

NOTE: in the navigation diagram, the heating element status is indicated by parameter r2 (1 = active, 0 = not active) whereas the boiler status is indicated by parameter r7 (1 = not active, 0 = active).

3.10 Manual operating mode

The control activates the electric heating element or the boiler, according to the value of parameter H50 previously seen. To activate MANUAL mode, press and hold  [FUNCTION] key until LED L18 flashes, then press  [SET] key to confirm. LED L18 remains

steady on.

Whereas the electric heating element activation is possible for all models, the boiler activation is possible only for model HP-E260ACSSC where a suitably dimensioned auxiliary exchanger is present.

The adjustment is made according to setpoint (Ut2) and heating element/boiler activation differential (H28) parameters.

If $S01 \leq (Ut2-H28)$ i.e. water temperature \leq (setpoint - differential) the heating element or the boiler is activated.

If $S01 > (Ut2-H28)$ i.e. water temperature $>$ (setpoint - differential) the heating element or the boiler is switched off.

The reference setpoint Ut2 can be changed by pressing  [UP] and  [DOWN] keys.

NOTE: in the navigation diagram, near parameter Ho2, it is possible to see the electric heating element runtime whereas, near parameter Ho4, it is possible to see the boiler runtime.

3.11 Fast heating function

It allows to obtain hot water as quick as possible, but with a higher energy consumption, by activating simultaneously the heat pump and the supplementary source selected with parameter H50 until the setpoint set is reached.

To activate the FAST HEATING function, press  [FUNCTION] key until LED L17 flashes, then press  [SET] key to confirm. LED L17 remains steady on.

The activation is possible only in AUTO mode, whereas it cannot be activated if ANTI-LEGIONELLA or HIGH TEMPERATURE FUNCTIONS ARE ALREADY ACTIVE.

The reference setpoint, Ut3, can be changed by pressing  [UP] and  [DOWN] keys.

The activation of FAST HEATING function is intended for a single cycle, therefore when setpoint Ut3 is reached the unit goes back to AUTO mode.

3.12 Anti-legionella function

This mode performs an antibacterial treatment, that consists in increasing and keeping the temperature of the water contained in the tank to the thermal shock temperature (65-70°C) for a preset time.

To activate ANTI-LEGIONELLA function, press and hold  [FUNCTION] key until LED L16 flashes, then press  [SET] key to confirm. LED L16 remains steady on.

 IT is possible to activate/deactivate the antibacterial treatment through parameter H32.

The anti-legionella treatment is controlled through the following parameters:

- H07 thermal shock setpoint (increase of water temperature)
- H08 treatment frequency (monthly, weekly, etc.)
- H09 number of cycles for each treatment
- H10 duration of each cycle (permanence period at the thermal shock temperature)
- H11 time interval between two consecutive cycles (e.g. 24h).

When the preset time expires (parameter H08) the control warns, through LED L16 flashing and beeper activation (two audible warnings) that the antibacterial treatment must be performed. By pressing  [SET] key, the temperature starts increasing through the heating element (LED L3 steady on) or the boiler (LED L4 steady on) according to the value of parameter H50. During the treatment LED L16 is steady on, while the cycle count is displayed. If you do not want to perform the treatment, simply press  [UP] key: LED L16 turns off and the counter is reset.  [UP] key operates with the machine in Stand by and not during OFF status.

With the unit ON, it is possible to manually force the antibacterial

treatment at any time, through [FUNCTION] key first and then [SET] key, for confirmation.

NOTE: in the navigation diagram, near parameter Ho3, it is possible to see the days passed since the last antibacterial treatment.

The activation is not possible if FAST HEATING or HIGH TEMPERATURE functions are already enabled.

3.13 Holiday function

It checks that the temperature inside the accumulation tank does not drop below a minimum value (default 4°C) avoiding any risks of water freezing.

To activate the HOLIDAY function, press [FUNCTION] key until LED L15 flashes, then press [SET] key to confirm. LED L15 remains steady on. The function can be activated in AUTO or MANUAL mode.

3.14 High temperature function

It allows to increase the water temperature to $Ut4 > Ut1$ value through the heating element or the boiler.

To activate the HIGH TEMPERATURE function, press [FUNCTION] key until LED L8 flashes, then press [SET] key to confirm. LED L8 remains steady on.

The unit works with the heat pump only until $Ut1$ value is reached and then works using the heating element or the boiler to reach $Ut4$ set according to the setting of parameter H50. The activation is not possible if ANTI-LEGIONELLA or FAST HEATING functions are already enabled. To disable HIGH TEMPERATURE function press [FUNCTION] key until LED L8 flashes, then press [SET] key to confirm; you will go back to the mode previously set (AUTO or MANUAL).

