Thermo-accumulator kit with instantaneous Domestic Hot Water production - Installation, use and maintenance manual

SAF

THERMO-ACCUMULATOR KIT WITH INSTANTANEOUS DOMESTIC HOT WATER PRODUCTION

GB

SAF_5523451_12

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DICHIARAZIONE DI CONFORMITÀ UE
EU DECLARATION OF CONFORMITY / DECLARATION DE CONFORMITE UE
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SAF

Noi, firmatari della presente, dichiariamo sotto la nostra esclusiva responsabilità che l'insieme in oggetto così definito:
We, the undersigned, hereby declare under our own responsibility that the assembly in question, defined as follows:
Nous, Signataires du présent acte, déclarons sous notre responsabilité exclusive que le groupe cité à l'objet défini de la façon suivante:
Die Unterzeichner erklären unter eigener Verantwortung, dass die oben genannte Maschineneinheit, bestehend aus:
Nosotros, los abajo firmantes, declaramos bajo nuestra exclusiva responsabilidad, que el conjunto en cuestión, denominado:

Nome / Name / Nom / Name / Nombre **SAF**
Tipo / Type / Type / Typ / Tipo **Accumulo acqua calda sanitaria**

A cui questa dichiarazione si riferisce è conforme a tutte le disposizioni pertinenti delle seguenti direttive:
To which this declaration refers, complies with all the provisions related to the following directives:
Auquel cette déclaration se réfère, est conforme à toutes les dispositions relatives des directives suivantes:
Das Gerät, auf welches sich diese Erklärung bezieht, entspricht allen Verordnungen im Zusammenhang mit den folgenden Richtlinien:
A la que esta declaración se refiere, es conforme con todas las disposiciones pertinentes de las siguientes directivas:

Direttiva Bassa Tensione LVD: 2014/35/UE
Direttiva compatibilità elettromagnetica EMCD: 2014/30/UE

L'oggetto della dichiarazione di cui sopra è conforme alle pertinenti normative di armonizzazione dell'Unione:
The above-mentioned declaration complies with the harmonised European standards:
L'objet de la déclaration reportée ci-dessus est conforme aux normes d'harmonisation relatives de l'Union:
Der Gegenstand der genannten Erklärung entspricht den diesbezüglichen harmonisierten Normen der europäischen Gemeinschaft:
El objeto de la declaración de arriba es conforme con las normativas pertinentes de armonización de la Unión:

CEI EN 60335-2-40: 2005 + CEI EN 60335-2-40/A1: 2007
CEI EN 61000-6-2: 2006
CEI EN 61000-6-3: 2007
CEI EN 61000-4-4: 2013
CEI EN 61000-4-6: 2014

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity has been released under the exclusive responsibility of the manufacturer.
La déclaration de conformité présente est délivrée sous la responsabilité exclusive du fabricant.
Diese Konformitätserklärung wurde unter der ausschließlichen Verantwortung des Herstellers ausgestellt.
Esta declaración de conformidad se ha otorgado bajo la responsabilidad exclusiva del fabricante.

Firmato a nome e per conto di AERMEC S.p.A.
Signed for and on behalf of AERMEC S.p.A.
Signé par et au nom de AERMEC S.p.A.
Unterzeichnet für und im Namen von AERMEC S.p.A.
Firmado en nombre de AERMEC S.p.A.

Bevilacqua (VR)

Commercial Director
Luigi Zucchi

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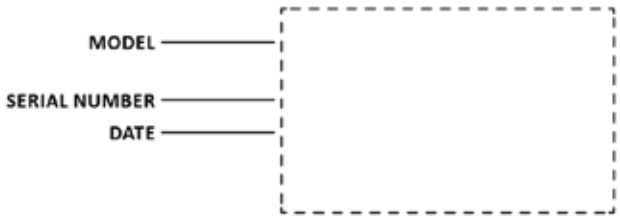
UKCA DECLARATION OF CONFORMITY

SAF



We, the undersigned, hereby declare under our own responsibility that the assembly in question, defined as follows:

Name **SAF**
Type **Domestic hot water storage**

To which this declaration refers, complies with all the provisions related to the following directives:

S.I. 2016 No.1101
S.I. 2016 No.1091

The above-mentioned declaration complies with the harmonised European standards:

EN 60335-2-43: 2005
EN 60335-2-40/A1: 2006
EN 60335-2-40/A2: 2009
EN 60335-2-40/A13: 2012
EN IEC 61000-6-2: 2019
EN IEC 61000-6-3: 2021
EN 61000-4-4: 2012
EN 61000-4-6: 2014

This declaration of conformity has been released under the exclusive responsibility of the manufacturer.

Signed for and on behalf of AERMEC S.p.A.

Bevilacqua (VR)

Commercial Director
Luigi Zucchi

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GENERAL INFORMATION

CHOOSING THE UNIT

By appropriately combining the variety of options available, every model can be configured in order to meet all specific system requirements.

Field	**Code**	
1,2,3		SAF
4,5,6	Size	
		200-300-500
7	Version	
	°	Standard
	S	With supplementary energy source management (2)
	T	Supplementary energy source preparation (2)
8.9	Fields for future developments	
	°	
	°	

(2) not available Version for size 200

SYMBOLS

- The following symbols are used inside this publication and/or the appliance:

⚠	Danger	Calls attention to actions which, if not correctly followed, can cause serious injury.
⛔	Prohibition	Calls attention to actions that impose prohibition.
U	User	Information, paragraph, chapter of the manual that is of interest to the user or installation.
I	Installer	Information, paragraph, chapter of the manual that is of interest to the installer.
A	After-sales Technical Service	Information, paragraph, chapter of the manual that is of interest to the installer.

GENERAL WARNINGS

Permissible use

- Read this sheet carefully.
- The documentation supplied with the unit must be delivered to the owner to keep it with care for any future maintenance or assistance.
- The company declines all contractual and non-contractual liability for damage to persons, animals or things, due to incorrect installation, adjustment and maintenance, to improper use or to partial or superficial acquaintance with the information contained in this manual; furthermore, in its quest to continually improve its products, the company reserves the right to alter the data expressed at any time and without notice and shall not be liable for any inaccuracies contained in this booklet, if due to printing or copying errors.
- These devices were designed for domestic hot water production. Other applications that are not expressly authorised by the are to be considered improper and, therefore, not allowed.
- The location, hydraulic and electrical system must be established by the designer and should take into account both the purely technical needs of any local laws in force and of specific authorisations.
- All work must be done by expert qualified staff, aware of the Standards in force on this subject in different countries.
- Upon delivery of the goods by the carrier, check the integrity of both the packaging and the units; should there be any damage or missing components, note it on the delivery note and send a formal complaint to the company by fax or registered letter within 8 days from when the goods were received.
- The warranty is void if:
- the personnel authorised by the company is not present when the device is commissioned.
  – in the event of failure to comply with the above-mentioned instructions.

Remarks

- Keep the manual in a dry place, in order to prevent deterioration, for at least 10 years for any further reference.
- Pay particular attention to the user regulations accompanied by “danger”, “prohibition” or “obligation” in so much as, if not complied with, the unit or objects may be damaged and/or persons injured.
- The manufacturer declines all responsibility for any damage due to improper use of the machine, partial or hasty reading of the information contained in this manual.
- • The appliance must be installed in such a way as to make maintenance and/or repairs to be carried out possible.
- The appliance warranty does not cover the costs for ladders, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.
- The manufacturer does not issue drawings or specifications of the connection systems.
- Any exceptions to the requirements contained in this manual must be approved in writing by the manufacturer's technical support.
- For anomalies not contemplated by this manual, contact the After-sales Service as soon as possible.

Fundamental safety rules

We remind you that the use of products that employ electrical energy and water requires that a number of essential safety rules be followed, including:

- 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 perform any cleaning operation before having disconnected the electrical mains by positioning the system master switch to "off".
- It is prohibited to modify the safety or adjustment devices without authorisation and instructions from the manufacturer.
- It is prohibited to pull, detach or twist the electrical cables coming out of the unit even if it is disconnected from the electrical mains.
- It is prohibited to open the doors for accessing the internal parts of the appliance unless the system is off via master switch.
- 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 disperse, abandon or leave the packing materials (boxes, staples, plastic bags, etc.) within the reach of children, as they are a potential source of danger.
- Observe safety distances between the machine and other equipment or structures to ensure sufficient access space to the unit for maintenance and/or assistance as indicated in this manual. (see the chapter on technical spaces).
- Powering the unit: must be through the cable provided on the unit and connected to a wall socket appropriate to the voltage values and absorption of the appliance.
- The hydraulic connection should be made according to the instructions in order to ensure the unit operates properly.
- If the unit is not running during the cold season, empty all the machine hydraulic circuits to keep them from freezing.
- Handle the drive with the utmost care, avoiding damaging it.

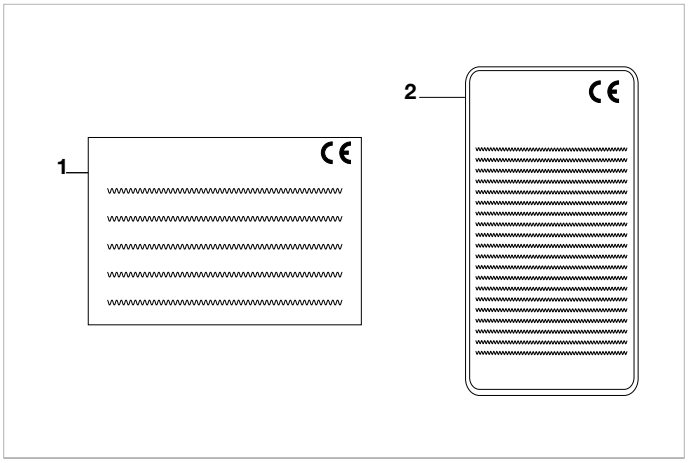
INSTRUCTIONS FOR THE USER

- Keep this manual along with wiring diagram in a place that is accessible to the operator.
- Write down the unit identification data so that you can provide them to the service centre should you need to request service (see the “machine identification” paragraph).
- We recommend keeping track of service done on the unit, as this will facilitate any potential troubleshooting.
- In case of failure or malfunction:
  – check the type of alarm to notify the Service Center;
  – turn off the unit immediately without resetting the alarm;
  – contact an authorised service centre;
  – request the use of only original spare parts.
- Ask the installer to be trained on:
  – switch-on/off;
  – extended shutdown
  – maintenance;
  – what to do/not to do in the event of a fault.

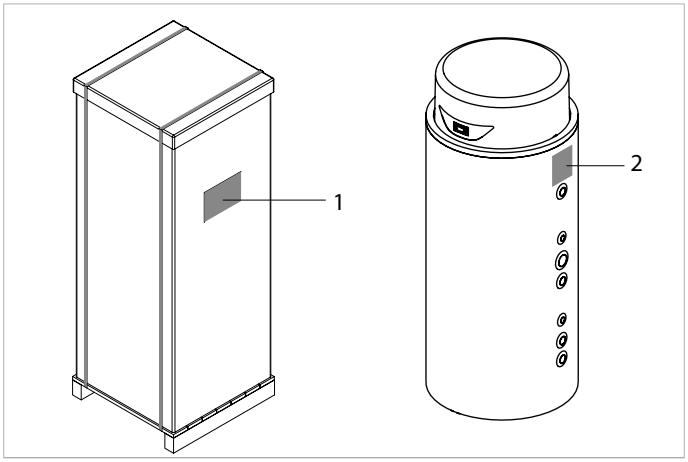
MACHINE IDENTIFICATION

- The equipment can be identified by:
  – Packaging plate.
  It bears the equipment identification data.
  – Feature plate.
  Secured to the machine, it bears the equipment technical and performance data. In case of loss or deterioration, request a duplicate from the technical service centre.

⚠ Tampering, removal, deterioration of identification tags makes it difficult to carry out any installation or maintenance and request spare parts.



1. Packaging plate
2. Feature plate



1. Packaging plate
2. Feature plate

RECOMMENDED EQUIPMENT

- To install the equipment, it is advisable to use the following equipment:
  – Set of Phillips head and flat head screwdrivers;
  – Wire cutters;
  – Scissors;
  – Set of open end spanners and pipe wrenches;
  – Ladder;
  – Hydraulic material to apply gaskets to the threading;
  – Electric equipment for connections;
  – Cut resistant gloves.

SAF INSTANTANEOUS DHW PRODUCER WITH INTEGRATED ACCUMULATION TANK

- SAF is an innovative indoor system "plug and play" system - an instantaneous producer of domestic hot water with an elegant, original design.

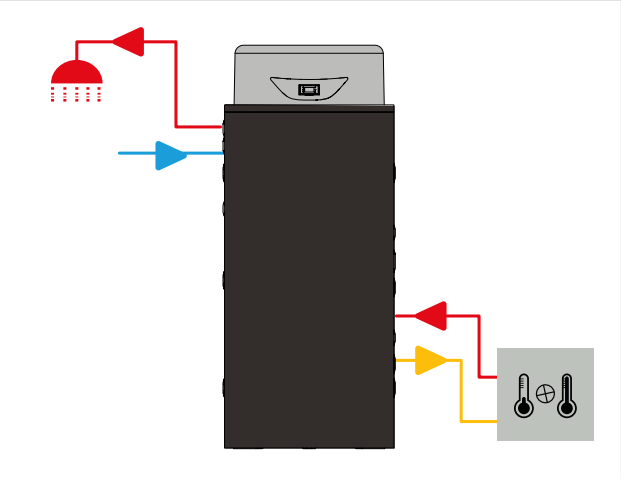
- Suitable for heating systems powered by one energy source or more (traditional boiler, heat pump, biomass boiler, solar panels, etc.), it guarantees the instantaneous production of domestic hot water at the temperature set by the user, and with limited scale formation. Heat exchange is ensured by a plate exchanger in AISI 316 stainless steel guaranteeing optimum hygiene and excellent performance. The heat exchanger is combined with a heat accumulation tank that supplies it with energy. The system contains all the necessary components, and has a control unit with graphic display so that the user can monitor operation and easily set the working parameters.

- The heart of the SAF system is its particular electronic adjustment, guaranteeing that the required DHW temperature is reached and maintained by modulating the flow rate on the primary circuit.

THIS GUARANTEES:

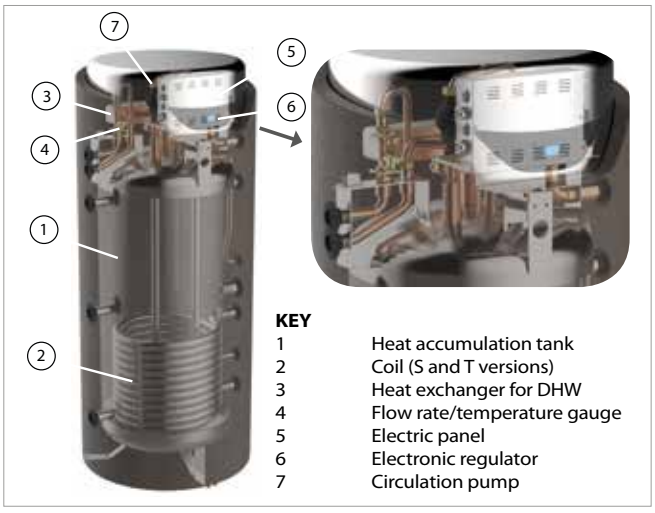
- the maximum thermal head on the primary circuit, to optimise generator efficiency (heat pump, solar panels, biomass, etc.)
- accurate, reliable adjustment

Thanks to the first-class efficiency of the heat exchange system, this module is ideal for residential or commercial installations powered by a heat pump or even with solar panels, and using low-temperature accumulation (50-55°C).



MAIN FEATURES

- High exchange efficiency in systems with a discontinuous generator or at low temperatures
- Easy, cost-effective use
- Efficient even at low flow rates (minimum 2 litres/min)
- Maximum hygiene in anti-legionella mode
- Highly precise temperature adjustment
- High-efficiency circulation pump (complying with the 2005/32 EC directive) with electronic rpm adjustment
- Graphic display showing the system and power yield temperatures
- Space saving compared with the exchanger + remote accumulation solution
- Cost-effective installation
- Plug and Play system
- Very thick, rigid insulation in injected PU with low thermal dispersion (energy class B)
- Monobloc structure with an original,
- attractive design and finishing touches that make it a furnishing element
- "All-in" integration with other generators (for suitable versions)
- Specific, supplementary solar module



KEY

1	Heat accumulation tank
2	Coil (S and T versions)
3	Heat exchanger for DHW
4	Flow rate/temperature gauge
5	Electric panel
6	Electronic regulator
7	Circulation pump

MACHINE DESCRIPTION

SAF is the new system that combines the functions of inertial accumulation and boiler for instant domestic hot water production, in a single integrated product designed to receive heat from any source type.
All the system components: carbon steel thermo-accumulator; plate inverter and plate heat exchangers for instant D.H.W. production, variable flow rate high efficiency pump are contained within a single unit for easy installation even in confined spaces.
The range includes seven different models that differ in their thermal storage capacity: 200, 300 or 500 l.
SAF is available in three versions, ideal for new buildings, renovations and existing buildings to more effectively respond to the different needs of users:

- **SAF°**, thermal buffer powered by a single energy source, integrated plate heat exchangers for instantaneous production of DHW, high efficiency circulator inverter and control electronics adjustment.
- **SAF T,** this version is equipped with a coil immersed in the storage for the integration of an auxiliary heat source (boiler/fireplace).
- **SAF S,** this version is set up for the use and the complete management of an additional source (solar, pellet boilers, etc). In addition to the specially-designed extra coil, the system also includes a circulator dedicated to the supplementary source, along with control software designed to manage it.

SAF INTEGRATION WITH AERMEC HEAT PUMPS AND COMPATIBILITY WITH OTHER ACCESSORIES

				Accessories MANDATORY					RECOMMENDED	
Heat pumps	**Sizes**	**Vers.**		**SAF**	**MOD485K**	**MODU485-BL***	**VMF-E5**		**VTV160**	**KRX-SAF**
ANL	**020-202**	**H°-HP**		•	•	•	•		•	•
ANLI	**101**	**H°-HP-HX**	(1)	•	-	-	-		•	•
ANK	**020-150**	**H°-HP**		•	•	•	•		•	•
NRK	**090-150**	**00-P1-P3**		•	•	•	•		•	•
CL	**025-200**	**H°-HP**		•	•	•	•		•	•
ANKI	**020-080**	**H°-HX**	(1)	•	-	-	-		•	•
WRL	**026-161**	**H°**	(1)	•	-	-	-		•	•

* To be installed on board of the heat pump.
(1) Units designed for the management domestic hot water: MOD485K and VMF-E5 accessories not required.
It is recommended not to combine the SAF with units with storage tank.

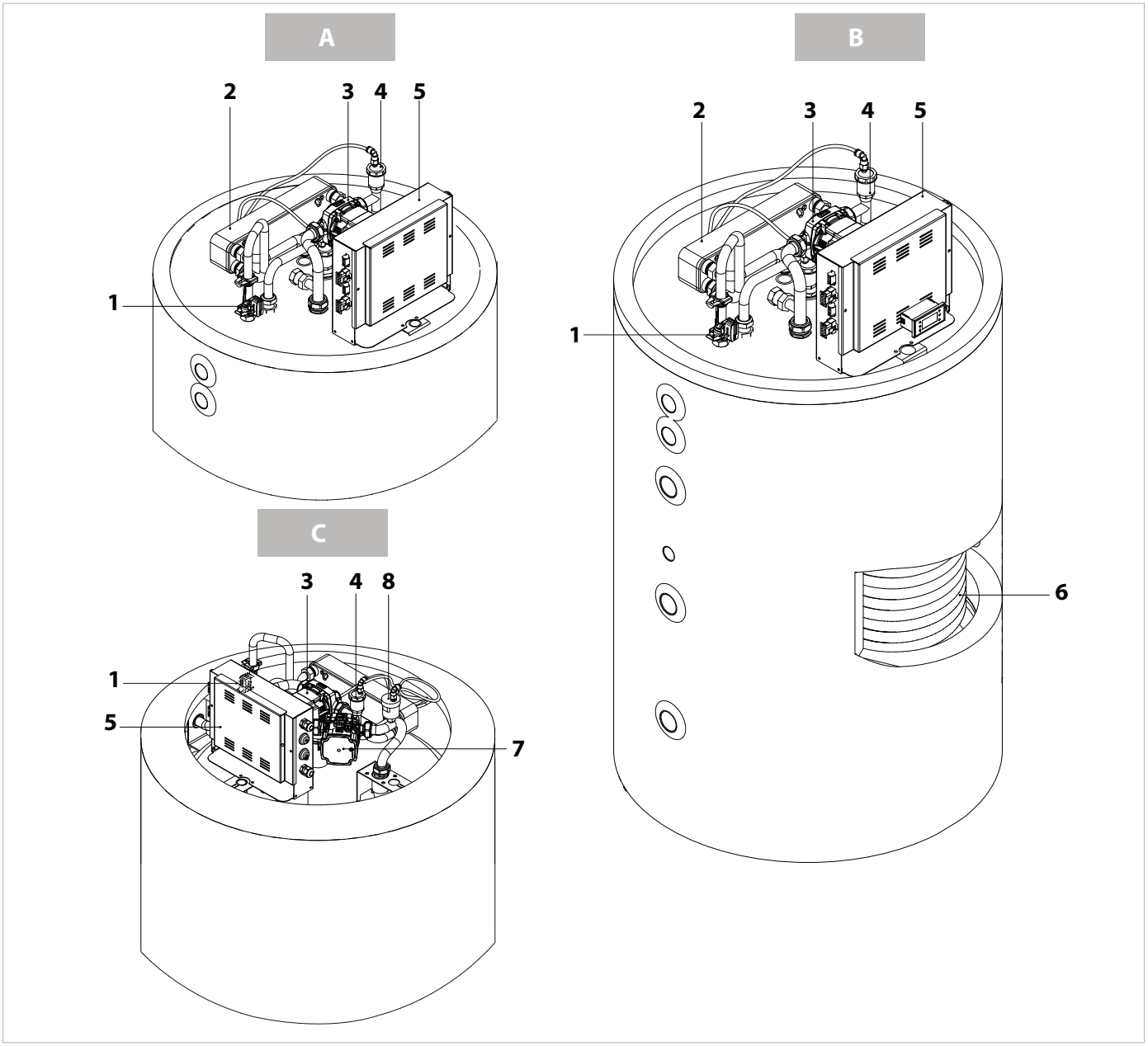
ACCESSORIES

- **VTV160**: 3-way diverter sector valve, complete with 2-point actuator (Kvs = 16).
- **MOD485K:** RS-485 interface for supervision systems with MODBUS protocol.
- **MODU-485BL:** RS-485 interface for supervision systems with MODBUS protocol.
- **VMF-E5**: recessed panel with backlit graphic LCD display and capacitive keypad, for centralised command/control of a complete hydronic system.
- **KRX-SAF:** Supplementary resistance with 230V/1/50 Hz 1200W regulation thermostat
- **COMPATIBILITY WITH VMF SYSTEM**

For further information on system, refer to specific documentation.

MAIN MACHINE COMPONENTS

COMPONENTS OF THE VARIOUS VERSIONS



A.	SAF°
B.	SAF T
C.	SAF S
1.	Flow Switch
2.	DHW heat exchanger
3.	Primary circuit pump
4.	Manual air vent
5.	Electric control board
6.	Integration coil (solar, fireplace, boiler)
7.	Solar circuit pump
8.	Conveyed storage automatic vent

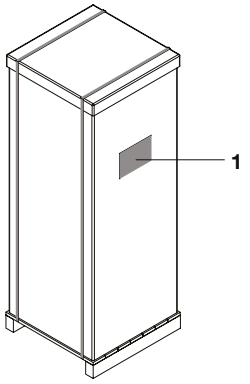
RECEPTION

PRELIMINARY WARNINGS

- Complaints must be made within 8 days of receipt; reports after this date are invalid.
- Interpose protections and spacers to prevent damage to the unit.
- Do not place any objects on top of the package.
- Remove the packaging only when the equipment is in installation position.
- Dispose of packaging parts responsibly and do not leave them within the reach of children as they are potential sources of danger; dispose of the packaging in accordance with the regulations in force in the country.
- The pallet supplied with the machine is not intended for other uses and must be disposed of according to the regulations in force in the country.

CHECKING ON ARRIVAL

- Before accepting the delivery, make sure:
  - The unit has not been damaged during transport
  - The delivered equipment corresponds to what is indicated on the transport document by comparing the data with Packaging Plate '1'.
- In case of damage or anomalies:
  - Note the damage on the transport document immediately and write: "Received with obvious loss/damage due to transport".
  - Dispute via fax and registered mail with return receipt to the carrier or supplier.



1. Packaging plate

HANDLING WITH PACKAGING

The equipment is supplied on wooden pallets protected by cardboard packaging.

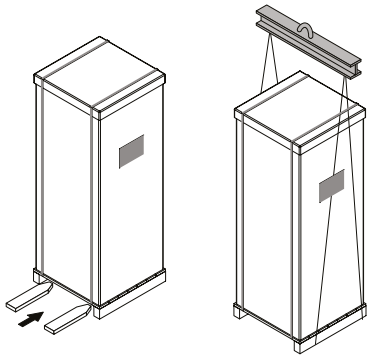
Lifting with forks

- Insert the forks from the side so as not to damage the product.

Lifting with crane

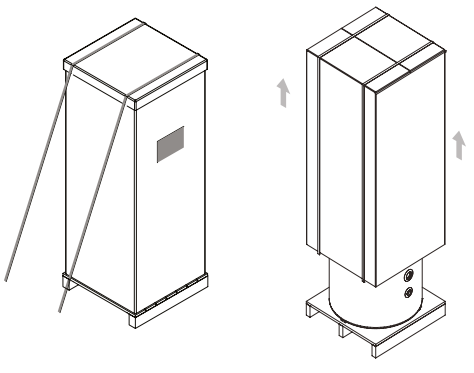
- Position the lifting straps as shown in the figure.

⚠ Use spacers to prevent damage to the unit.



REMOVING THE PACKAGING

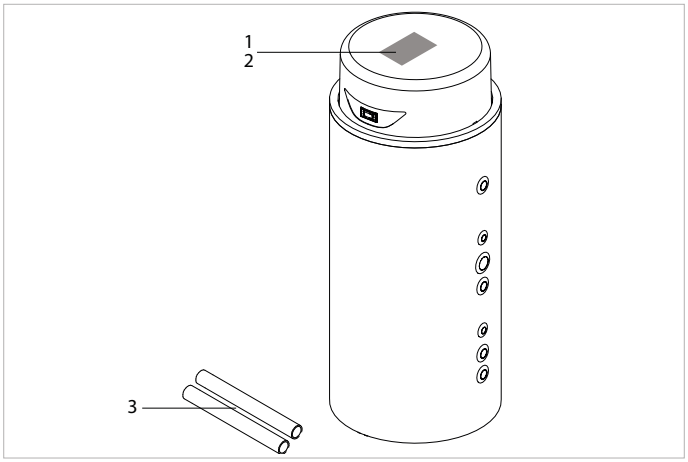
- Cut the fixing straps.
- Remove the cardboard packaging, lifting it upwards.
- Remove any protective inserts.
- Remove the plastic wrap around the machine.



SUPPLY

- Included in the supply are:
  1. Machine instructions manual.
  2. CE DECLARATION.
  3. Threaded fittings for handling.

⚠ Keep the manual in a dry place, in order to prevent deterioration, for at least 10 years for any further reference.



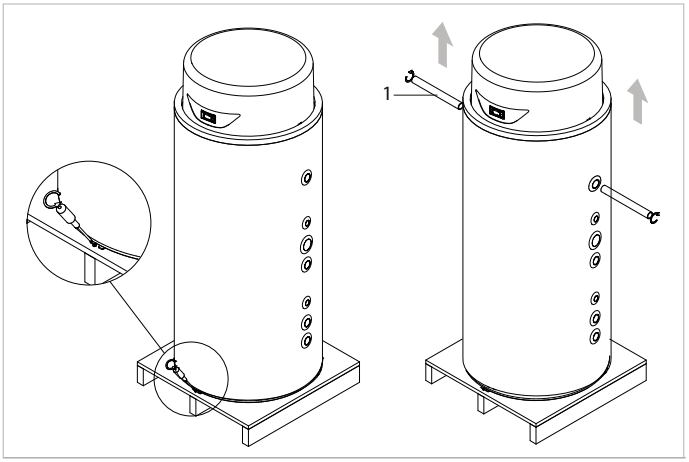
REMOVING FROM THE PALLET

- Remove the three screws from support feet.

⚠ If necessary, raise the tank insulating material slightly.

- Screw the two threaded fittings supplied in the sleeves positioned higher.
- Handle using means suitable for the weight of the equipment.

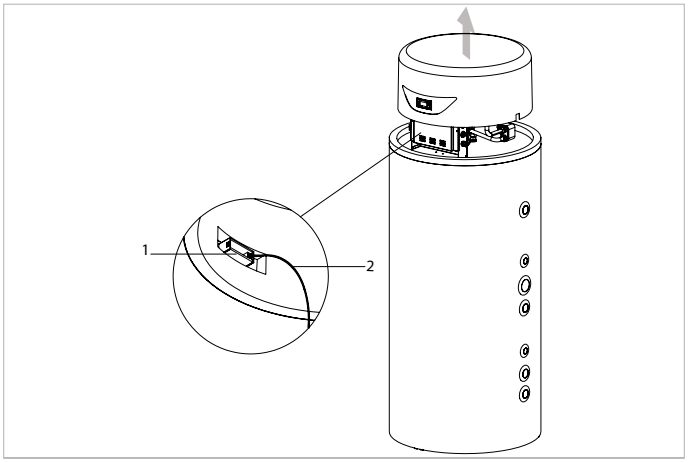
⚠ The maximum liftable weight per person is 25 kg.



1. Threaded fitting

ACCESS TO INNER PARTS

- Raise the cover by about 15 cm, taking care not to tear the connection wiring between the card and the unit.
- Disconnect the connection cable connector from the control panel.
- Lift the cover up fully to remove it, still being careful of the parts underneath it.



1. Control panel
2. Connection cable

INSTALLATION

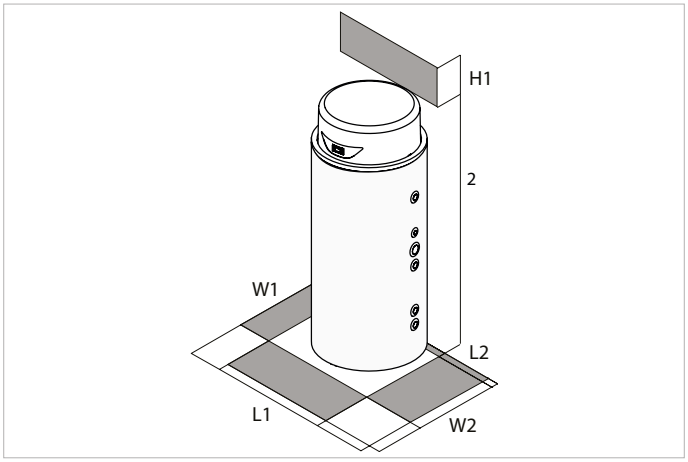
PRELIMINARY WARNINGS

- For detailed information (dimensions, weights, technical specifications, etc) please refer to the information chapter.
- The location, hydraulic and electrical system must be established by the designer and should take into account both the purely technical needs of any local laws in force and of specific authorisations.
- Ensure that the equipment corresponds with the system requirements.
- Make sure the equipment is installed protected from the elements in clean, dry premises.
- Meet the technical spaces shown in this manual to ensure proper access for machine maintenance.

CHECKING OPERATIVE SPACES

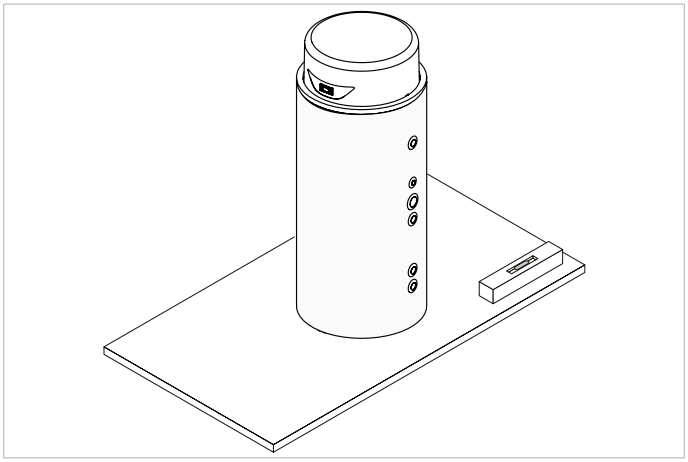
- The installation must allow specialised, authorised personnel to service the machine easily, respecting both the safety distances between units and other equipment as well as the technical spaces indicated in the table.

H1	L1	L2	W1	W2
400	500	200	300	300



POSITIONING UNITS

- Place the unit on a perfectly level supporting surface.



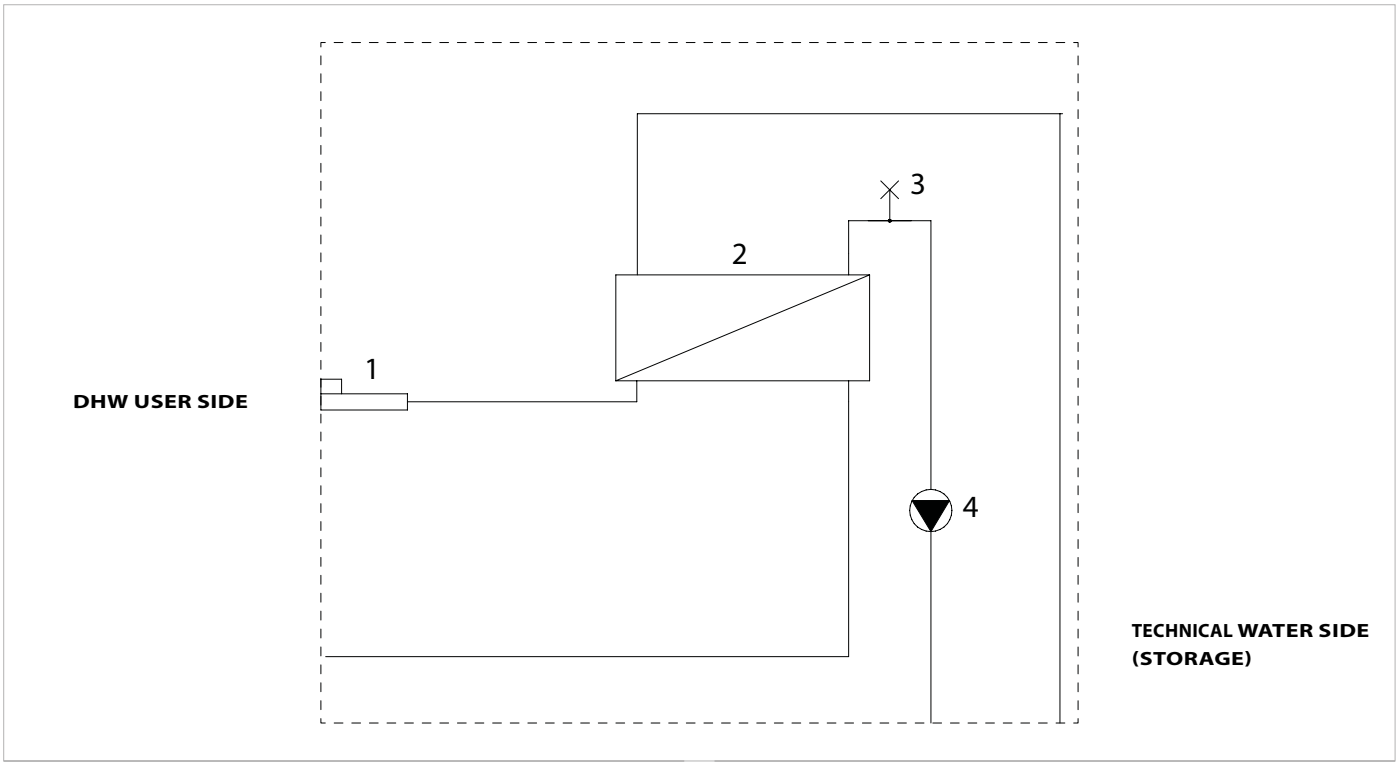
HYDRAULIC CONNECTIONS

PRELIMINARY WARNINGS

- For detailed information (dimensions, weights, technical specifications, etc) please refer to the information chapter.
- Install an input filter (under penalty of voiding the warranty.)
- The filter must be sized to ensure the flow rates necessary for the equipment.
- In case of impurities in the water, periodically service the filter.
- Install both input and outlet shut-off valves.
- Provide a tap to drain the tank.
- Make sure that the weight of the pipes does not bear on the structure of the machine.
- In the event that the leaking water wets the thermal insulation of the SAF (condensing on the display, damaging), it is necessary to leave the lid raised by about 5 cm to allow the complete evaporation of the water.

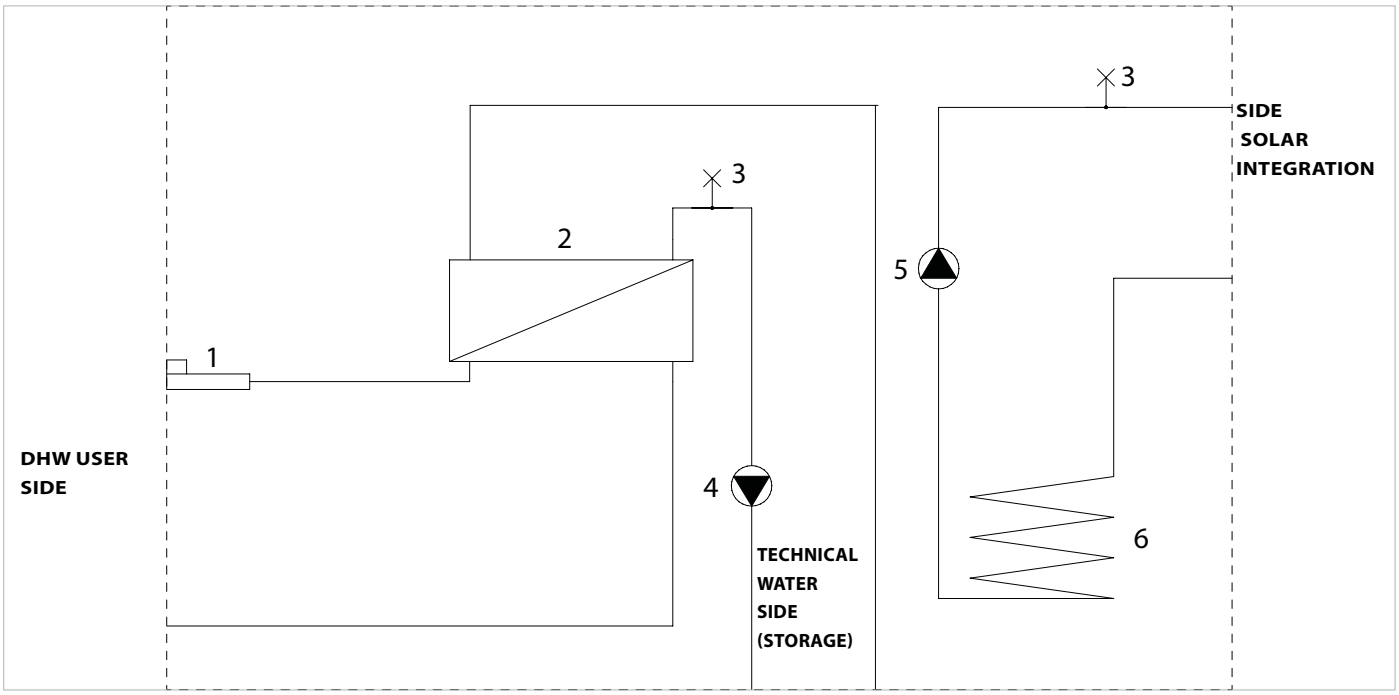
INTERNAL CIRCUIT DIAGRAMS

SAF



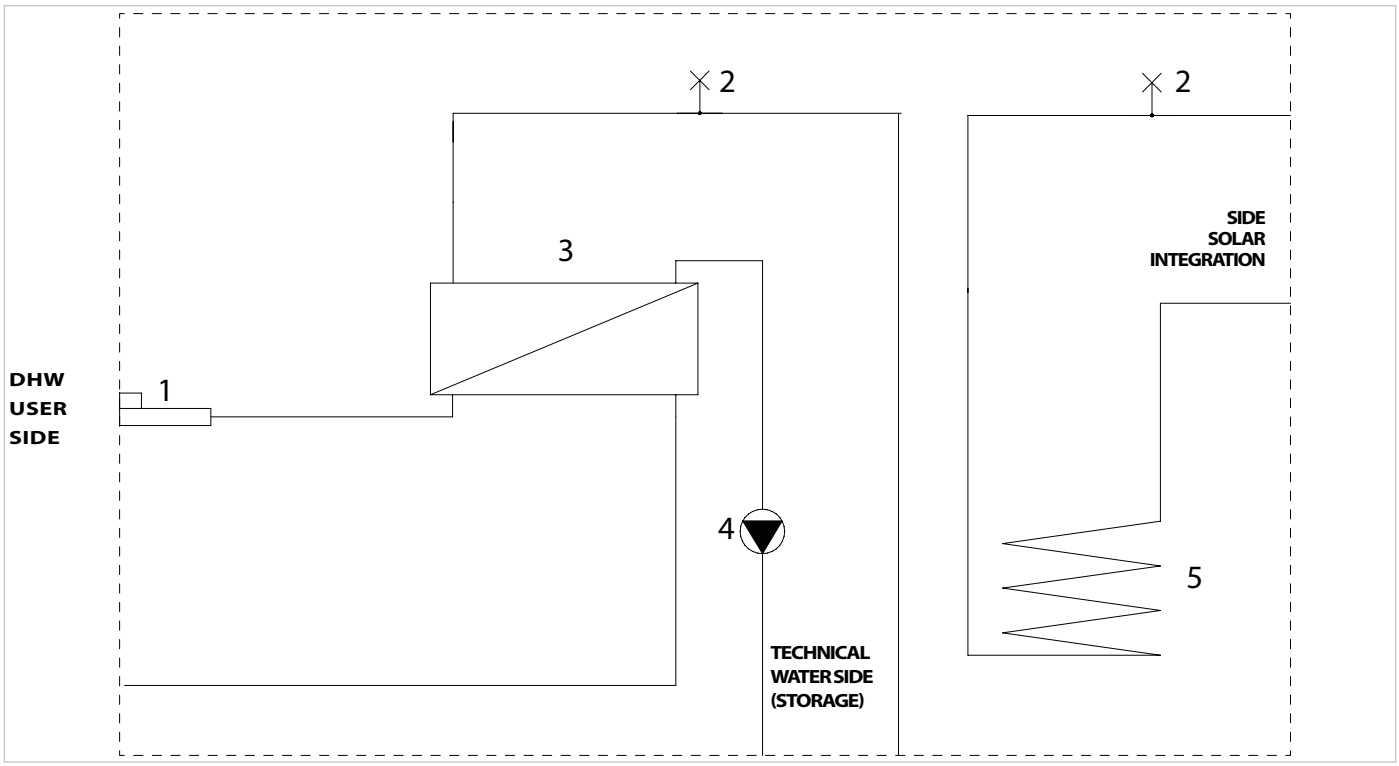
1.	flowmeter with integrated temperature sensor	**3.**	Manual air vent
2.	DHW heat exchanger	**4.**	Primary pump