3.15 Clock function

It allows to set day, hours and minutes. To activate CLOCK function:

- press and hold [FUNCTION] key until LED L9 flashes, then press [SET] key to confirm. LED L9 remains steady on. The display shows the day in flashing mode
- press [UP] and [DOWN] keys to set the desired day
- press [SET] to confirm



- The display shows hours and minutes
- press [UP] and [DOWN] keys to change the time
- press [SET] to confirm

3.16 Hourly programming

3.16.1 5-day time interval

It allows to activate a singledaily hourly programme to activate the unit valid from Monday to Friday, according to the following steps:

- press [FUNCTION] key until flashing LED L10 is displayed
- press [SET] to confirm the selection; LED L10 is steady on, whereas LED L13 (ON from time interval) and the time on display are in flashing mode
- press [UP] and [DOWN] keys to change the activation time
- press [SET] to confirm hours and minutes, then LED L13 turns steady on.

To delete the setting, press [FUNCTION] key.

Once the starting time is set, LED L14 (OFF from time interval) turns flashing on:

- press [UP] and [DOWN] keys to change the deactivation time
- press [SET] to confirm, then LED L14 turns steady on.

To delete the setting, press [FUNCTION] key.

At the end of programming, the display shows the current temperature since it is in OFF mode.

3.16.2 2-day time interval

It allows to activate a daily hourly programme to activate the unit valid from Saturday to Sunday, according to the following steps:

- press [FUNCTION] key until flashing LED L11 is displayed
- press [SET] to confirm the selection; LED L11 is steady on, whereas LED L13 (ON from time interval) and the time on display are in flashing mode
- press [UP] and [DOWN] keys to change the activation time
- press [SET] to confirm hours and minutes, then LED L13 turns steady on.

To delete the setting, press [FUNCTION] key.

Once the starting time is set, LED L14 (OFF from time interval) turns flashing on:

- press [UP] and [DOWN] keys to change the deactivation time
- press [SET] to confirm, then LED L14 turns steady on.

To delete the setting, press [FUNCTION] key.

At the end of programming, the display shows the current temperature.

3.17 Autostart function

The Autostart function allows the unit to automatically restart after a shut-down due to a power failure.



It is possible to enable / disable the function setting the parameter H23.

3.18 Dynamic Setpoint function

The controller allows changing the Set Point automatically according to external conditions. This change is obtained by subtracting to set point a value based on the outdoor air temperature measured by the probe (S02).



It is possible to enable / disable the function setting the parameter H33.

The dynamic setpoint is enabled only for heat pump operation.

Dynamic Set Point parameters:

- H34 slope of the compensation line (value between 0.5 and 2).
- H35 outdoor air temperature above which the compensation starts (value between 15 e 25).

- H36 excursion of outdoor air temperature on which the set point works (value between 5 and 10).

Example:

Ut1=60°C; H34=1; H35=20°C; H36=10°C

When the dynamic set point is enabled (H33=1), we can have three cases:

1st Case

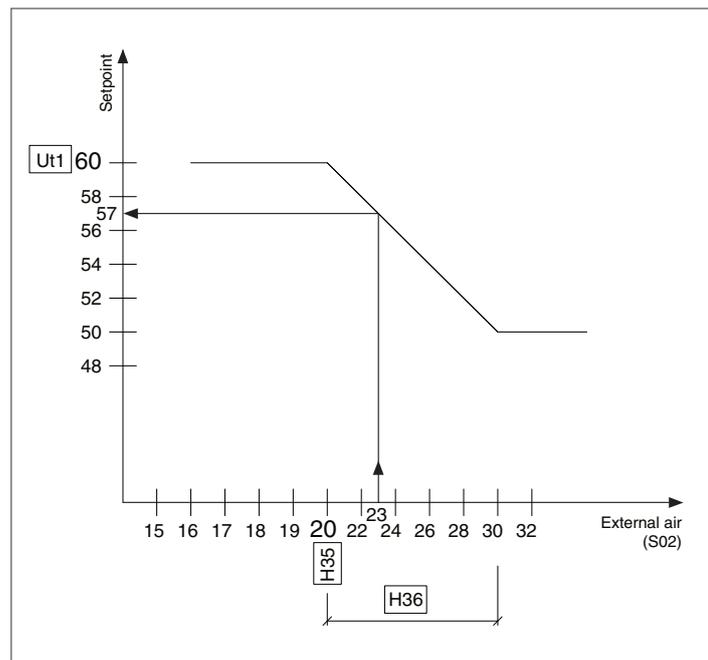
Tair <= H35 In that case Dynamic Set point = Ut1