SAF S



1.	flowmeter with integrated temperature sensor
2.	DHW heat exchanger
3.	Manual air vent
4.	Primary pump
5.	Solar pump
6.	Solar coil

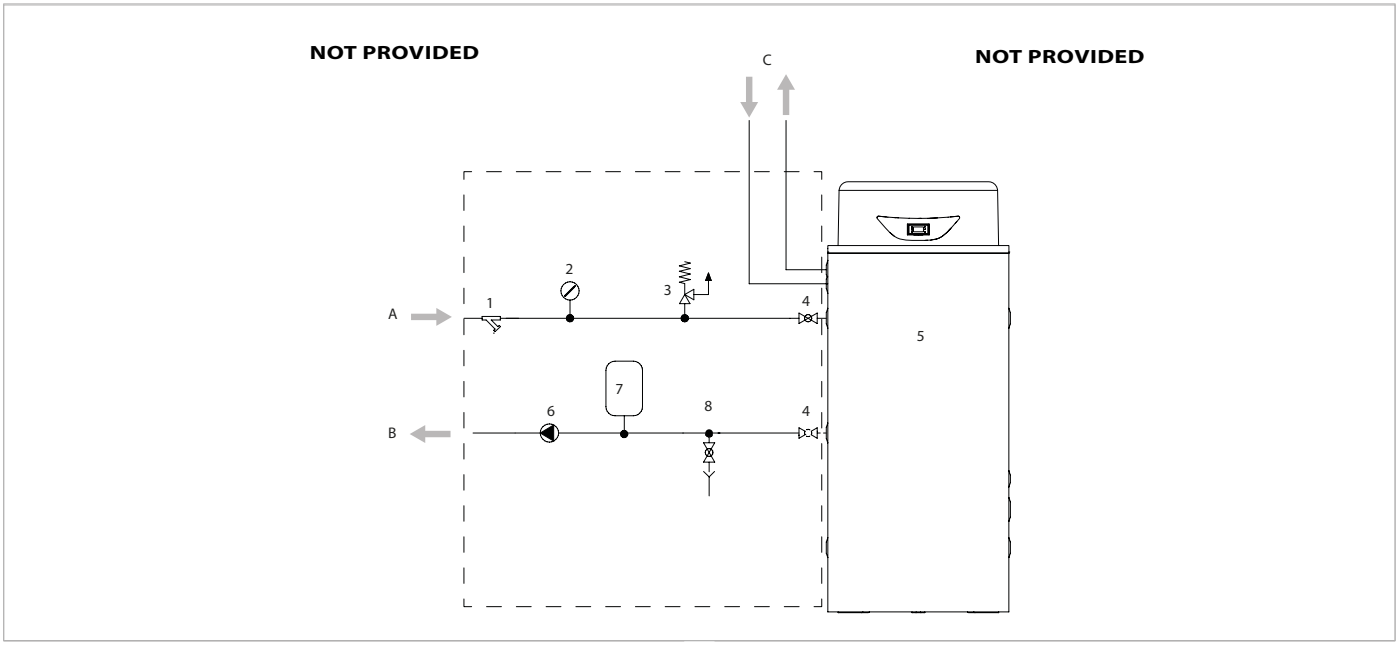
SAF T



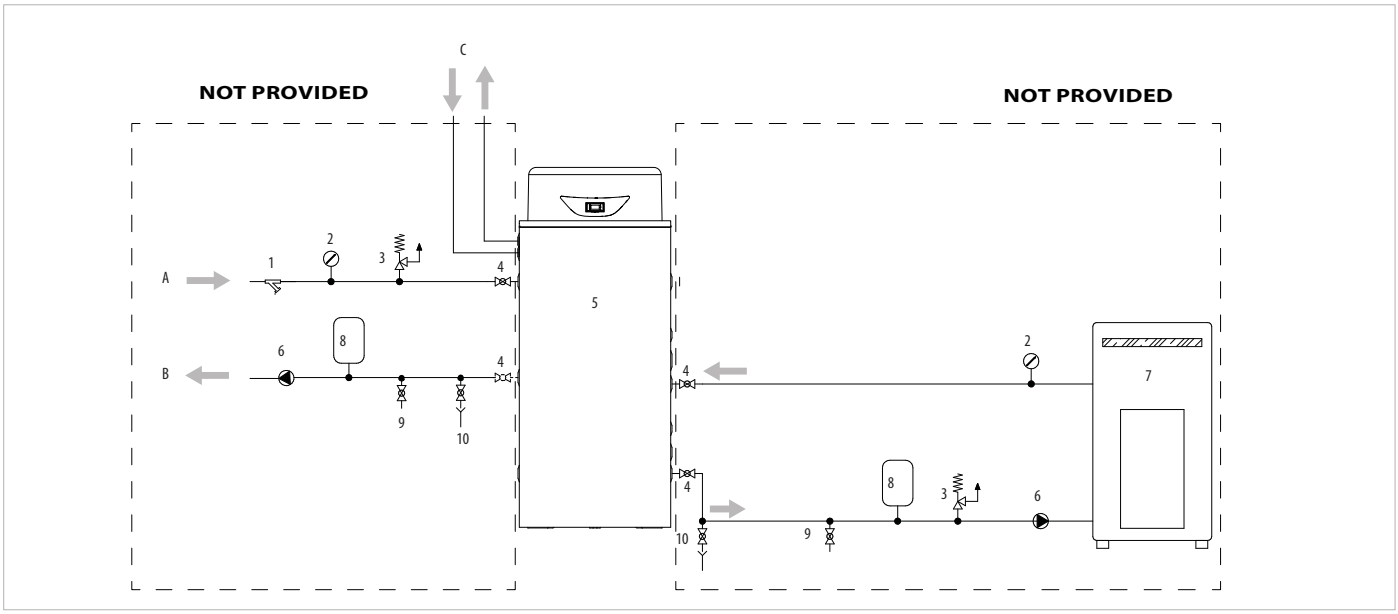
1.	**flowmeter with integrated temperature sensor**
2.	**Manual air vent**
3.	**DHW heat exchanger**
4.	**Primary pump**
5.	**Solar exchanger**

BASIC CONNECTION DIAGRAMS

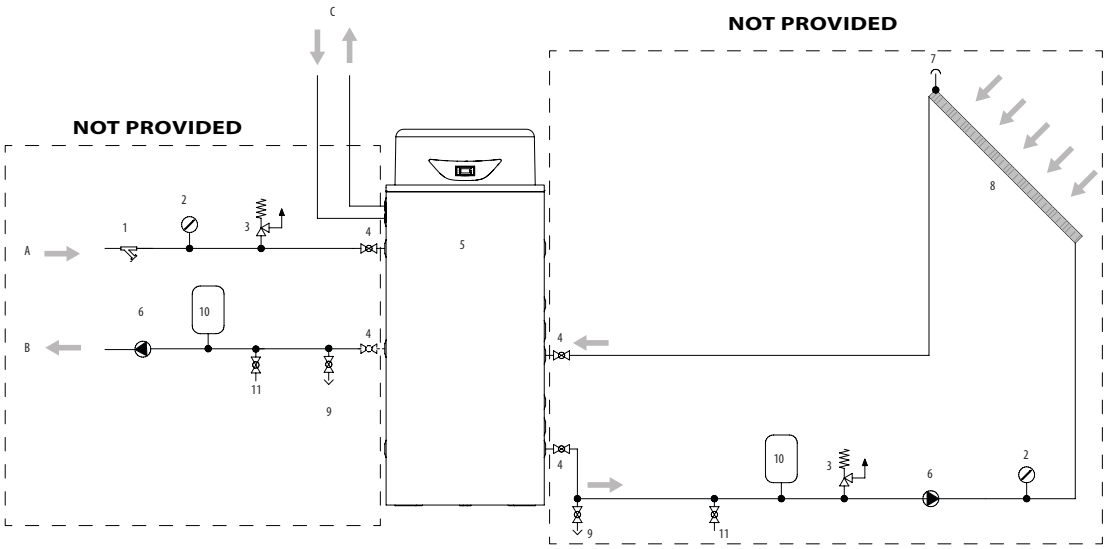
Example of system with SAF°



A.	From the heat pump
B.	To the heat pump
C.	To the DHW distribution system
1.	Y-Filter
2.	Manometer
3.	Safety valve
4.	Cut-off valve
5.	SAF
6.	Circulation pump
7.	Expansion vessel

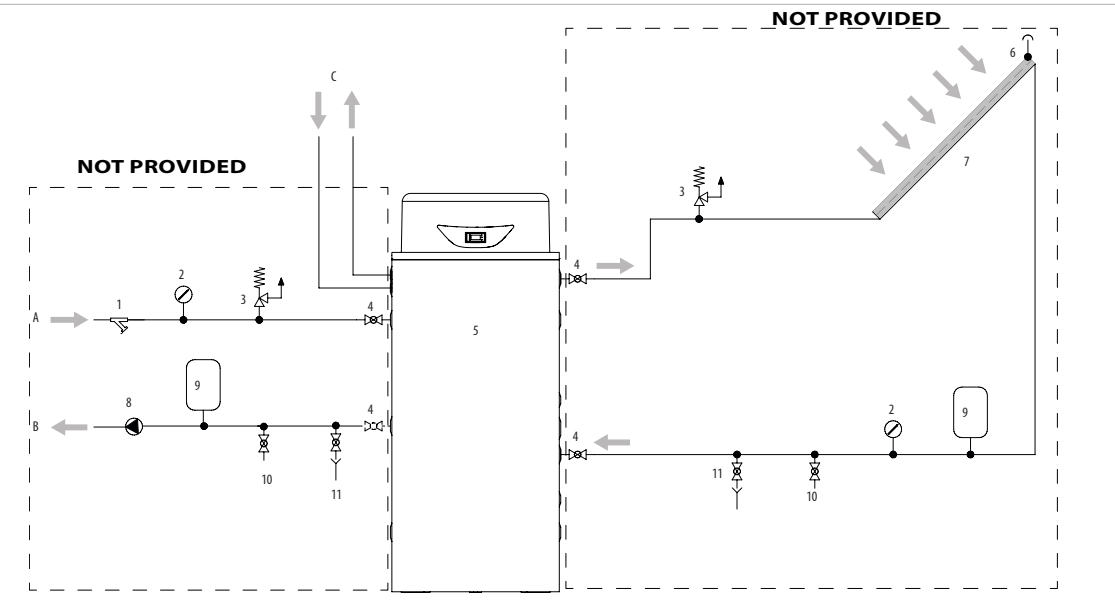


Example of system with integration from fireplace or boiler for SAF T



A.	From the heat pump
B.	To the heat pump
C.	To the DHW distribution system
1.	Y-Filter
2.	Manometer
3.	Safety valve
4.	Cut-off valve
5.	SAF T
6.	Circulation pump
7.	Stove or fireplace
8.	Expansion vessel
9.	Filling valve
10.	Drain tap

Example of system with SAF_S and SAF_T integration



A.	From the heat pump
B.	To the heat pump
C.	To the DHW distribution system
1.	Y-Filter
2.	Manometer
3.	Safety valve
4.	Cut-off valve
5.	SAF T
6.	Low-temperature system mixer
7.	Air vent
8.	solar collector
9.	Drain tap
10.	Expansion vessel
11.	Filling valve

CONNECTION

- Remove the protection caps from the connections.
- Connect the pipes to the connections positioned on the unit based on the model (see the chapter on 9.3 Dimensions p. 16).

⚠ To seal, we recommended using hemp and green paste.

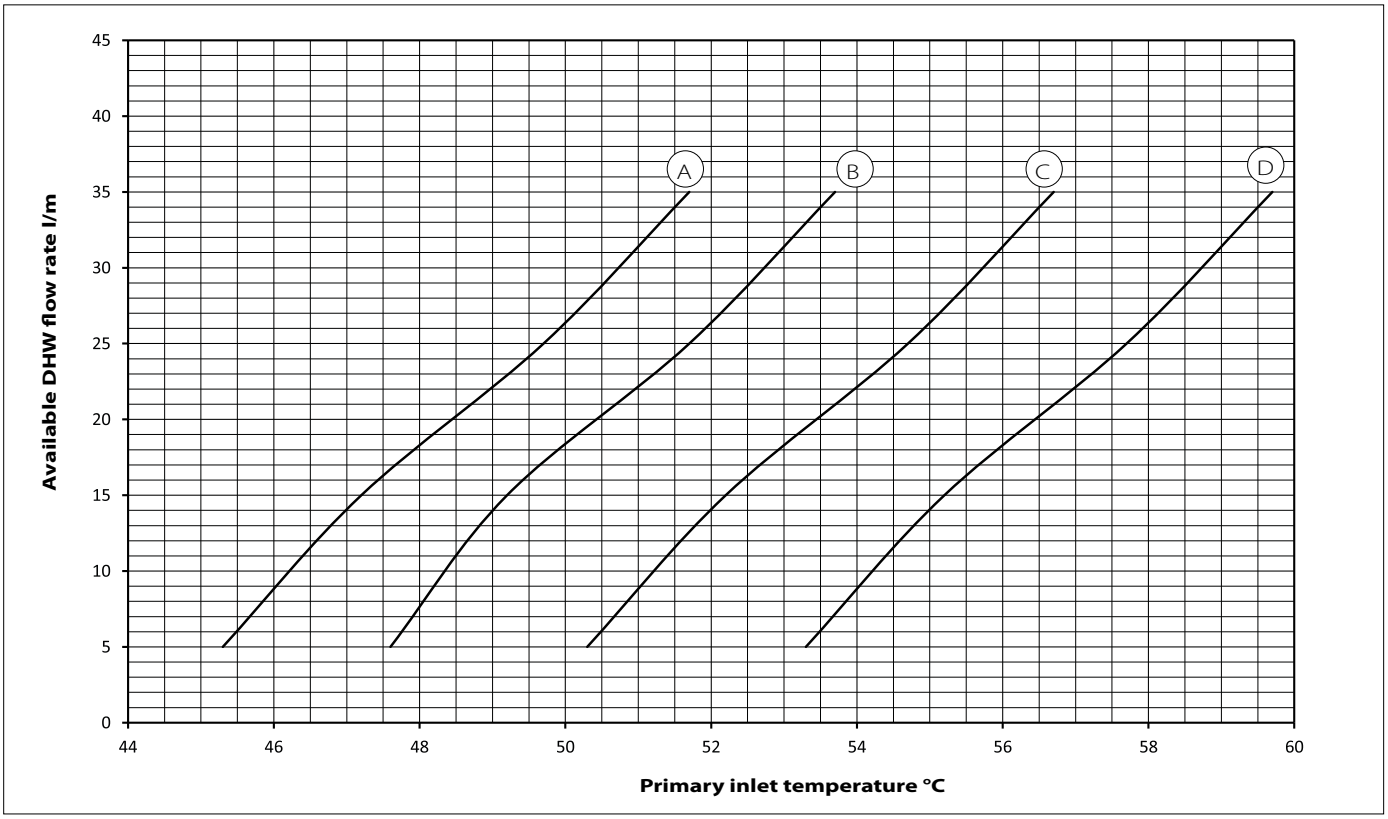
FILLING THE SYSTEM

- Before carrying out any operations, make sure that the master switch is turned off.
- Make sure the drain cocks are closed
- Open the shut-off valves in the hydraulic system.
- Begin filling.

DRAINING THE SYSTEM

- Before emptying, make sure the shut-off valves are closed.
- Open the drain cock provided on the system.

Quantity of water produced in l / m at different storage temperatures and different withdrawal temperatures



A T out 40 °C	C T out 45 °C
B T out 42 °C	D T out 48 °C

ELECTRIC CONNECTIONS

PRELIMINARY WARNINGS

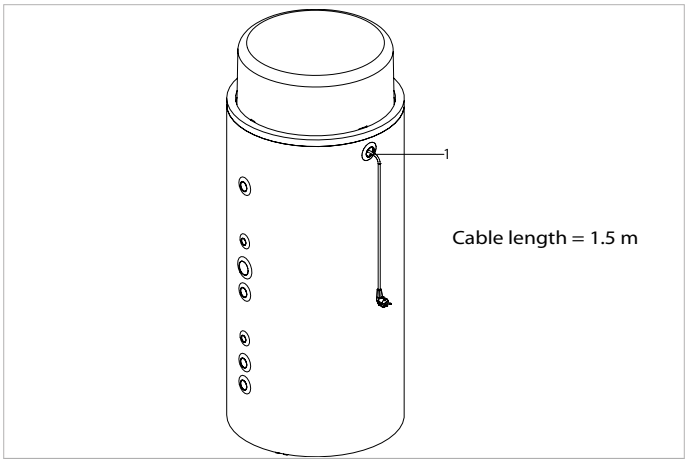
- Ensure supply voltage is correct (see identification plate applied on the equipment); incorrect voltage would irreparably undermine the main equipment components.
- Respect the connection indications of the phase, neutral and earth wires.
- Install a suitable protective power cut-off device with delayed characteristic curve with contact openings of at least 3 mm and with an adequate breaking capacity and differential protection.
- An efficient earth connection is mandatory; the manufacturer cannot be responsible for damage caused by a lack of said connection.
- The power supply of the equipment must have a value between ± 10% of the value shown on the feature plate. If this is not respected, you must contact your electrical service provider.
- Use cables that comply with the standards in force in various countries.

POWER SUPPLY CONNECTION

- The equipment is supplied with a plug to be inserted into a socket.

If necessary you can extend the cable.
In this case:

- Use an approved extension cord that is adequate to the equipment absorption.



1.	Power cable

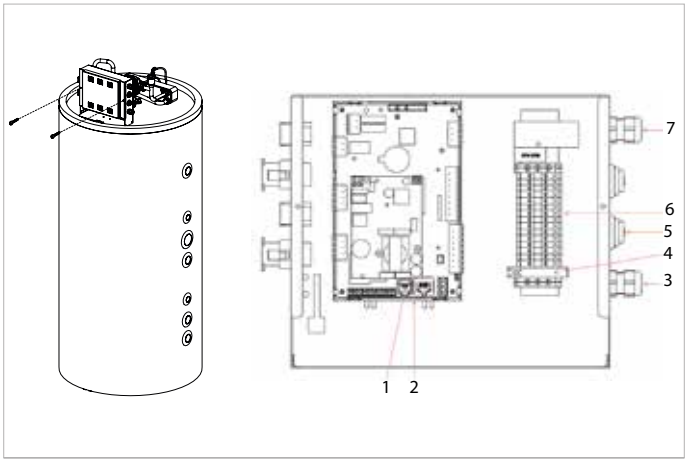
AUXILIARY CONNECTIONS

For the auxiliary connections you must access the terminal board.

- Remove the top cover (see chapter 2.7Access to inner parts p. 17)
- Unscrew the locking screws.
- Open the electrical panel door.
- Insert the connection cables into the same hole used for the power cable.

Next:

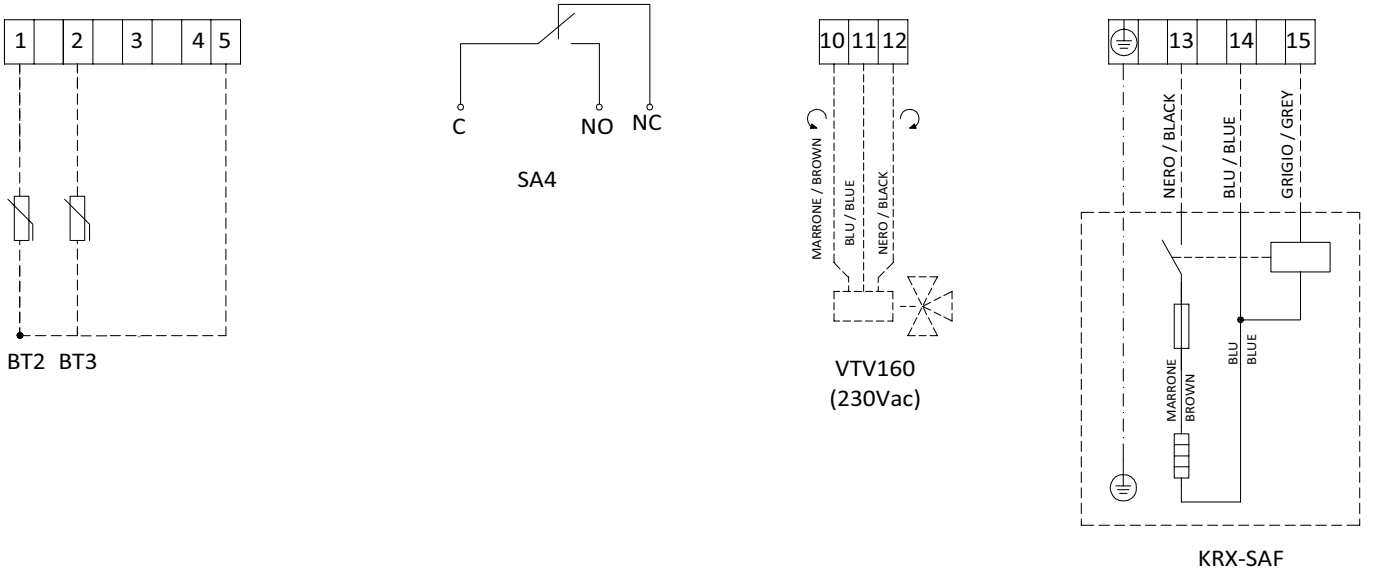
- Insert the cables into the cable guides on the electrical panel.
- Connect to the terminal board.



- **Refer to the supplied wiring diagrams for connections to the heat pump**

1.	Control panel connection cable
2.	Electronic controller
3.	Power cable
4.	230 V, 5x20 T, 3.15 A Auxiliary fuse
5.	Auxiliary connection input
6.	Auxiliary connection terminal board
7.	Resistance kit connection cable input

AUXILIARY CONNECTION TERMINAL BOARD



Auxiliary connection		Corresponding terminals	
BT2	Probe lower accumulation (only for versions saf "s" and "t")	2-5	Use a cable with minimum section of 0.5 mm up to 50 m and of 1 mm up to 100 m for the connection.
BT3	probe solar collector (for saf version "s" only)	8-9	Use a cable with minimum section of 0.75 mm for the connection To control a greater load, interface with a relay and use a cable with a suitable section.
SA4	clean contact (not in tension) to the heat pump enable		
VTV160	3-way diverter valve (vtv accessory)	10-11-12	Use a cable with minimum section of 0.75 mm for the connection
KRX-SAF	Resistance kit Integration Control (KRX-saf accessory).	13-14-15	Kit equipped with pre-wired, measured cables.

PUMP E1 PRIMARY CIRCUIT PROGRAMMING

- Access the internal parts as in the auxiliary connections paragraph
- Activate the production of domestic hot water by opening a tap.
- On pump E1, press the button ◌ several times until the following light sequence is displayed on the LEDs ●●●●● (green LEDs flashing and yellow LEDs fixed)

START-UP

PRELIMINARY WARNINGS

- Check the availability of diagrams and manuals of the installed machine.
- Be sure that the machine is placed on a perfectly level supporting surface.
- Check for anti-vibration joints on they hydraulic piping between equipment and system.
- Make sure all of the hydraulic circuit shut-off valves are open.
- Make sure the hydraulic plant has been filled and the air has been bled.
- Make sure the electrical connections have been made according to the standards in force in that country, including grounding.
- Make sure that the voltage is within the tolerance limits (± 10%).

FUNCTIONING FEATURES

DHW set-point:

The domestic hot water Set Point load is defined at first start-up and then can be modified as needed.

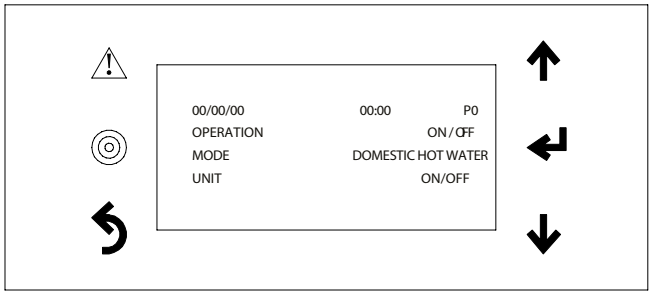
- Example: Set Point = 50°C.

Heat generator set point

- Example: Set Point = 50° C, hysteresis 5° C.
  - If the water temperature in the tank is less than 45° C, the generator will switch on.
  - If the water temperature is greater than 50° C, the generator will switch off.

If the unit power supply is restored after a temporary interruption, the set mode will be kept in the memory.

CONTROL PANEL



Key functions

⚠	Alarm Symbol	It lights up when there is an alarm state. Press the button to display the alarm type. Press again after resolving the cause to reset the alarm.
◎	Programming Symbol	Press the button to access the programming or set point consultation pages.
↩	Esc Symbol	Press the key to exit the programming pages.
↑	Up arrow key	Moves the flashing cursor to the previous page or increases the value to edit.
↵	Enter Key	To confirm and access the parameter to edit.
↓	Down arrow key	Moves the flashing cursor to the next page or decreases the value to edit.

6.3 NAVIGATION

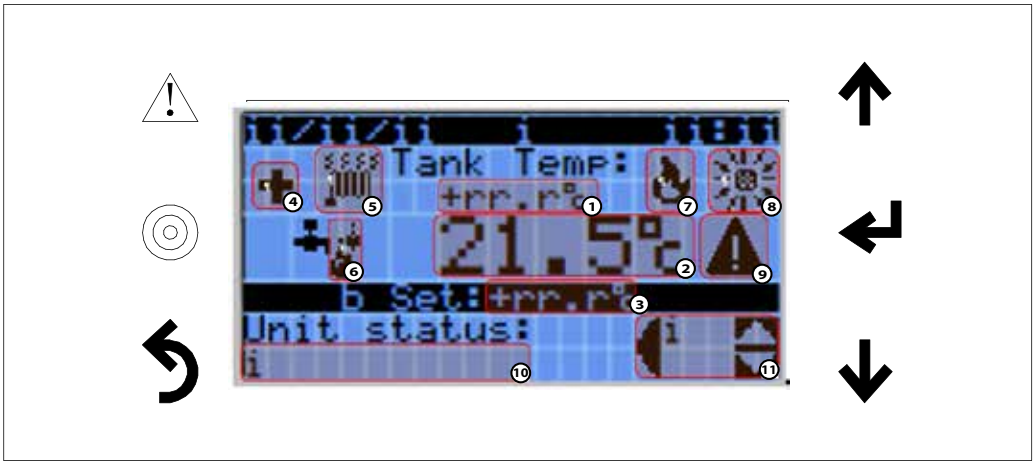
When the cursor is positioned in the upper left corner of the screen, pressing the keys ↓ / ↑ moves to the next / previous page.
Pressing the key ← the cursor is positioned on the next field where a parameter can be set.
When the cursor is positioned on a field, pressing the ↓ / ↑ keys changes the value set for the relative parameter; the value is acquired immediately. Pressing the ← key, the cursor leaves the field and moves to the next one or to the top of the page (top left corner). **The user domestic hot water set point is preset at 45°C and can be modified according to the user's needs.**

6.4 SYSTEM CONFIGURATION

When the cursor is positioned in the upper left corner of the screen, by pressing the ↓ / ↑ keys you go to the next / previous page
By pressing the ← key, the cursor moves to the next field in which a parameter can be set

When the cursor is positioned on a field, pressing the ↑ / ↓ keys modifies the value set for the relative parameter; the value is acquired immediately. By pressing the ← key, the cursor leaves the field and passes to the next one or to the top of the page
(top left corner)

Standby, press ←, the "Main screen" will appear.



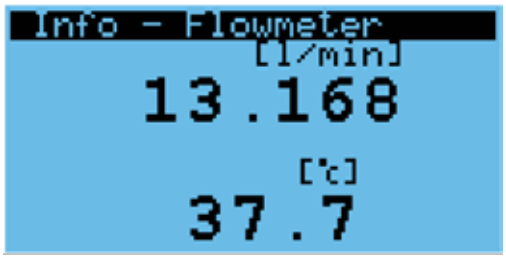
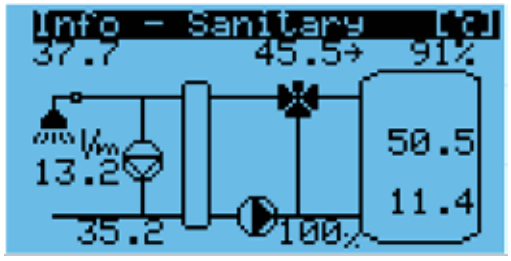
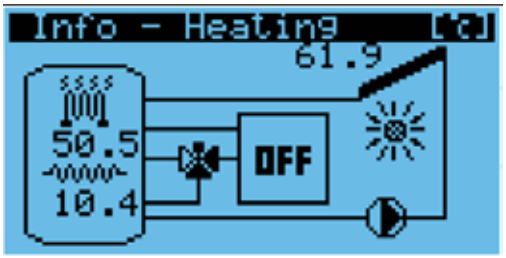
Display

1.	Intermediate storage temperature
2.	Domestic water temperature
3.	DHW set point
4.	Anti-legionella cycle in progress
5.	Electric heater in operation (optional)
6.	Domestic water supply
7.	Heat producer (boiler) active
8.	Active solar production (optional)
9.	Alarm Active
10.	Unit Status
11.	Selection: Unit On/Off; Information screens; DHW set point adjustment

By pressing the arrow it is possible to select the menus:

- Switching the unit ON/OFF
- Info - Information screen
- Set - DHW set point adjustment

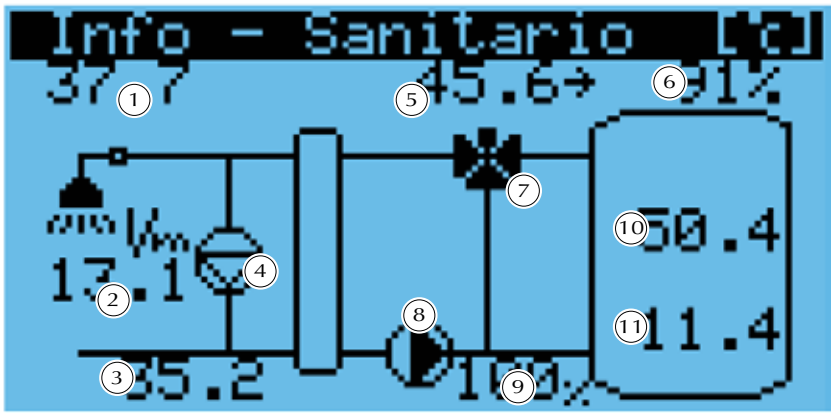
On/Off, switching off the equipment

Press the ↑/↓ arrow keys to turn off. Press the key ← to switch on.
Info, allows you to view the instantaneous operating parameters

↑/↓

↑/↓


Set, allows the regulation of the domestic water temperature set points

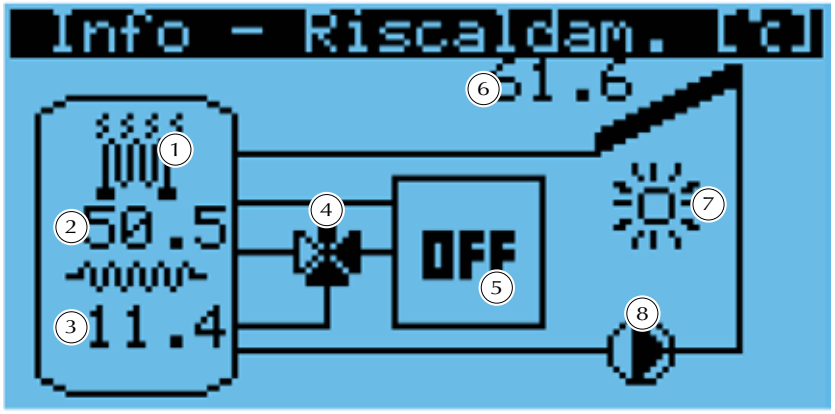
Press ←, the cursor will flash next to the temperature °C. With the arrow keys ↑/↓ vary the temperature to the desired value, confirm and exit by pressing ESC

Health info screen 1/2 key



1 Domestic water temperature	7 Mixing valve: Black triangle = way open; Delta
2 Domestic water flow rate	8 Pump primary: On = black triangle; Off = empty triangle
3 Domestic water recirculation temperature (optional)	9 Speed % pump primary
4 Recirculation pump: On = black triangle; Off = empty triangle (optional)	10 Intermediate storage temperature
5 Primary mixing temperature (optional)	11 Lower storage temperature (optional)
Mixing valve % opening (optional)	

Heating info screen 2/2 key



1 Electric heater active (optional)	5 Heat producer (boiler): OFF = deactivated; Animated flame = Active producer
2 Intermediate storage temperature	6 Solar collector temperature (optional)
3 Lower storage temperature (optional)	7 Icon depicting a sun with production by a solar collector active (optional)
4 Diverting valve: Black triangle = way open; Empty triangle = closed way (optional)	8 Solar circulator: On = black triangle; Off = empty triangle (Optional)

SYSTEM INITIAL CONFIGURATION

To customize the system configuration it is necessary to turn the unit OFF, press the Prg button and enter the password.
There are two access levels, one for the user who is only allowed the display of the parameters of the active functions, and one for the maintenance technician (Service), with the possibility of changing the configuration
and parameters.
The factory-set passwords are:

- User password = 0000;
- Service password = 1234.

Passwords are customizable from the Main menu -> 10. Settings -> 4. Change Password.

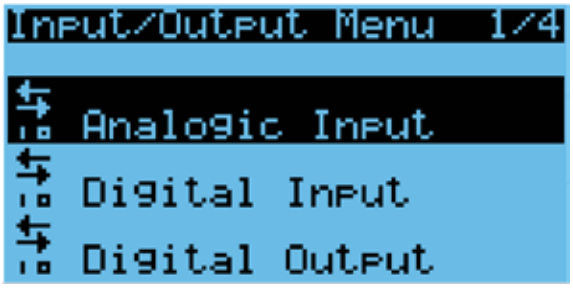
Unit configuration menu:

- CIRCULATION
  Select this function if you want to control and power a SA2 recirculation pump (230VAC max 1A).
- ANTI LEGIONELLA
  Select this function if you want to activate the protection Anti Legionella
- SOLAR KIT
  Select this function if the Aquamatic is in the Solar version or if you want to control and power the E1 solar circulator
- HEATER KIT
  Select this function if the Heater accessory is installed Electric A3
- PRIMARY MIXING VALVE
  Select this function if the Mixing valve accessory is installed Primary YV1
- STRATIFICATION VALVE
  Select this function if the stratification valve accessory YV2 is installed
  For details on the individual functions see chapter 10. Accessories

MAIN MENU

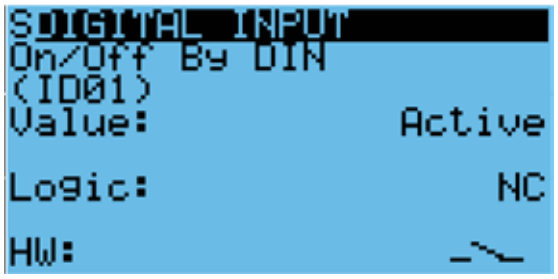
Press the Prg key, enter the password and confirm by pressing ←, with the arrows ↑ / ↓ select the required menu and confirm by pressing ←.
The Main menu includes the following sections:

1. Inputs Outputs
2. Unit configuration
3. DHW
4. solar
5. Heating
6. Valves
7. Circulation
8. Anti Legionella
9. Alarm log
10. Settings
11. Logout

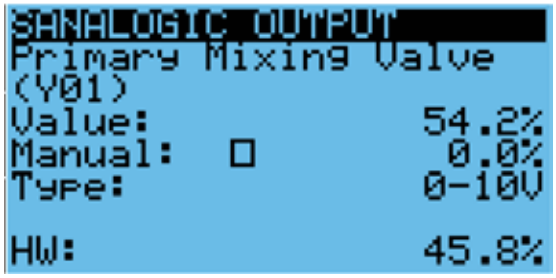


Within this section, there are the following sub-sections that allow you to view and change the following parameters:

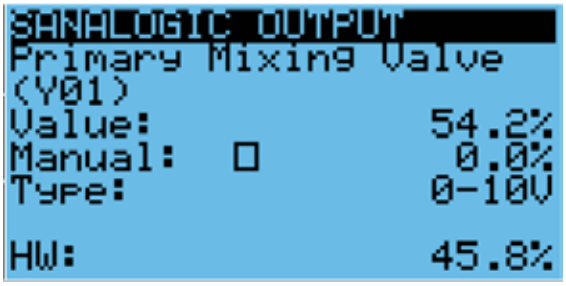
1 analogue inputs: Display value of the read value; Offset correction of reading; Selecting the type of probe NTC or NTC HT.



2. Digital inputs: Visualisation value of the input status; Logic change of logic, NC or NO; HW display of the hardware status of the digital input.



3 digital outputs: Visualisation value of the output status; Logic change of logic, NC or NO; HW display of the output hardware status.

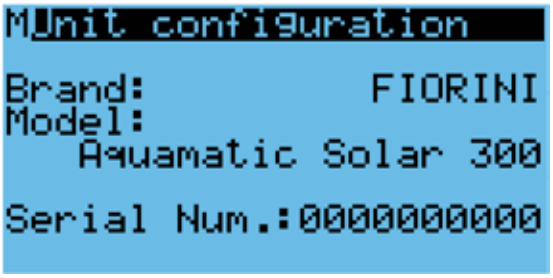


4. Analogue outputs: Display value of the read value in output; Manual allows the activation of the output at a value that can be set; Display type fo the signal type; HW display of the output hardware status

UNIT CONFIGURATION

Screen showing the model and serial number of the product

Press the Prg key, enter the password and press ←, with the ↑ / ↓ arrows select Unit Configuration and press ←.
The first screen shows model and serial number, access the second by pressing the ↓ arrow.

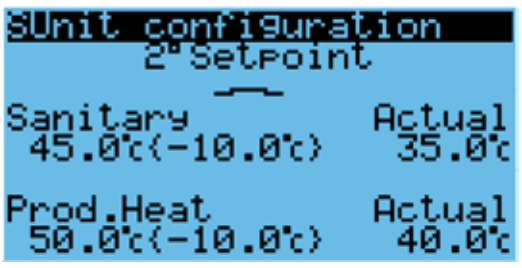


Screen listing the functions and options that can be activated

Press ← until selecting the required function, to activate or deactivate a function press the arrows ↑ / ↓, press Esc to confirm and exit.

The list includes all the functions and options provided for the Aquamatic range; activate only functions and options present on your unit. Changing the configuration is possible only if the unit is Off, a message will appear on the display reminding it.

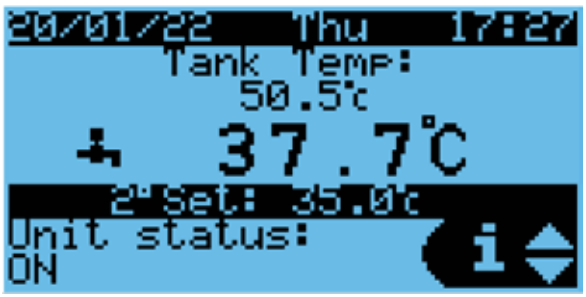
SECOND SET POINT



↑/↓

Through the digital input ID4 (clean contact), it is possible to activate a second set point for the following parameters:
- Domestic water;
- Heat producer (boiler);
- Heater;
- Recirculation pump.

You will have to set the offset with respect to the main set (Second_set = Main_ Set - Offset).
The three Offsets can be set separately.
The 2nd Set indication will appear on the main screen when it is active.



IMPORT / EXPORT PARAMETERS

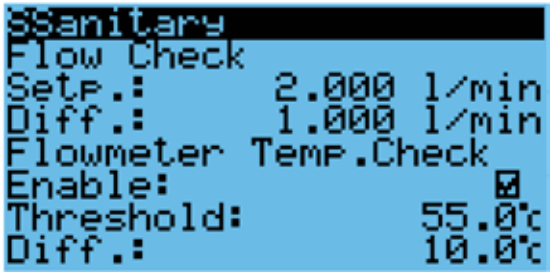
This menu allows you to save the parameters set on the controller in the internal memory to a .TXT file; by selecting the appropriate function, it will be possible to import the parameters previously stored.

EXPORT ALARMS

This menu allows you to save the alarm history in the internal memory to a .TXT file

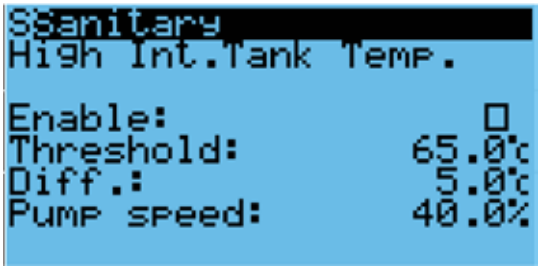
DHW

FLOW METER PARAMETERS



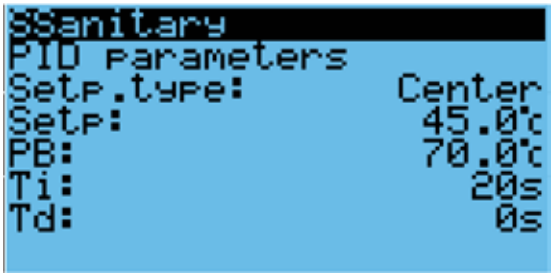
- Setp.: Flow rate above which the production of sanitary water is active (operation of pump E1).
- Diff.: Differential, if the domestic water flow rate is ≤ Setp. - Diff., Pump E1 stops.
- Enable: Enables the DHW high temperature protection function, this function stops pump E1 if the Temperature Sanitary water > of Threshold.
- Threshold: Temperature above which pump E1 is stopped.
- Diff.: Differential, if the domestic water temperature is ≤ Threshold. - Diff., the protection is deactivated.

DESTRATIFICATION



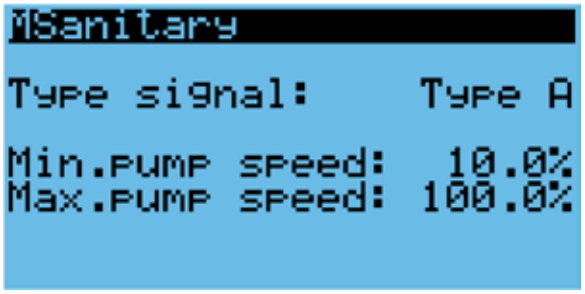
• Enable: Enables the water mixing function in the accumulation in order to uniform the temperature.
• Threshold: Activation temperature of the mixing function, if the tank temperature BT1 > Threshold the pump E1 comes on.
• Diff.: Differential, if the tank temperature BT1 ≤ Threshold.-Diff., The E1 pump stops.
• Pump speed: Pump speed during mixing.

DHW PUMP REGULATION PARAMETERS



• PID parameters: They determine the temperature regulation curve of the sanitary water.

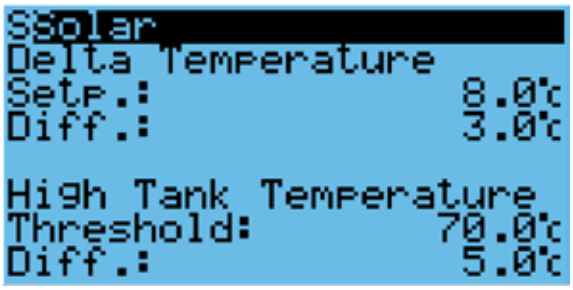
TYPE OF PUMP ADJUSTMENT



• Signal type: PWM type A signal; with this signal an inverse regulation is carried out, for low signal there is high speed and viceversa. For example, if the signal cable is disconnected, the pump runs at maximum speed.
• Pump min. speed: Minimum speed at which the pump will be driven by the PWM signal.
• Pump max. speed: Maximum speed at which the pump will be driven by the PWM signal.