2nd Case

H35 < Tair < (H35+H36) In that case Dynamic Set point= Ut1-[(Tair-H35)*H34]

3rd Case

Tair > (H35+H36) In that case Dynamic Set point = Ut1-[H36*H34]



3.19 Unit remote ON/OFF function

IT is possible to set the priority of activation of the various functions, usually according to cost effectiveness. For example, if the unit is integrated in a solar system, For example, if the unit is integrated in a solar system, it can be advantageous to use solar energy as first resource, and when its contribution is no longer considerable, activate the heat pump heater.

For this purpose, the unit has a digital NO input (voltage-free contact) available on the basic board between the TIMERGND terminals, enabled to receive information from an external source, or more generally from a timer.



It is possible to enable/disable the this function using the binary parameter H70.

H70 = 0 Function disabled

H70 = 1 Function enabled

When the function is enabled (H70=1), by pressing [FUNCTION] key two conditions occur:

- If the contact (TIMER-GND) is OPEN the unit is OFF waiting to receive an input for starting. This condition is shown on the display by alternating the water temperature with label OFF. Led 1 is flashing.
- If the contact (TIMER-GND) is CLOSED, the unit has received an input for starting and starts normally. Led 1 is lit.

NOTE: in the navigation diagram, the machine status from external contact can be displayed near parameter Id4. (1= on hold; 0= enabled).

3.20 Electric heating element function from remote ON/OFF

If you have a twin rate tariff and a suitable counter, you may decide to use the electrical heater only in the hours where the use of electricity is more convenient.

For this purpose, the unit has a N.O. digital input (terminals RES-GND) to enable / disable only the heater.



it is possible to enable / disable the Remote ON OFF setting the parameter H60. The function integration with electrical heater parameter H50=1 must be activated.

H60 = 0 Function disabled

H60 = 1 Function enabled

With function enabled (H60=1):

- if contact RES-GND is OPEN (equivalent to Convenient two-hourly rate condition), the unit usually operates in AUTO mode, in order to activate the compressor or the heating element according to its calculation algorithm. LED L8 is OFF.
- If the input RES-GND is closed (equivalent to the nonconvenient use of electricity), the unit works normally with compressor only and the electrical heater never starts. In this mode any intervention request of the heating element is indicated by LED L8 flashing (showing that the heating element activation request is in progress).

NOTE: in the navigation diagram, the heating element status from external contact can be displayed near parameter Id3. (1= enabled; 0=on hold).

3.21 Fan management (menu Fan)

The fan status is connected to the compressor one: the fan is activated if the compressor is activated.

Parameter F02, define the type of regulation:

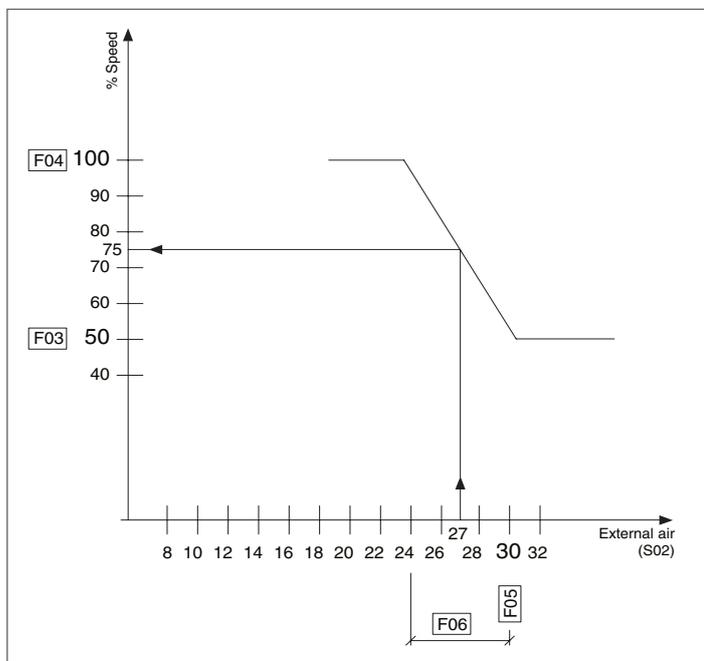
- **F02** = 0 ON/OFF regulation;
- **F02** = 1 modulating regulation.