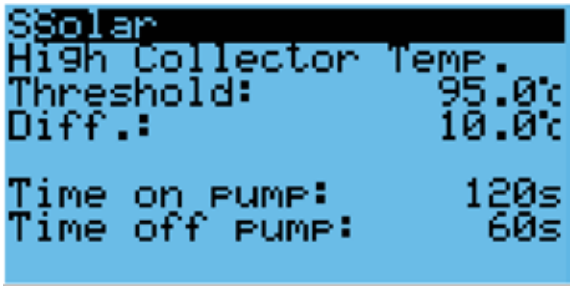
SOLAR

SOLAR PUMP PARAMETERS



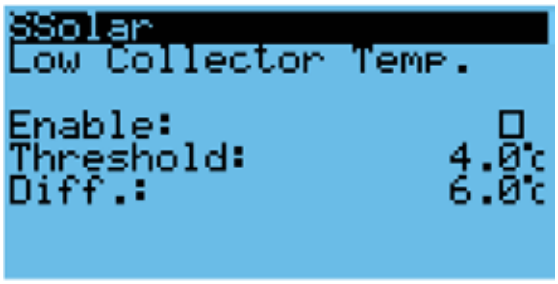
• Delta Temperature: Temperature difference for solar pump activation, if the difference between the solar collector temperature and the low storage temperature BT3 - BT2 > Setp. solar pump E2 is activated.
• Diff.: Differential, if the tank temperature BT3 BT2 ≤ Threshold.-Diff., The E2 pump stops.
• High storage temp.: Maximum temperature in the storage, if the temperature of the BT1 tank exceeds the temperature of Threshold the solar circulator is stopped.
• Diff.: Differential, if the storage temperature BT1 ≤ Threshold - Diff. The high temperature protection is deactivated.

HIGH TEMPERATURE COLLECTOR



• High Collector Temp: Maximum solar collector temperature, if the temperature of the BT3 solar collector exceeds the temperature Threshold, the E2 solar circulator is activated cyclically.
• Diff.: Differential, if the temperature BT3 ≤ Threshold - Diff. The E2 solar pump resumes operation based on the existing conditions.
• Pump on time: Pump on time during the High temperature function.
• Pump off time: Pause time between one ignition period and the next for High temperature.

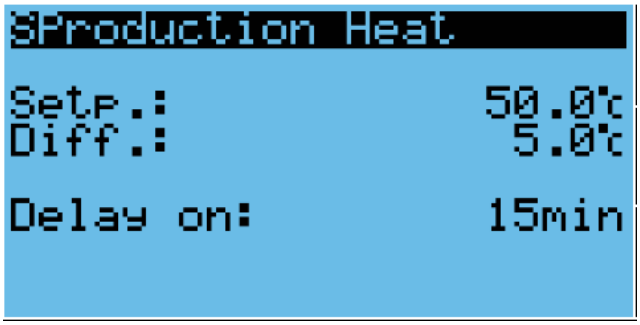
COLLECTOR ANTIFREEZE



• Enable: Enables the frost protection function for the solar collector
• Threshold: Activation temperature of the antifreeze function, if BT3 ≤ Threshold, the E2 pump is started.
• Diff.: Differential, if the temperature BT3 ≥ Threshold + Diff. The E2 solar pump resumes operation based on the existing conditions.

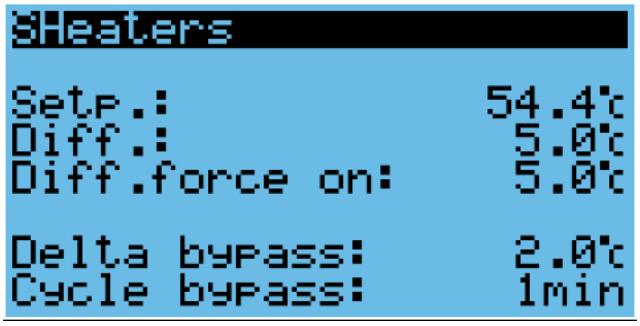
HEATING

HEAT PRODUCER



• Setp.: Set of the heat producer, if the storage temperature BT1 > Setp. the request for Heat Production (boiler) ceases by deactivating the digital output SA4 (exchange contact) and the voltage output SA3 (230 Vac 1 A max).
• Diff.: Differential, if BT1 ≤ Setp. - Diff. The Heat Production request is active.
• Delay on: Delay time of the Heat Production request if the E2 solar pump is running.

ELECTRIC HEATER



• Setp.: Heater set, if the accumulation temperature BT1 > Setp. the heater goes out;
• Diff.: Differential, if BT1 ≤ Setp. - Diff. Heater activates.

the starting of the heater is also conditioned by the bypass cycle time parameter, time within which if the bt1 temperature increases more than delta bypass, the heater is not activated.
the starting of the heater is immediate if the temperature bt1 is ≤ setp. - diff. - diff. forced on

VALVES

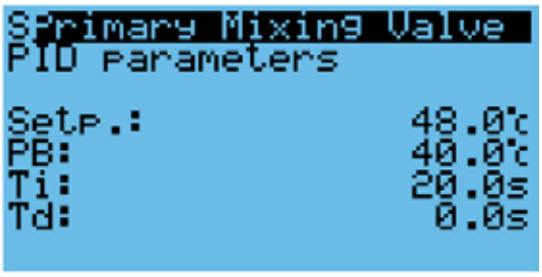
STRATIFICATION VALVE

The actuation of the YV2 Stratification Valve (diverter) occurs if all three conditions described below are met.

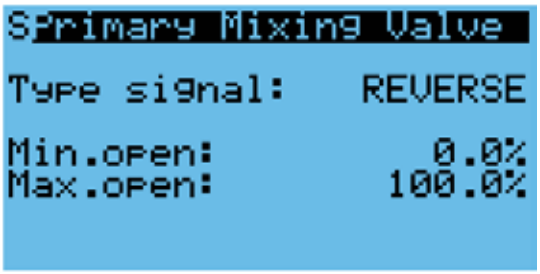
↑/↓

Low Storage Temperature BT2 (accessory)
• Setp.: Set referred to BT2, if BT2 < Setp. valve YV2 can be activated.
• Diff.: Differential, if BT2 ≥ Setp. + Diff. The valve is deactivated.
Intermediate storage temperature BT1
• Setp.: Set referred to BT1, if BT1 < Setp. valve YV2 can be activated.
• Diff.: Differential, if BT1 ≥ Setp. + Diff. the valve is deactivated.
Delta Temperature (BT1-BT2)
• Setp.: Set referred to (BT1-BT2), if (BT1-BT2) > Setp. valve YV2 can be activated.
• Diff.: Differential, if BT1 BT2 ≤ Setp. - Diff. the valve is deactivated.

MIXING VALVE



↑/↓

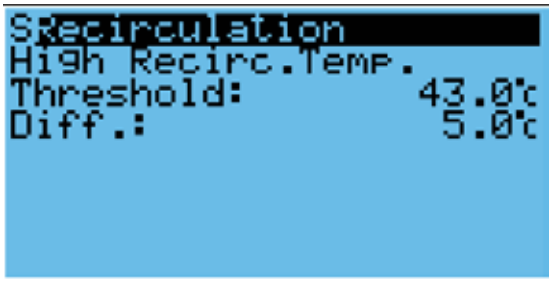


• Setp.: Temperature regulation set point referred to the BT5 mixing probe.
• PID parameters: They determine the valve regulation curve.
• Type signal: 0-10V Signal; with this signal an inverse regulation is carried out, for low signal the by-pass is very closed and viceversa. For example, if the signal cable is disconnected, the by-pass will be completely closed and the water coming from the tank will enter the exchanger directly.
• Min opening: minimum % opening of the valve.
• Max Opening: maximum % opening of the valve.

CIRCULATION

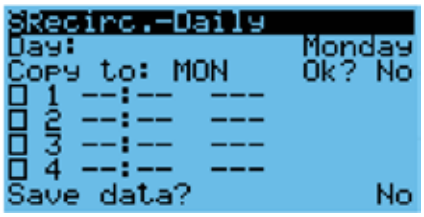
The SA2 recirculation pump is activated within the set time bands, if the conditions referring to the BT4 temperature (accessory) are met.

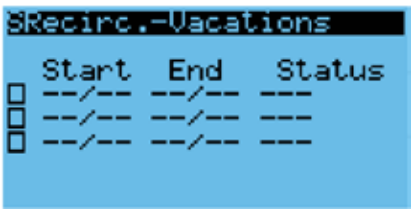
ACTIVATION TEMPERATURE



- Threshold: Maximum recirculation temperature, if BT4 > Threshold the SA2 Recirculation pump stops.
- Diff.: Differential, if BT4 ≤ Threshold - Diff. The SA2 recirculation pump activates, in the foreseen periods.

HOURLY ACTIVATION





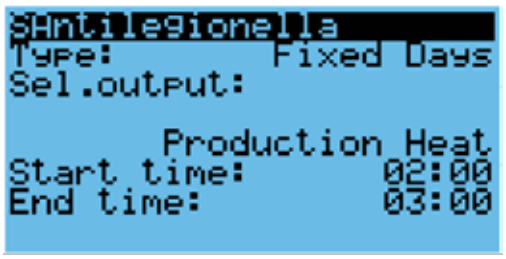
- Daily programming: it is possible to configure up to 4 daily time bands in which the recirculation pump will be able to operate and copy the timetable from day to day.
- Vacation period programming: it is possible to set up to 3 holiday periods in which to decide whether the recirculation pump will be able to operate or not.
- Special days programming: it is possible to set up to 6 holiday periods in which to decide whether the recirculation pump will be able to operate or not.

ANTI LEGIONELLA

The Anti Legionella function can be activated in the following ways:

DAILY ACTIVATION

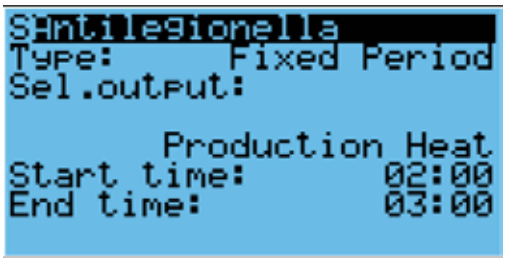
You can choose between two types of activation:



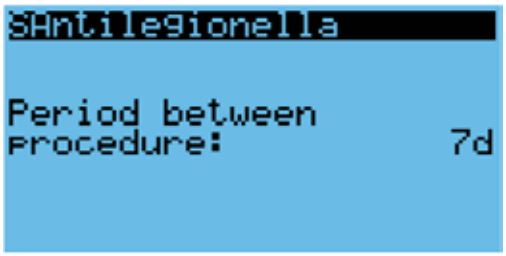
↑/↓

- Type: Fixed Days
- Select output: It is possible to select the thermal source of the anti-legionella cycle, only Boiler, only Heater, Boiler + Heater.
- Start time / End time: It is possible to set the time interval within which the anti-legionella cycle will be activated.
- Select days: It is possible to select the days of the week in which the anti-legionella cycle will be activated in the interval previously set.

Fixed Period

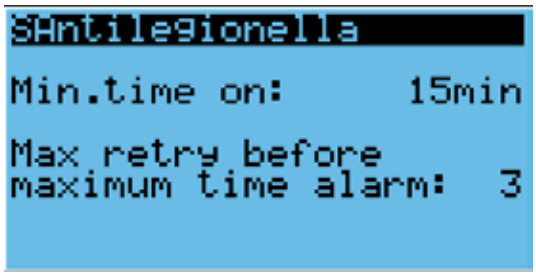


↑/↓



- Type: Fixed Period
- Select output: It is possible to select the thermal source of the anti-legionella cycle, only Boiler, only Heater, Boiler + Heater.
- Start time / End time: It is possible to set the time interval within which the anti-legionella cycle will be activated.
- Period between procedures: It is possible to define the interval in days between two successive anti-legionella cycles.

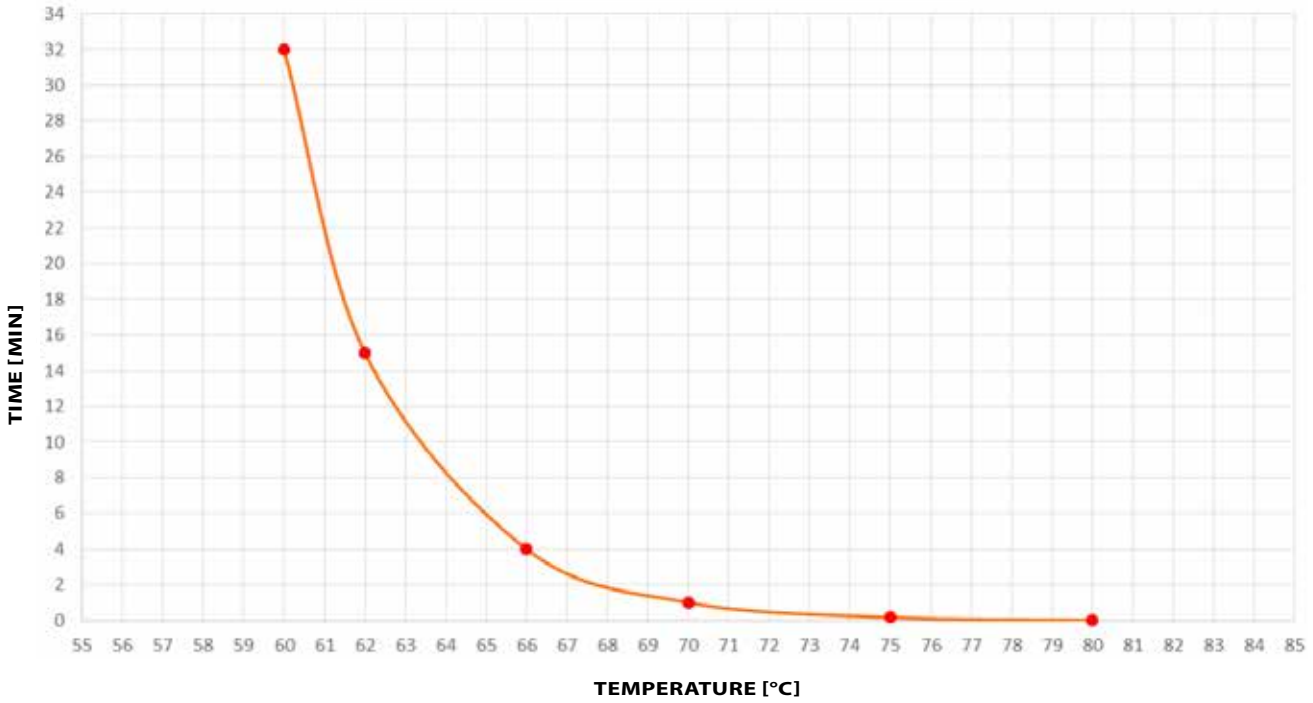
CYCLE DURATION



- Min.on time: Minimum duration in minutes of the anti-legionella cycle.
- Max. Attempts before the max. Time: Maximum number of failed Anti Legionella cycles before the alarm is triggered due to anti-legionella cycle failing.

The anti-legionella cycle is considered successfully completed if the lower temperature between F1 and BT4 (if present) remains higher at least at 60°C for a time that decreases according to the temperature reached as shown in the graph below (the table shows some example points).

TIME VS TEMPERATURE FOR ANTI-LEGIONELLA



Temperature (°C)	Time [minutes]	Time [seconds]
60	32	1920
62	15	900
66	4	240
70	1	60
75	0,17	10
80	0,017	1

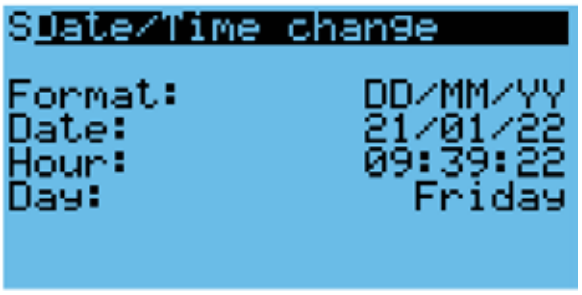
ALARM LOG

It is possible to view the log of the various alarms that have occurred on the group.

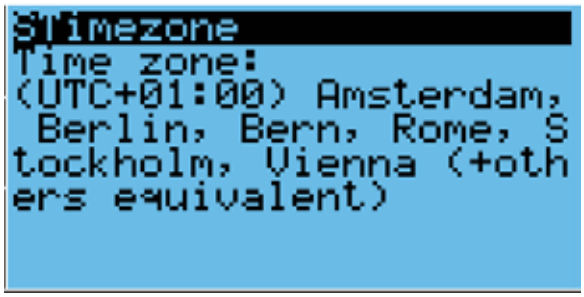
Code	Description	Reset
AL001	Error in the number of retain memory writes	manual
AL002	Error in the retain memory write	manual
AL003	Storage low temperature probe alarm	automatic
AL004	Solar collector temperature probe alarm	automatic
AL005	Recirculation temperature probe alarm	automatic
AL006	Primary mixer temperature probe alarm	automatic
AL007	Storage intermediate temperature probe alarm	automatic
AL008	Flow meter temperature probe alarm	automatic
AL009	Flow meter capacity probe alarm	automatic
AL010	High storage temperature warning	automatic
AL011	Maximum anti-legionella time alarm	automatic
AL012	High temperature collector warning	automatic
AL013	High temperature collector warning	automatic
AL013	Low temperature collector warning	automatic

SETTINGS

DATE/TIME

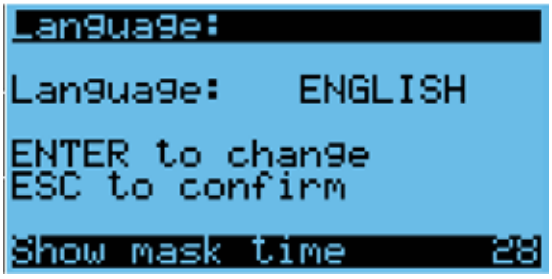


↑/↓



It is possible, if necessary, to set the date and time of the internal clock of the electronic controller.

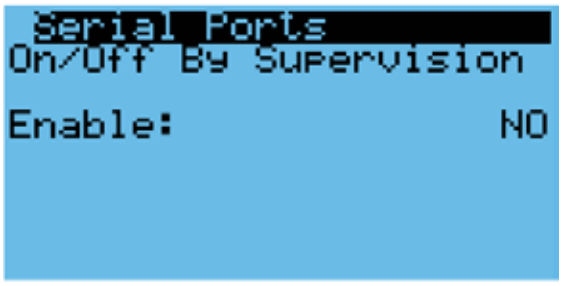
LANGUAGE



You can select the language.

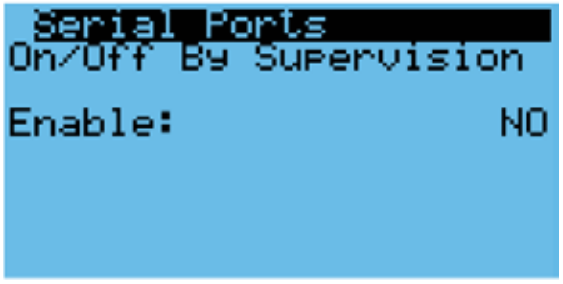
NETWORK

ON/OFF FROM SUPERVISION



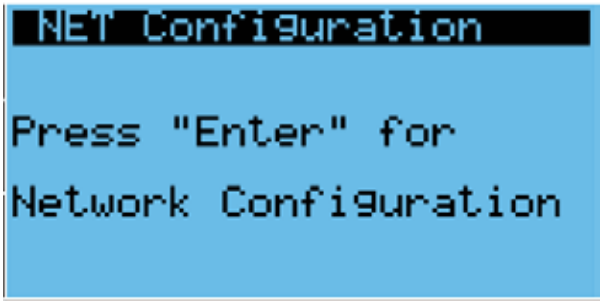
The supervisor on / off function can be enabled.

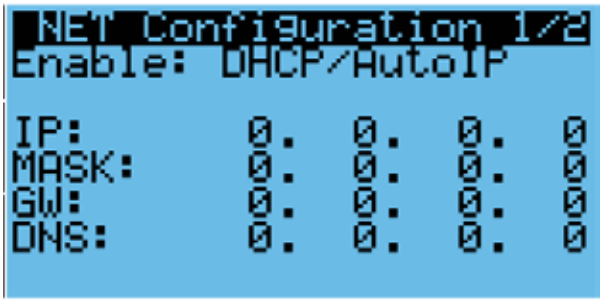
SERIAL PORT

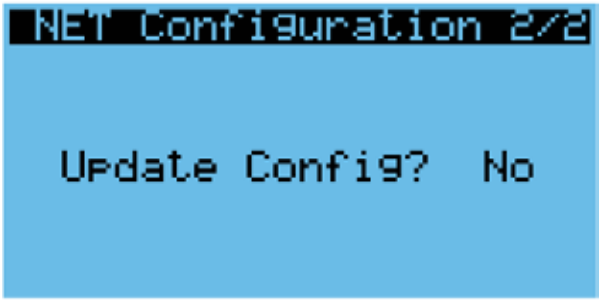


It is possible to set the parameters of the serial port.

CONFIGURATION DE RÉSEAU







It is possible to configure the network parameters (if the integrated ethernet port is present).

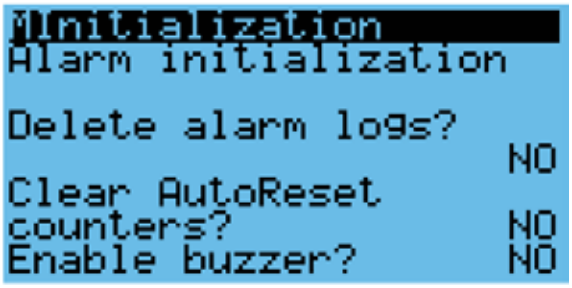
CHANGE PASSWORD

The menu allows the customization of passwords; if you log in as a User you will only be able to customize the password User, if you log in as a Service you can customize both passwords.

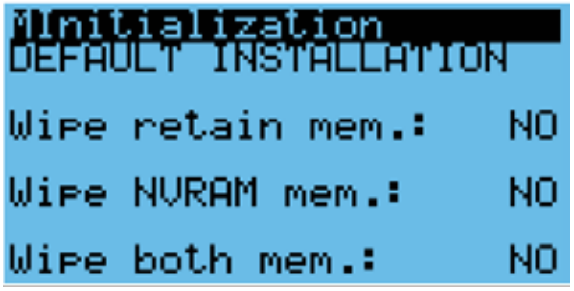
INITIALISATION

These menus allow resetting to factory settings (access allowed only to the Manufacturer).

Cancellation of alarms



Cancellation of alarms



LOGOUT

Pressing ← exits the current level to be able to access with a password of a different level.

MAINTENANCE

PRELIMINARY WARNINGS

• All ordinary and extraordinary maintenance operations must be carried out by qualified personnel.

• Before proceeding with any intervention on the unit it is recommended
to disconnect the power supply.

ROUTINE MAINTENANCE

• Periodic maintenance is essential to maintain the unit in perfect efficiency both from a functional and energy point of view.

• A maintenance plan is recommended, on an annual basis, which includes the following operations and checks:

– Presence of air bubbles.
- Efficiency of safety devices.
- Electrical power supply voltage.
- Electrical power consumption.
- Tightening of electrical and hydraulic connections.
- Circulating pumps efficiency.

POSSIBLE ANOMALIES AND POSSIBLE REMEDIES

Fault	Cause	Remedy
The producer does not start	Power failure	Check for voltage
	Main switch on OFF	Set to ON
	Control panel in STAND-BY	Set to ON
	Low power supply voltage	Check power supply line
	Faulty circulator	Replace the component
Poor yield	Presence of air in the hydraulic circuit	Vent
	Incorrect sizing of the equipment	Check
	Operation outside of operating conditions recommended by the manufacturer	Check parameters
Noisy circulator	Presence of air in the hydraulic circuit	Vent
	Low power supply voltage	Check power supply line
The instantaneous producer of domestic water stopped due to intervention of the protections	Low power supply voltage	Check
	Electrical connections tightened badly	Check
	Operation outside permitted limits	Check
	Bad functioning of the probes or flow meter	Replace the component
	Thermal protection intervention	Check the supply voltage
		Check the electrical isolation of the windings of the circulator
High electrical power consumption	Supply voltage non compliant	Control the supply voltage
	Operation outside permitted limits	Check

SHUTDOWN FOR LONG PERIODS

• Check that the control panel indicates “STAND-BY”.
• Close the water taps.
• Set the general differential QF switch to OFF.

⚠ If the temperature can drop below zero there is a danger of frost: the hydraulic system and the hydraulic circuits of the appliance
they must be emptied.

USER MENU

Start-up

On the control panel

1. Press the ↑ key

Deactivation

On the control panel

1. With the keys ↑ / ↓ select 
2. Press the → key
3. Press the ↑ key
4. The STANDBY screen will appear

Language

On the control panel

1. Press the Prg key
2. With the keys ↑ / ↓ select the Settings menu and press ←
3. With the keys ↑ / ↓ select the Language menu and press ←
4. Press ← to change language
5. Press Esc to confirm and exit

Set point configuration

On the control panel

1. With the keys ↑ / ↓ select Set
2. Press the ← key
3. Use the keys ↑/ ↓ to modify the value
4. Press Esc to confirm and exit

Alarms

On the control panel

1. Press the key  and the alarm page will be displayed
2. By pressing the keys ↑/ ↓ it is possible to view any other alarm pages .
3. Press Esc to confirm and exit

Data and time setting

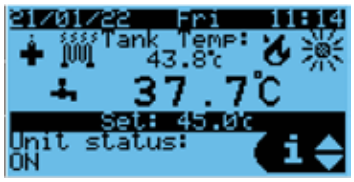
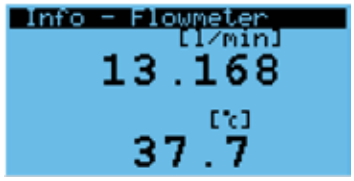
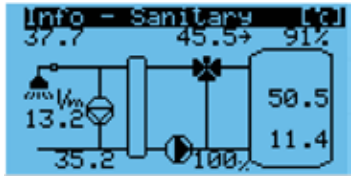
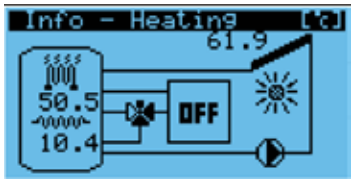
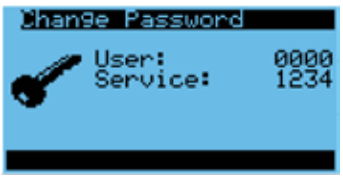
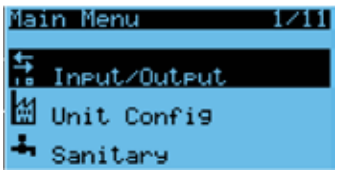
On the control panel

1. Press the Prg key.
2. With the keys ↑ / ↓ select the Settings menu and press ←.
3. With the keys ↑ / ↓ select the Date/time menu and press ←.
4. Press the ← key to enter the field to be modified.
5. Use the keys ↑/ ↓ to modify the value.
6. Press the ← key to enter the next field and proceed as indicated above to make the change.
7. Press Esc to confirm and exit.

FUNCTIONING CHARACTERISTICS

DHW set point

The user domestic hot water set point is preset at 45°C and
it is displayed on the main screen.
The user can change the Set Point according to their needs.
Heat generator set point
The set point of the heat producer is preset to 50°C, hysteresis
5°C.
The activation of the heat producer is signaled by the flashing
of the symbol 
• For water temperatures in the tank below 45°C
the generator will be switched on.
• For water temperatures in the tank below 50°C
the generator will be switched off.
In case of restoration of the power supply of the unit after a momen-
tary
interruption, the set modes will be maintained
in the memory.

	Home screen: Press ← to turn on the device
	Equipment On / Off Screen: Press ↑ or ↓ to turn off the device
	Home screen see key on page 20
	Set screen DHW set point adjustment
	Info screen - Flowmeter Capacity and produced DHW temperature
	Info screen - Domestic hot water see key on page 22
	Info screen - Heating see key on page 22
	Password Screen is displayed by pressing Prg: User password 0000, confirm by pressing ← four times
	Home screen Main menu consisting of 11 items: 1/11 Inputs/Outputs 2/11 Unit Config 3/11 DHW 4/11 Solar 5/11 Heating 6/11 Valves 7/11 Recirculation 8/11 Anti-legionella 9/11 Log 10/11 Settings 11/11 Logout

TECHNICAL INFORMATION

TECHNICAL DATA

SAF

Model		200	300	500
Performance in DHW production				
Output flow rate (*)	l/m		18.5	
Output volume (*)	l	153	214	337
Accumulation dispersion				
Losses through dispersion (**)	W	59	68	80
Actual volume	l	199	290	480
Energy efficient class			B	
Hydraulic features				
Pressure drop	mca		1.20	
Electric functioning				
Electric power supply	V/Ph/Hz		230/1/50	
Minimum input power	W		25	
Maximum input power	W		75	
Minimum input current	A		0.14	
Maximum input current	A		0.53	
Sound features				
Sound Pressure	dB(A)		25	
Operating limits				
Minimum DHW flow rate	l/m		2.0	
Maximum DHW flow rate	l/m		35.0	
Maximum working pressure	bar		6	
Maximum operating temperature	°C		95	

(*) Working conditions according to EN 16417 (ACS 42 ° C, 50 ° C storage)
(**) Working conditions according to EU Regulation N°. 812/2013 and N°. 814/2013 (ambient air 20 ° C, 65 ° C storage)

SAF T

Model		300	500
Performance in DHW production			
Output flow rate (*)	l/m	18.5	
Output volume (*)	l	214	337
Accumulation dispersion			
Losses through dispersion (**)	W	68	80
Actual volume	l	279	465
Coil volume	l	10.0	13.0
Energy efficient class		B	
Hydraulic features			
Pressure drop	mca	1.20	
Electric functioning			
Electric power supply	V/Ph/Hz	230/1/50	
Minimum input power	W	25	
Maximum input power	W	75	
Minimum input current	A	0.14	
Maximum input current	A	0.53	
Sound features			
Sound Pressure	dB(A)	25	
Operating limits			
Minimum DHW flow rate	l/m	2.0	
Maximum DHW flow rate	l/m	35.0	
Maximum working pressure	bar	6	
Maximum operating temperature	°C	95	

(*) Working conditions according to EN 16417 (ACS 42 ° C, 50 ° C storage)
(**) Working conditions according to EU Regulation N°. 812/2013 and N°. 814/2013 (ambient air 20 ° C, 65 ° C storage)

SAF S

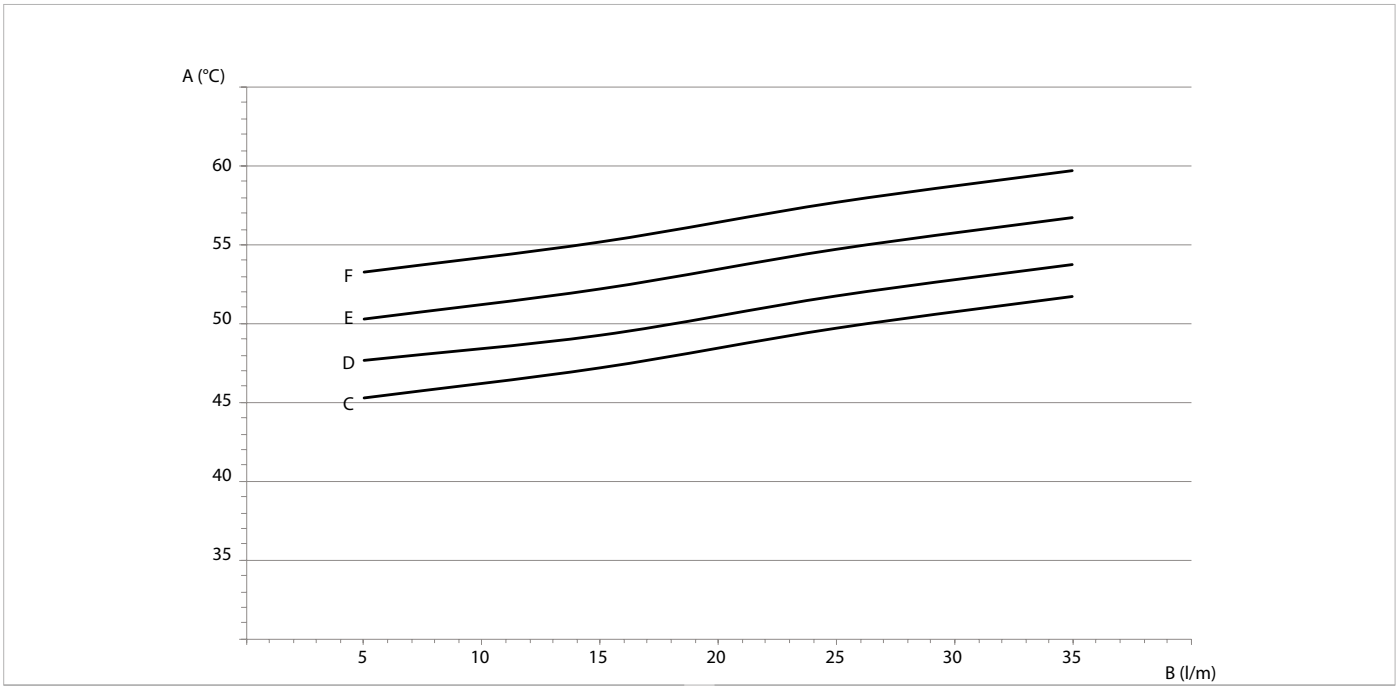
Model		300	500
Performance in DHW production			
Output flow rate (*)	l/m	18.5	
Output volume (*)	l	214	337
Accumulation dispersion			
Losses through dispersion (**)	W	68	80
Actual volume	l	279	465
Coil volume	l	10.0	13.0
Energy efficient class		B	
Hydraulic features			
Pressure drop	mca	1.20	
Electric functioning			
Electric power supply	V/Ph/Hz	230/1/50	
Minimum input power	W	27	
Maximum input power	W	127	
Minimum input current	A	0.18	
Maximum input current	A	1.05	
Sound features			
Sound Pressure	dB(A)	25	
Operating limits			
Minimum DHW flow rate	l/m	2.0	
Maximum DHW flow rate	l/m	35.0	
Maximum working pressure	bar	6	
Maximum operating temperature	°C	95	

(*) Working conditions according to EN 16417 (ACS 42 ° C, 50 ° C storage)
(**) Working conditions according to EU Regulation N°. 812/2013 and N°. 814/2013 (ambient air 20 ° C, 65 ° C storage)

PERFORMANCE

DHW production at different sampling temperatures

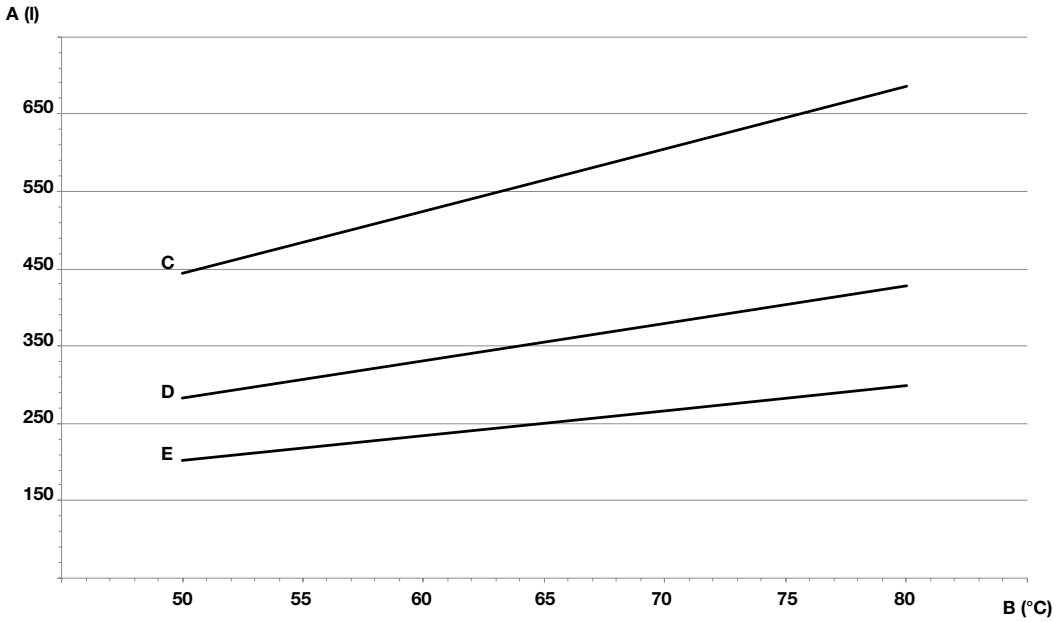
Amount of domestic hot water produced at different storage temperatures and varying sampling temperatures.



A.	Primary temperature	**D.**	Outlet temperature 42°C
B.	Domestic hot water quantity	**E.**	Outlet temperature 45°C
C.	Outlet temperature 40°C	**F.**	Outlet temperature 48°C

DHW quantity with 8 kW generator

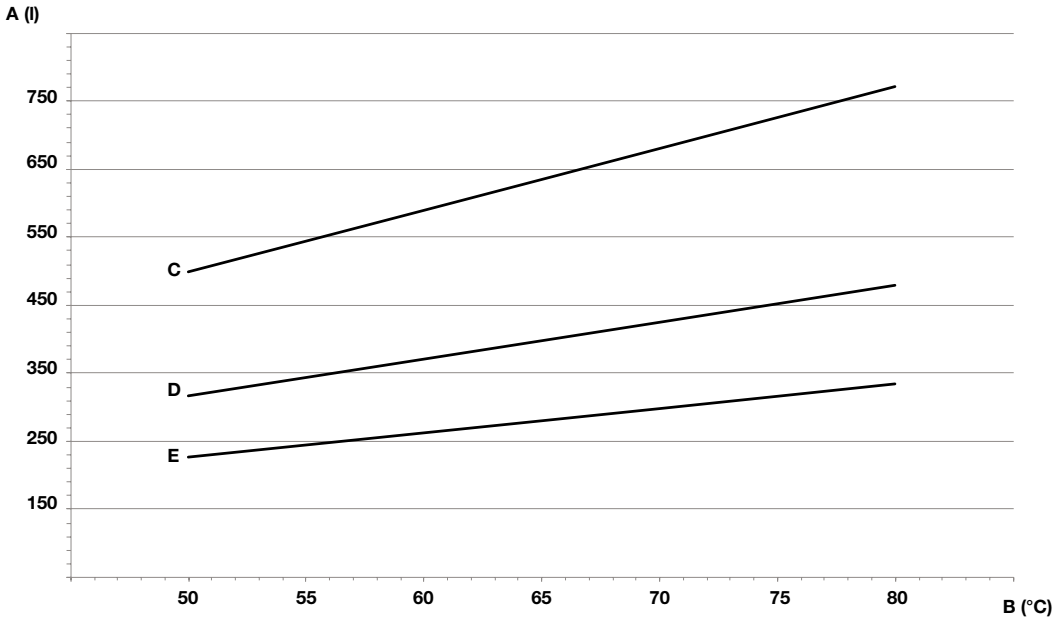
Amount of domestic hot water produced with 8 kW generator turned on at different thermal storage temperatures with the same sampling temperature (42° C).



A.	Domestic hot water quantity	**D.**	SAF 300
B.	Storage temperature	**E.**	SAF 200
C.	SAF 500		

DHW quantity with 12 kW generator

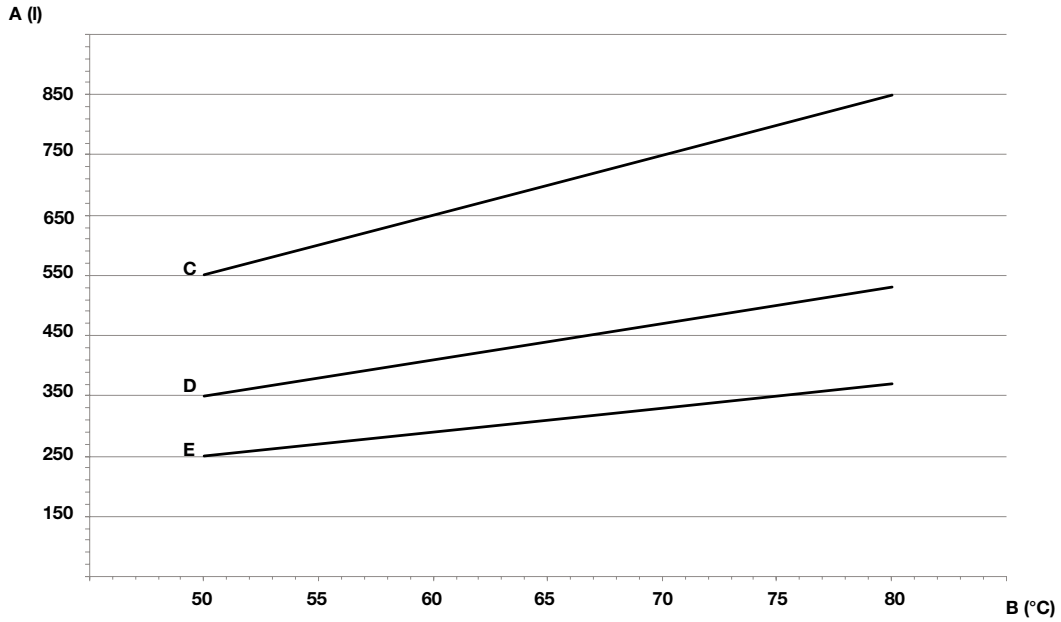
Amount of domestic hot water produced with 12 kW generator turned on at different thermal storage temperatures with the same sampling temperature (42° C).



A.	Domestic hot water quantity	**D.**	SAF 300
B.	Storage temperature	**E.**	SAF 200
C.	SAF 500		

DHW quantity with 16 kW generator

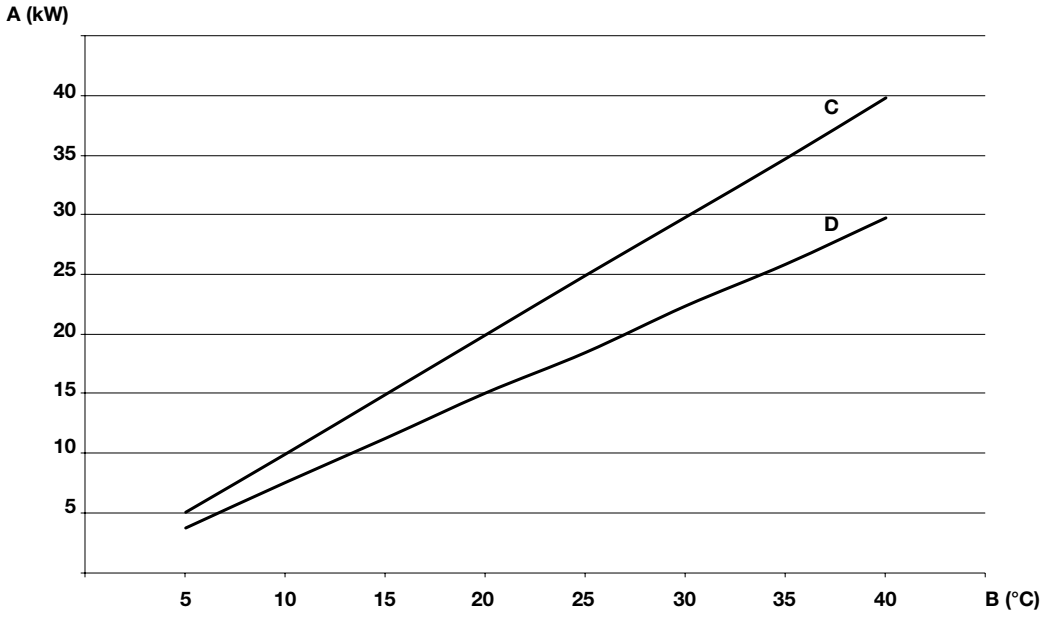
Amount of domestic hot water produced with 16 kW generator turned on at different thermal storage temperatures with the same sampling temperature (42° C).