Modulating regulation (F02=1) parameters:

- **F03** Minimum fan proportional speed. % of maximum voltage.
- **F04** Maximum fan proportional speed. % of maximum voltage.
- **F05** Temperature for minimum fan speed. It represents the air temperature above which the fan runs at minimum speed.
- **F06** Temperature for minimum fan speed. It represents the differential respect to F5, below which the fan run maximum speed (the colder the air, the greater the fan speed).

It is also possible, using parameter F07; to fix a value of water temperature, below which the fan ignores the adjustment, following the speed fixed to the parameter F04.

The factory settings of the parameters are shown in the following example:



If the water temperature is lower than F07 parameter (15°C), the fan runs at max speed F04.

If the water temperature is higher or same as F07 parameter (15°C), 3 cases are possible:

1st Case

$T_{air} \leq [F05-F06]$ Fan at max speed or F04

2nd Case

$[F05-F06] < T_{air} < [F05]$ Fan at proportional speed V%

3rd Case

$T_{air} > [F05]$ Fan at minimal speed F03

3.22 Defrost management (dFr branch)

It allows to use the unit also with air temperature of about 0°C, preventing the formation of ice on the evaporating coil surface. It is adjusted by a smart algorithm and is performed through hot gas injection (d01=1). Moreover, it can be carried out per time or per temperature according to the parameter value (d02).

The defrost is enabled only for heat pump operation.

The activation/deactivation of defrost is based on the value detected by probe S03 and on a series of parameters described in dFr branch.

The defrost activation occurs if probe S03 detects a temperature lower than the intervention threshold (d03), for a preset interval time (d05). This interval is displayed through the flashing of LED L5, whereas for the whole duration of the cycle dFr symbol is displayed, alternated with the current water temperature.

Similarly, the defrost deactivation occurs if probe S03 detects a temperature higher than the defrost end threshold (d04) or possibly for a maximum time (d07).

NOTE: in the navigation diagram, the instantaneous value of such temperature can be displayed near parameter S03.

3.23 Alarms

ALARM E01 - HIGH PRESSURE

The alarm shuts off the unit and the display shows the message E01. The reset is automatic until the number of interventions/hour is equal to the value set in the parameter AL7, in which case it becomes manual. Manual reset by keyboard pressing the SET key once the cause of alarm has fixed.

ALARM E03 - PROBE S01 FAILURE

It is active if the sensor S01 (Outdoor air temperature) is short-circuited or disconnected. The alarm shuts off the unit and the display shows the message E03.

ALARM E04 - PROBE S02 FAILURE

It is active if the sensor S02 (Outdoor air temperature) is short-circuited or disconnected. The alarm shuts off the unit and the display shows the message E04.

The machine operation can be forced to MANUAL mode by setting H29=0 (i.e. by disabling probe S02, in order to remove the alarm condition) and then by pressing FUNCTION key to activate the electrical heating element only; obviously, in this condition the AUTOMATIC mode is inhibited.

ALARM E05 - HIGH TEMPERATURE

The reset is automatic.

It is activated if the sensor S1 assumes values higher than the parameter AL5 for a time longer than the parameter AL6.

The alarm shuts off the unit and the display shows the message E05.

ALARM E06 - PROBE S03 FAILURE

It is active if probe S03 (evaporator inlet probe) is short circuited or interrupted and if the following conditions are true:

- defrost enabled (d01= 1, d01=2)
- electronic expansion valve enabled (U00=1).

The intervention implicates the machine switching off and the displaying of label E06.

ALARM E07 - PROBE S04 FAILURE

It is active if probe S04 (evaporator outlet probe) is short circuited or interrupted and if the electronic expansion valve is enabled (U00=1). The intervention implicates the machine switching off and the displaying of label E07.

Code	Description
E01	Refrigerant high pressure alarm
E02	Not available
E03	Alarm Probe S01 (water) broken or disconnected
E04	Alarm Probe S02 (air) broken or disconnected
E05	Water high temperature alarm
E06	Alarm Probe S03 (evaporator inlet) broken or disconnected
E07	Alarm Probe S04 (evaporator outlet) broken or disconnected

⚠ From a state of ALARM, holding down the [SET], key you enter the navigation diagram.

⚠ If the alarms described repeatedly trigger, switch off the machine and contact an authorized Technical Support Centre, indicating the identification data of the unit contained in the relevant plate.