A.	Domestic hot water quantity	**D.**	SAF 300
B.	Storage temperature	**E.**	SAF 200
C.	SAF 500		

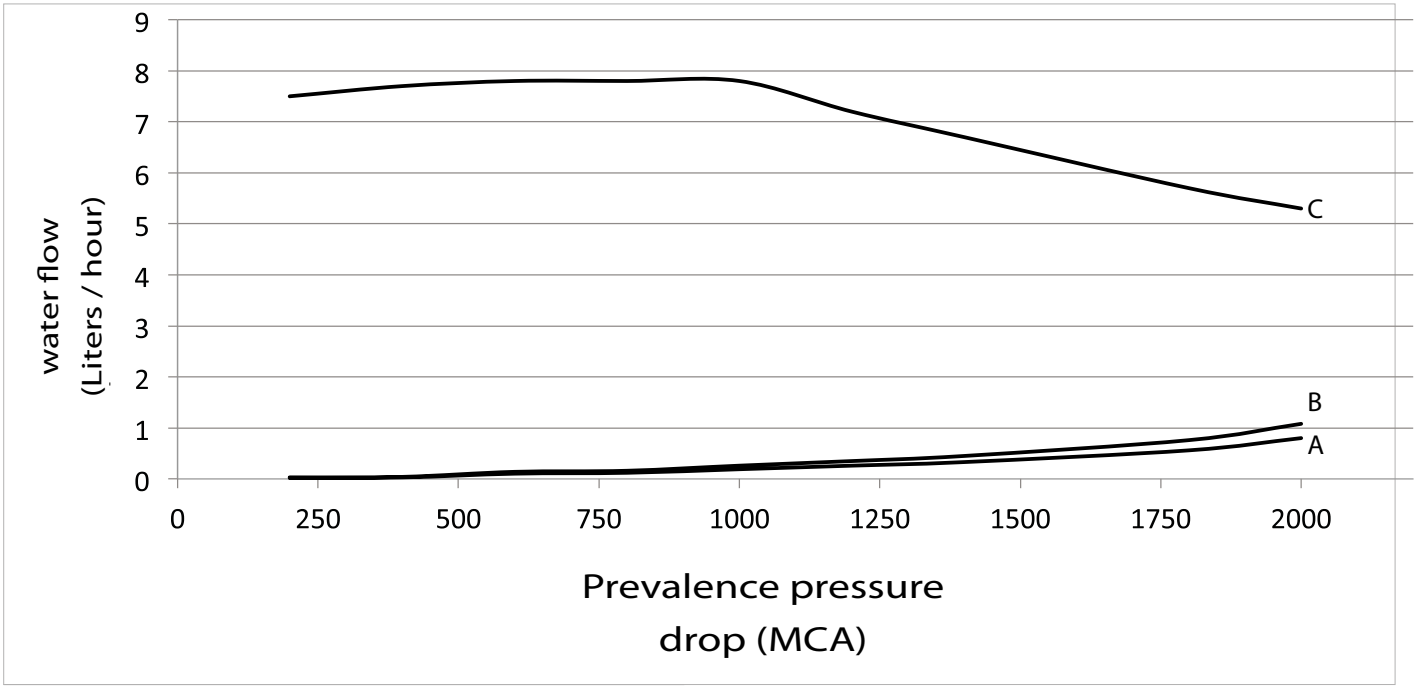
Solar heat exchanger yield

Yield of the solar heat exchanger based on the delta T.



A.	Heat exchanger capacity	**C.**	SAF 500 with 1.87 m^2 coil
B.	Delta T	**D.**	SAF 300 with 1.4 m^2 coil

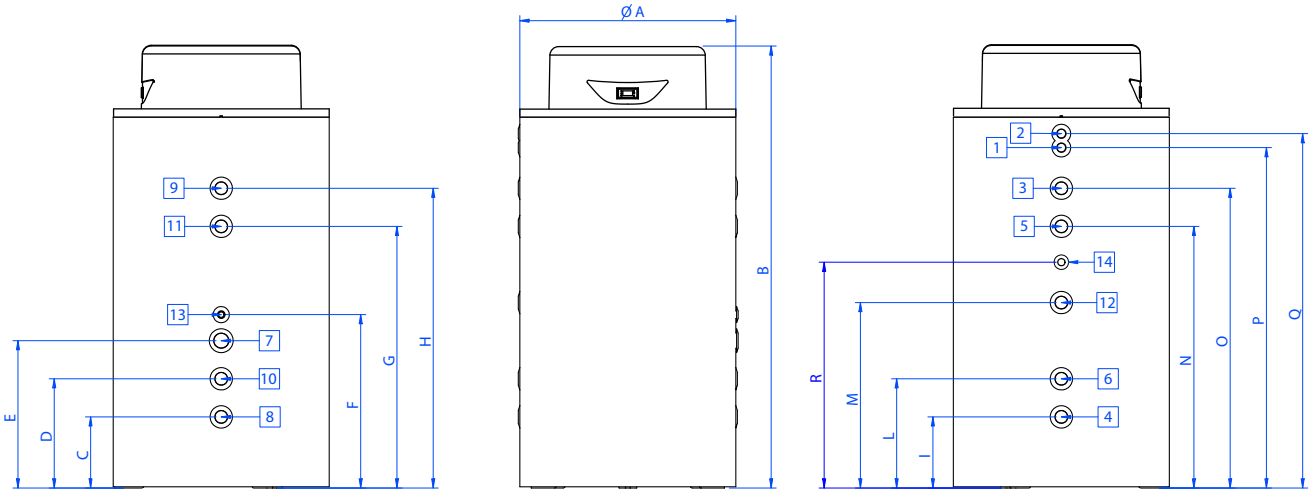
Pressure drops supplementary coils and characteristic solar circulator



A.	SAF 300
B.	SAF 500
C.	SOLAR PUMP CURVE

DIMENSIONS - CONNECTIONS

SAF°

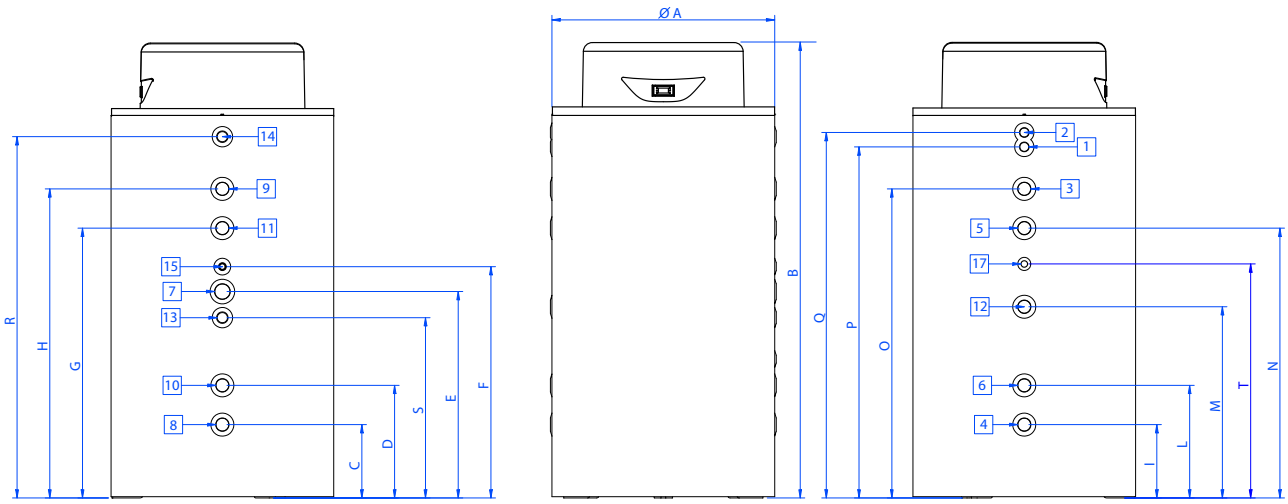


DESCRIPTION	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R
SAF 200	710	1315	255	/	405	525	/	780	255	/	517,5	/	780	890	965	629
SAF 300	710	1690	255	/	405	525	/	1155	255	/	705	/	1155	1270	1340	1005
SAF 500	850	1740	280	430	580	683	1030	1180	280	430	730	1030	1180	1310	1400	880

N°	DESCRIPTION	SAF 200	SAF 300	SAF 500
1	INLET COLD WATER HEALTH	3/4″	3/4″	3/4″
2	OUTPUT HOT WATER	3/4"	3/4″	3/4″
3	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1″	1″	1″1/4
4	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1″	1″	1″1/4
5	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	/	1″1/4
6	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1″1/4	1″1/4	1″1/4
7	ATTACHMENT FOR ELECTRICAL RESISTANCE (KRX SAF-ACCESSORY)	1″1/2	1″1/2	1″1/2
8	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1″	1″	1″1/4
9	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1″	1″1/4
10	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	/	1″1/4
11	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	/	1″1/4
12	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1″	1″	1″1/4
13	CABLE ENTRY ELECTRICAL RESISTANCE (KRX SAF-ACCESSORY)	GUAINA D. 20	GUAINA D. 20	GUAINA D. 20
14	COCKPIT FOR PROBE SSAN (SUPPLIED ONLY OF HEAT PUMPS WRL)	1/2"	1/2″	1/2″

DIMENSIONS - CONNECTIONS

SAF S

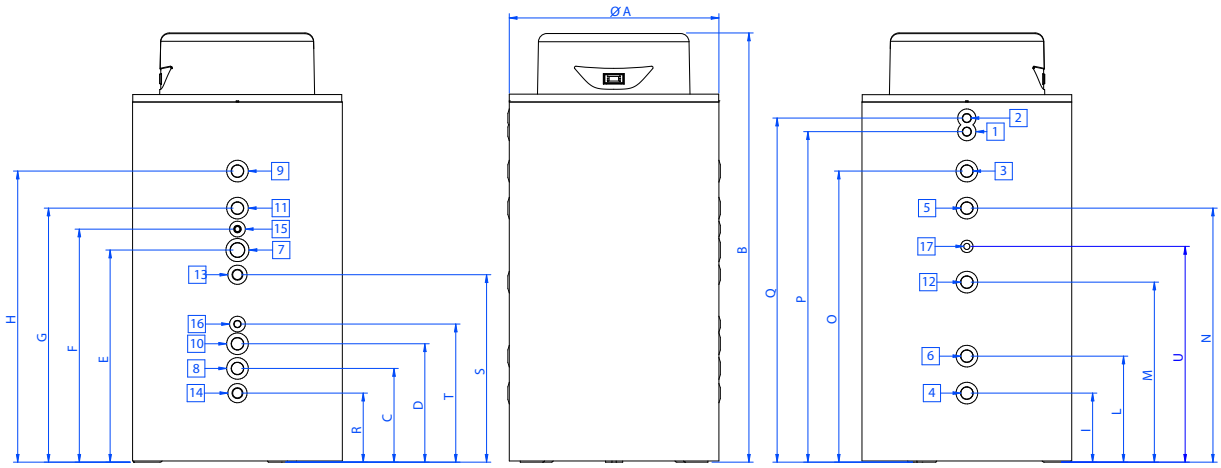


DESCRIPTION	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T
SAF 200	710	1690	255	/	695	815	/	1155	255	/	705	/	1155	1270	1340	1329	584	1005
SAF 300	850	1740	280	430	788	883	1030	1180	280	430	730	1030	1180	1310	1400	1379	688	880

N°	DESCRIPTION	SAF 300	SAF 500
1	INLET COLD WATER HEALTH	3/4"	3/4"
2	OUTPUT HOT WATER	3/4"	3/4"
3	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
4	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
5	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	1"1/4
6	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	1"1/4
7	ATTACHMENT FOR ELECTRICAL RESISTANCE (KRX SAF-ACCESSORY)	1"1/2	1"1/2
8	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
9	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
10	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	1"1/4
11	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	1"1/4
12	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
14	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"
13	OUTPUT SOLAR COIL	1"	1"
15	INPUT SOLAR COIL	GUAINA D. 20	GUAINA D. 20
17	CABLE ENTRY ELECTRICAL RESISTANCE (KRX SAF-ACCESSORY)	1/2"	1/2"

DIMENSIONS - CONNECTIONS

SAF T



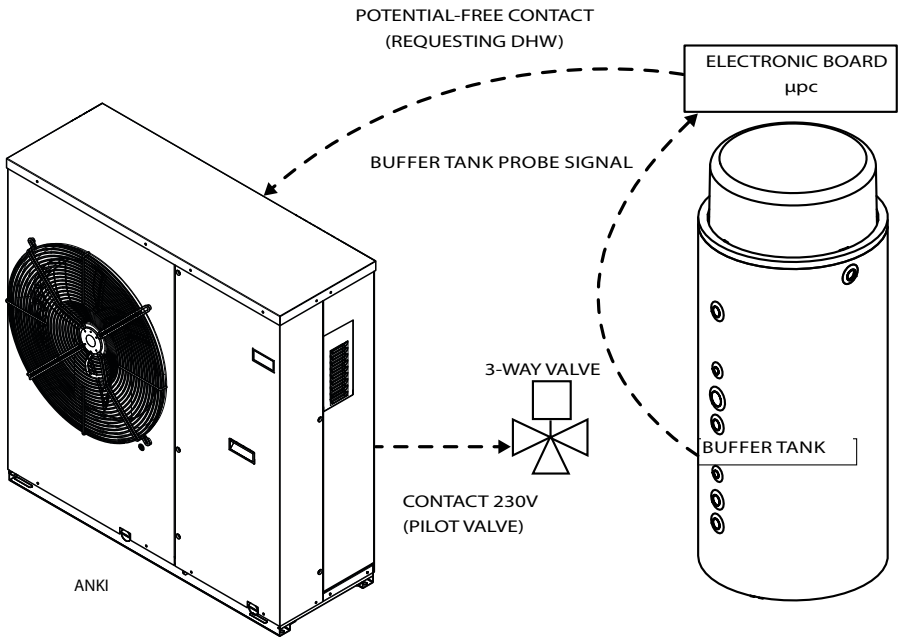
DESCRIPTION	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U
SAF 300	710	1690	355	/	785	905	/	1155	255	/	705	/	1155	1270	1340	255	675	465	1005
SAF 500	850	1740	380	480	860	945	1030	1180	280	430	730	1030	1180	1310	1400	280	760	560	880

N°	DESCRIPTION	SAF 300	SAF 500
1	INLET COLD WATER HEALTH	3/4"	3/4"
2	OUTPUT HOT WATER	3/4"	3/4"
3	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
4	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
5	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	1"1/4
6	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	1"1/4
7	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"1/2	1"1/2
8	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
9	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
11	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	1"1/4
10	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	/	1"1/4
12	ATTACHMENT FOR HEAT PUMP / OTHER INTEGRATION	1"	1"1/4
13	INPUT INTEGRATION SERPENTINO	1"	1"
14	OUTPUT COIL INTEGRATION	1"	1"
15	CABLE ENTRY ELECTRICAL RESISTANCE (KRX SAF-ACCESSORY)	GUAINA D. 20	GUAINA D. 20
16	COCKPIT FOR PROBE "BT2" (BOTTOM TANK)	1/2"	1/2"
17	COCKPIT FOR PROBE SSAN (SUPPLIED ONLY OF HEAT PUMPS WRL)	1/2"	1/2"

LINK LOGIC

UNITS	VERSION	SIZE
ANKI	H	020-045

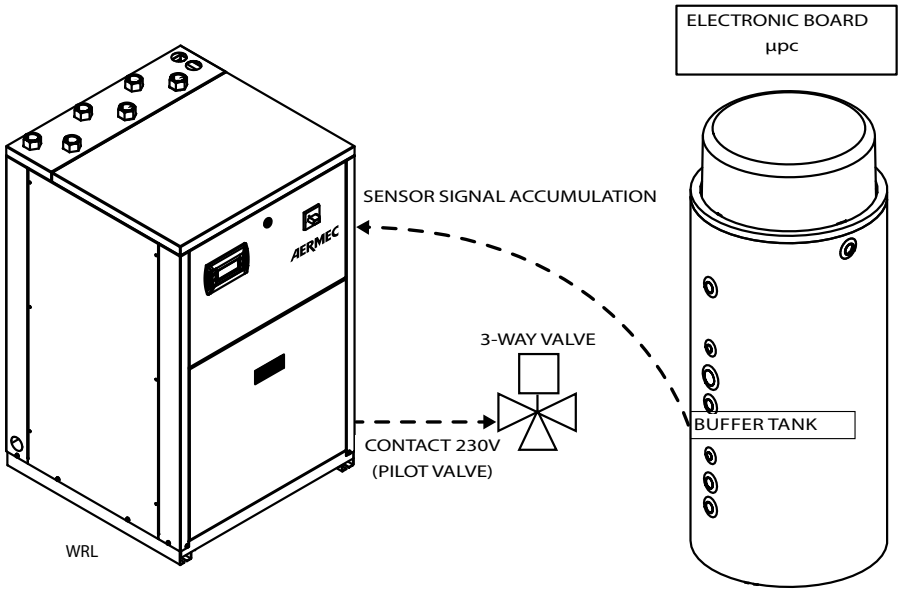
The µpc board of the buffer tank reads the values of the buffer tank probe and provides a 24V signal to the unit in order to request DHW. Once the unit receives the signal, the 3-way valve is diverted to the DHW.



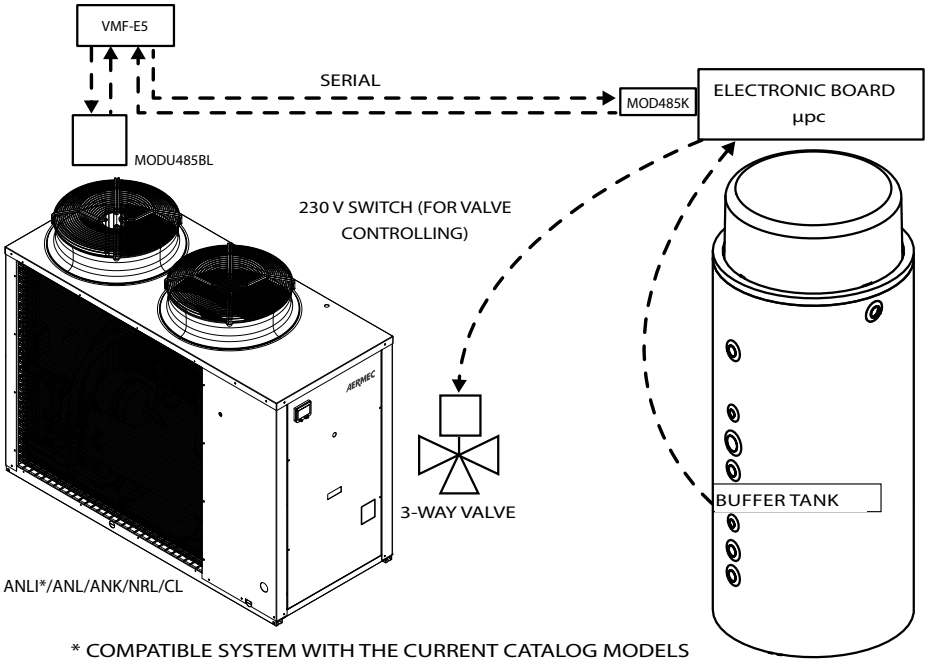
* SYSTEM COMPATIBLE WITH THE CURRENT MODELS IN THE CATALOG

UNITS	VERSION	SIZE
WRL	H	026-161

The µpc board of the unit reads the values of the buffer tank probe and the 3-way valve is diverted to the DHW.