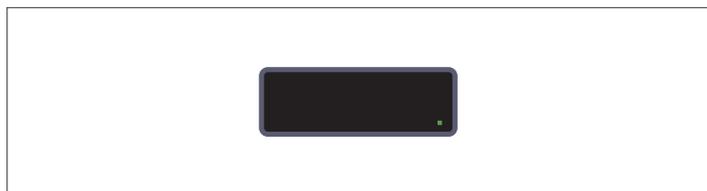
3.24 Counter reset

All User and Manufacturer parameters and runtimes are stored in memory. The runtime and anti-legionella count stops if power supply is missing and restarts from the status in which it was before power supply interruption.

Press and hold [DOWN] key for 3 seconds to reset the counter of heat pump, heating element, and total runtime.

3.25 Return to factory parameters

To restore the factory defaults you have to run the initialization procedure. Starting from STANDBY mode (rightmost point ON) press [UP] and [DOWN] keys for 5 seconds.



To confirm the procedure the display will show the message "ini".



3.26 Further checks after commissioning

After having started the unit, check the temperature of DHW temperature probes displayed. If the values detected are not correct, check the location of the probes in the probe holder socket.

Several days after unit starting, visually check any leaks in the water system or any clogging of the condensed water drainage.

4 MAINTENANCE

4.1 Routine maintenance

⚠ Maintenance interventions must be carried out by authorised personnel **Beretta** or qualified personnel in accordance with the provisions of this booklet. Do not modify or tamper with the unit as dangerous situations may arise and the unit manufacturer will not be liable for any damage caused.

⚠ Before carrying out any maintenance work, make sure that the unit is not and cannot be, either casually or accidentally, electrically powered. Therefore, the electrical power must be disconnected any time maintenance work is carried out.

⚠ The customer must carry out all maintenance operations on the heat pump heater.

⚠ If the unit must be disassembled, protect your hands with gloves.

4.1.1 Checks

At least once a year or in case of need it is recommended to perform the following checks.

- Control of the general conditions of the unit.
- General check of power consumption during the heat pump heater operation.
- Overall control of the operation of the electrical heater.
- Checking the tightness of all electrical connections.
- Control of the settings and programming parameters.
- Checking the status of the contacts of the fan and compressor.
- Monitoring of air filters in the hydraulic circuit.
- Control the sacrificial anode.
- Check the operation of safety valve.
- Control the preload of expansion tank.
- Control of the general conditions of the unit and the installation and testing of leaks.
- Checking the refrigerant charge.
- Control the filter dryer.
- Checking the condition of the refrigerant circuit.
- Control of the electrical heater.
- Check tightness of bolts, nuts, flanges and water connections that may have been loosened by the vibrations.

Furthermore, for better efficiency of the heat pump heater,, it is recommended to perform the following operations:

- periodically clean the evaporator using a soft bristled brush, taking care of using suitable protections against the injury hazard caused by the flaps
- check the fan cleaning conditions
- clean the condensate drain duct.

4.2 Troubleshooting

If an abnormal behaviour of the heat pump heater is observed, without the presence of the alarms described in paragraph “Alarm description”, before contacting the technical service check, using the table below, whether the fault can be easily solved.

FAULTS	POSSIBLE CAUSE
The heat pump heater does not turn on	there is no electricity the main switch is open
Compressor and/or fan doesn't start	the safety times set have not yet passed there is no load demand the electrical connection is slack
Frequent starts and stops of the heat pump heater	the values set for set point and / or differential are incorrect
The heat pump heater continues working without stopping	there is an excessive heat load the values set for set point and / or differential are incorrect
The system produces unusual noises and vibrations	the coating shells vibrate the air duct and / or water pipes vibrate
The electric heating element does not switch on	the start-up is not necessary

As a general rule however, before calling for service try to power cycle the unit.



If the user is not able to fix the problem, turn OFF the unit and contact an authorized service centre, indicating the identification data listed on the nameplate.

4.3 Recycling and disposal

When they are no longer used, the heat pump heaters **Beretta** HP-EACS shall be disposed of in compliance with the current regulations.

In particular, European Directive 2012/19/EU on waste electrical and electronic equipment requires their disposal outside the normal municipal solid waste stream. The dismissed units must be separately collected to optimise the rate of recovery and recycling of the materials that compose them and prevent potential damages for health and environment.

The main materials that compose the heat pump heaters **Beretta** **HP-E ACS** are:

- Steel
- Magnesium
- Plastic
- Copper
- Aluminium
- Polyurethane.
- R134a

Do not release the refrigerant into the environment. Recover and dispose of it in compliance with the current regulations

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