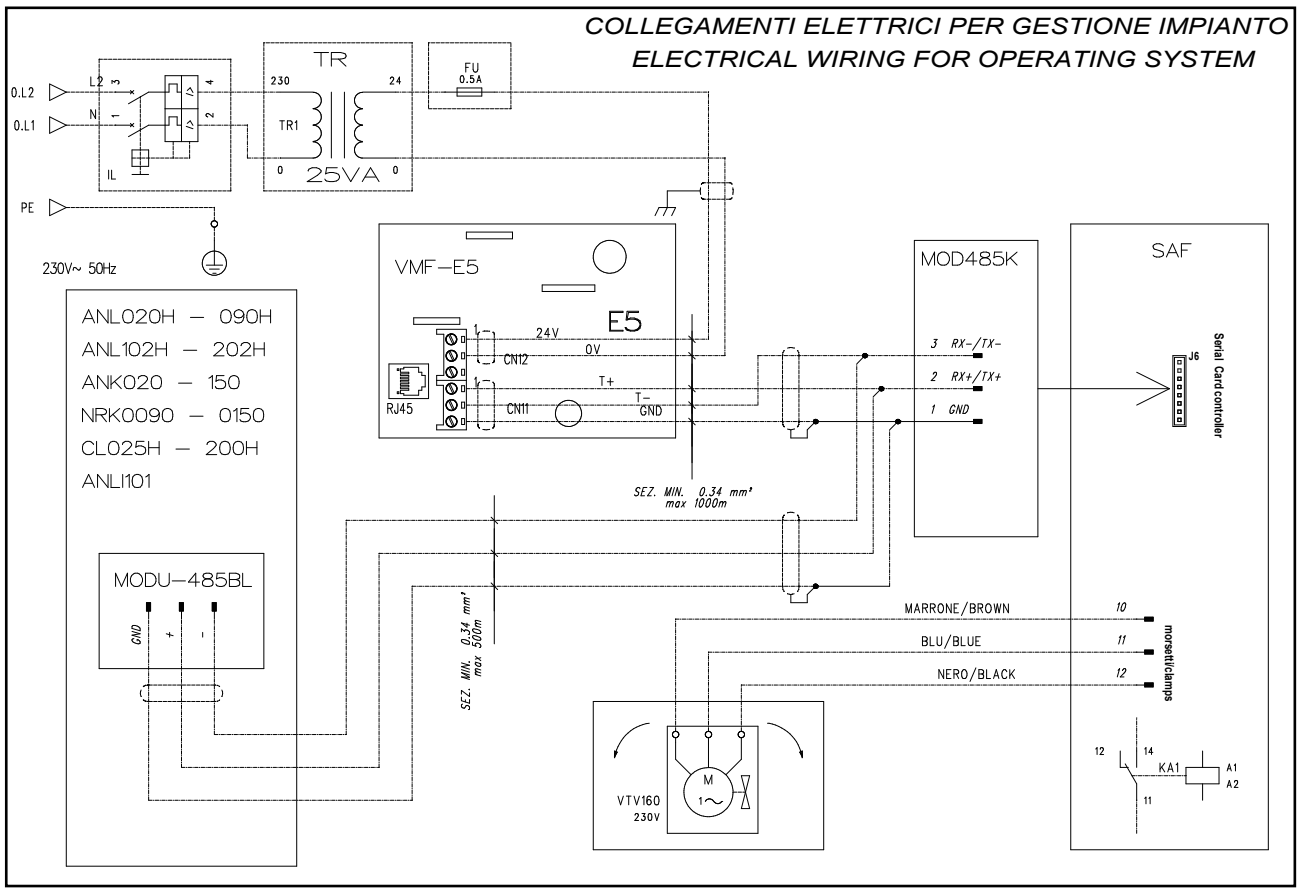


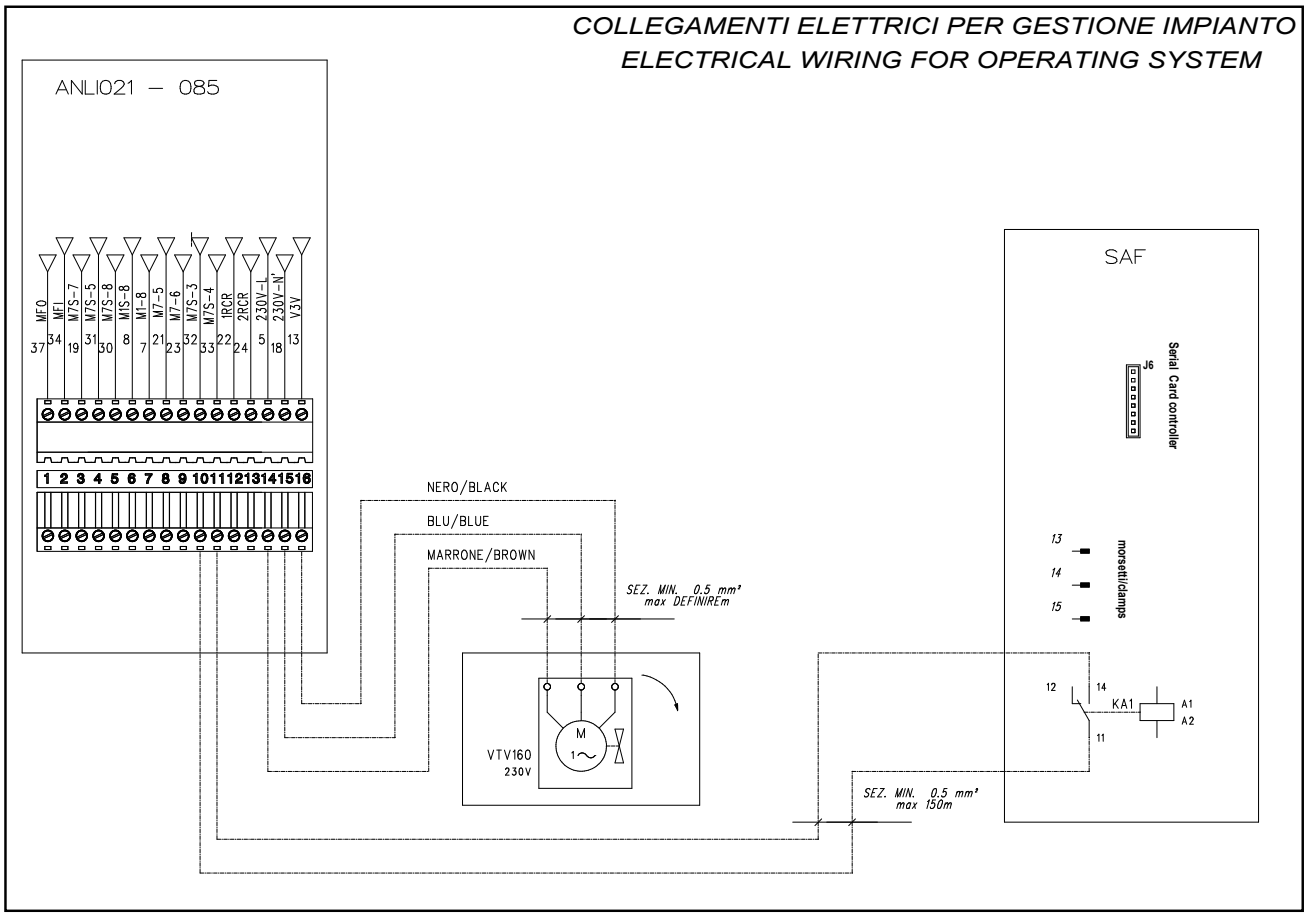
UNITS	VERSION	SIZE
ANL	H	020-101
ANLI	H	101
ANK	all	205-150
NRK	all	0090-0150
CL	H	025-200



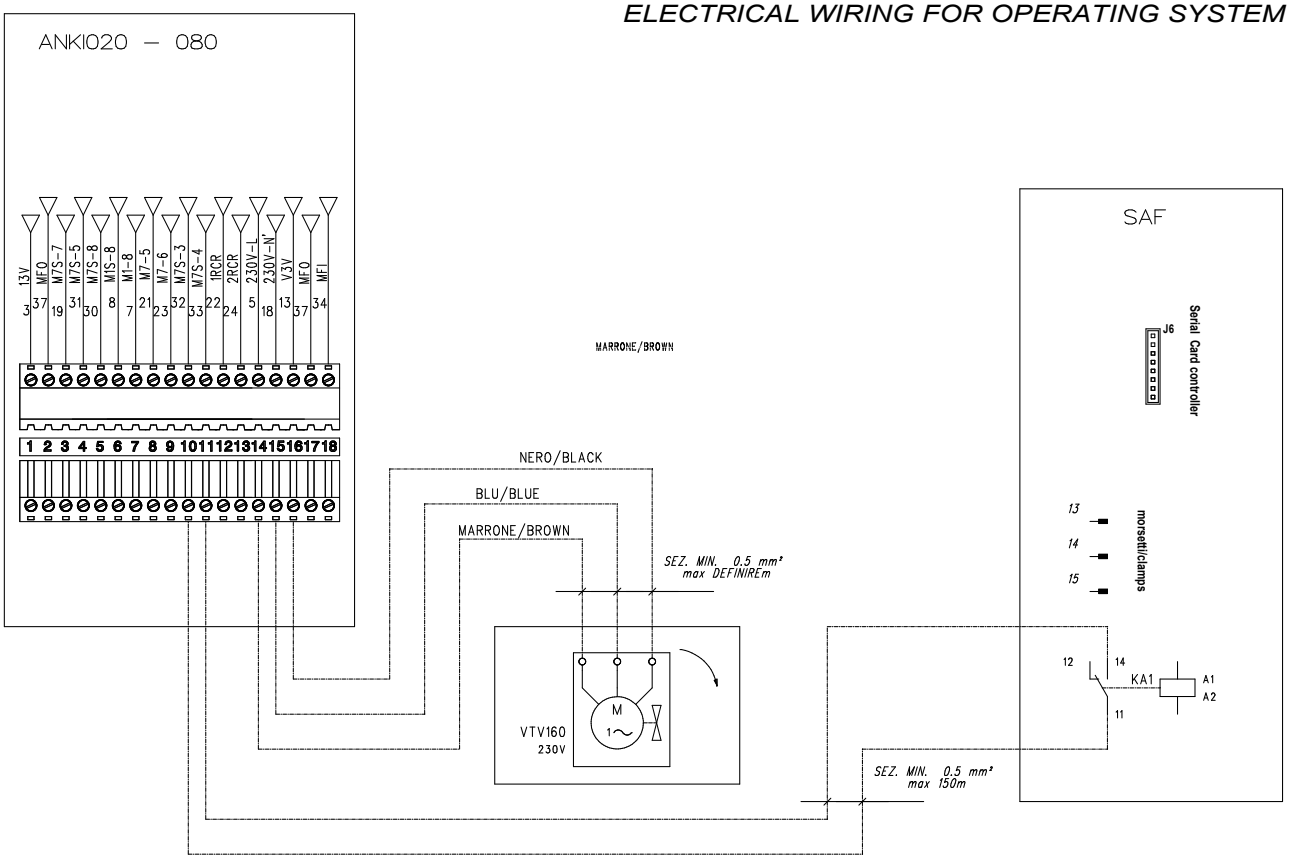
* COMPATIBLE SYSTEM WITH THE CURRENT CATALOG MODELS

The following drawings are meant as an indication. As regards wiring please refer to the electrical drawings.

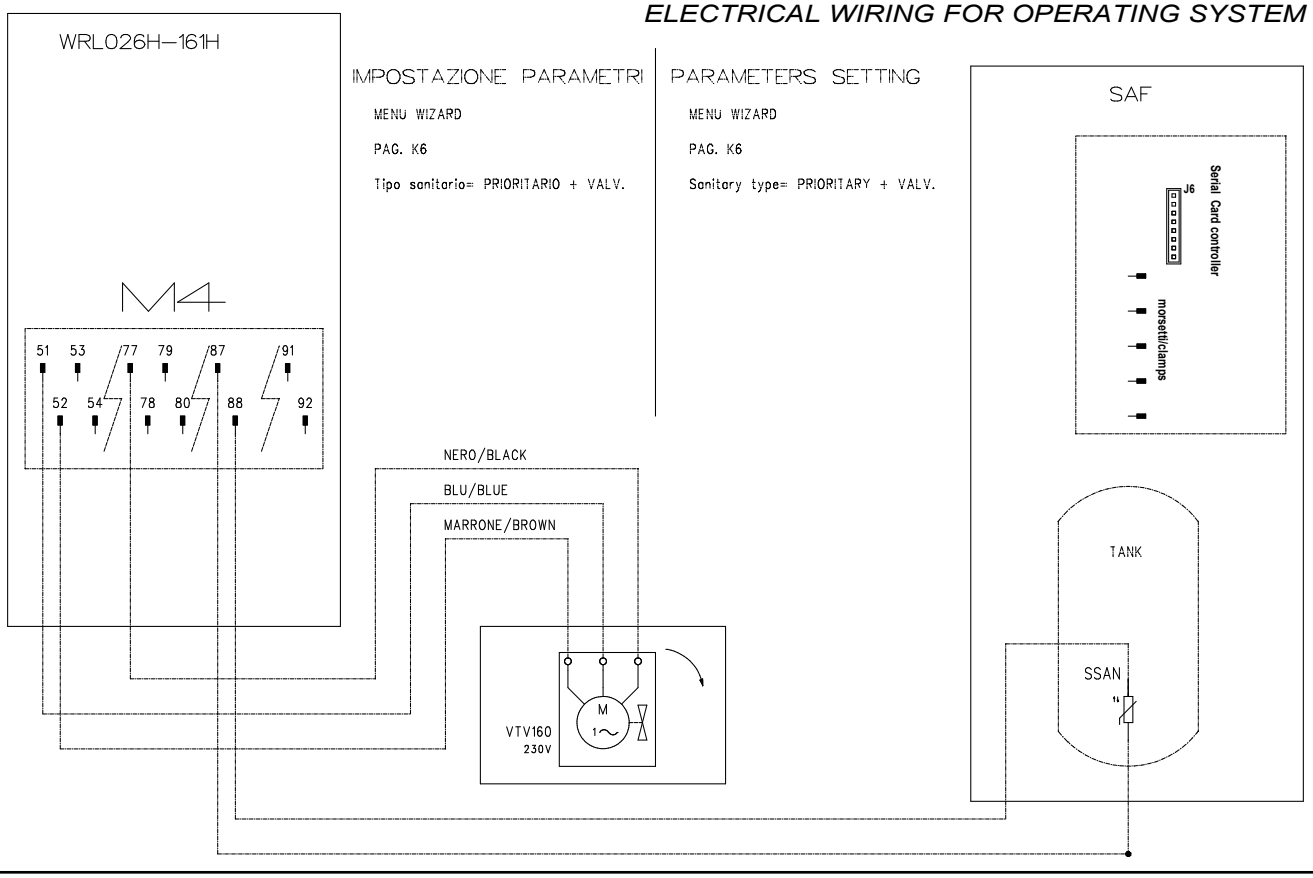

COLLEGAMENTI ELETTRICI PER GESTIONE IMPIANTO
ELECTRICAL WIRING FOR OPERATING SYSTEM
0.L2
0.L1
PE
230V~ 50Hz
L2
N
IL
TR
230
24
TR1
25VA
0
FU
0.5A
ANL020H – 090H
ANL102H – 202H
ANK020 – 150
NRK0090 – 0150
CL025H – 200H
ANLI101
VMF–E5
E5
24V
0V
T+
T–
GND
CN12
CN11
RJ45
MOD485K
3 RX–/TX–
2 RX+/TX+
1 GND
SAF
J6
Serial Card controller
SEZ. MIN. 0.34 mm²
max 1000m
MODU–485BL
GND
+
-
SEZ. MIN. 0.34 mm²
max 500m
MARRONE/BROWN
BLU/BLUE
NERO/BLACK
10
11
12
morsetti/clamps
VTV160
230V
M
1~
12
14
KA1
A1
A2
11


COLLEGAMENTI ELETTRICI PER GESTIONE IMPIANTO
ELECTRICAL WIRING FOR OPERATING SYSTEM
ANLI021 – 085
MF0
MF1
M7S–7
M7S–5
M7S–8
M1S–8
M1–8
M7–5
M7–6
M7S–3
M7S–4
1RCR
2RCR
230V–L
230V–N
V3V
37
34
19
31
30
8
7
21
23
32
33
22
24
5
18
13
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
NERO/BLACK
BLU/BLUE
MARRONE/BROWN
SEZ. MIN. 0.5 mm²
max DEFINIREm
VTV160
230V
M
1~
SAF
J6
Serial Card controller
13
14
15
morsetti/clamps
12
14
KA1
A1
A2
11
SEZ. MIN. 0.5 mm²
max 150m

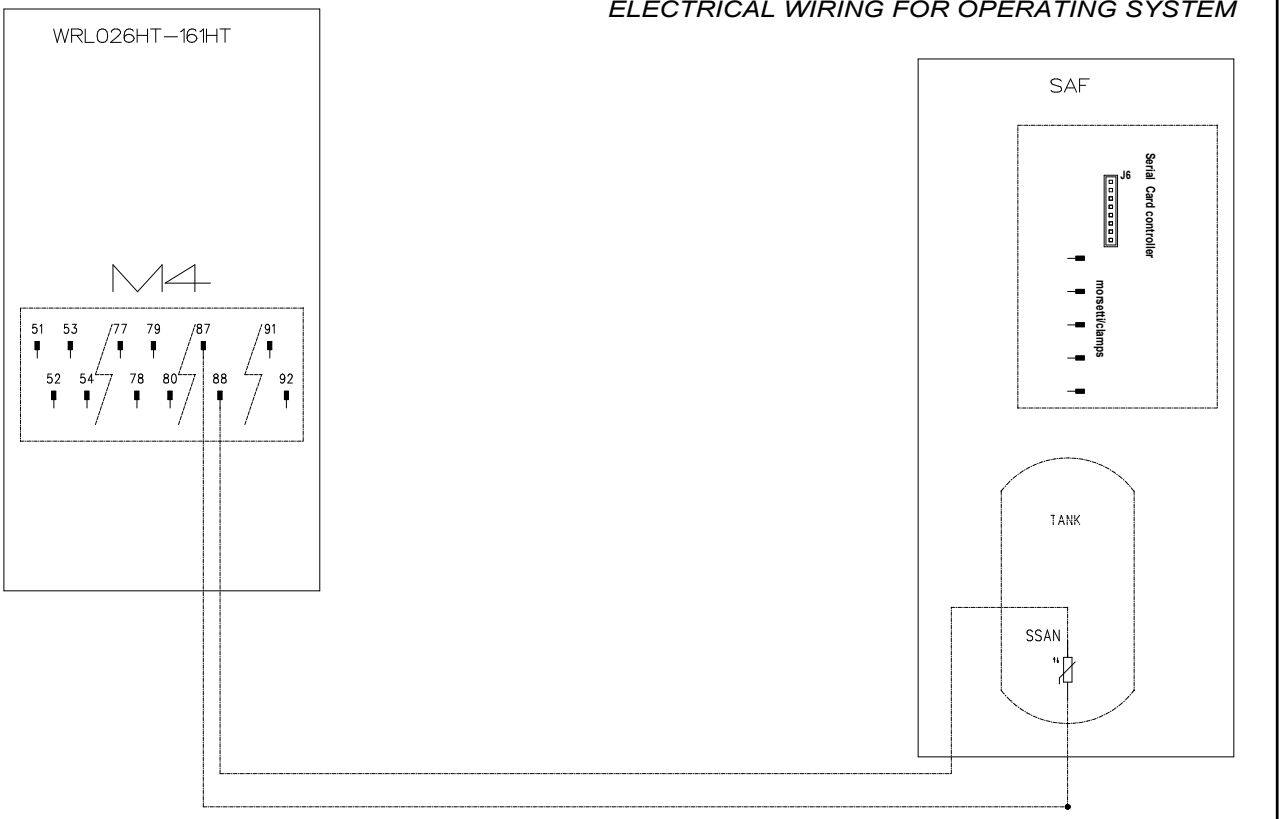
COLLEGAMENTI ELETTRICI PER GESTIONE IMPIANTO
ELECTRICAL WIRING FOR OPERATING SYSTEM



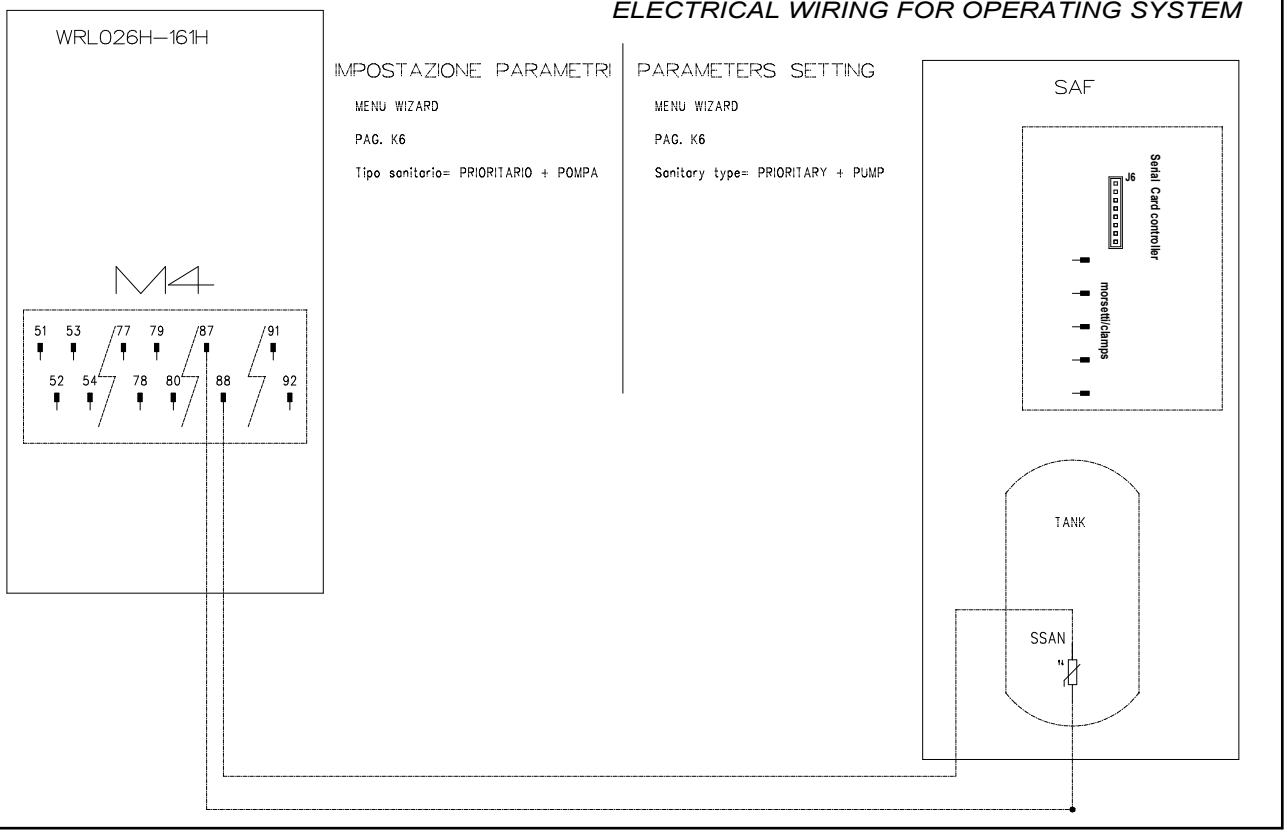
COLLEGAMENTI ELETTRICI PER GESTIONE IMPIANTO
ELECTRICAL WIRING FOR OPERATING SYSTEM



COLLEGAMENTI ELETTRICI PER GESTIONE IMPIANTO
ELECTRICAL WIRING FOR OPERATING SYSTEM



COLLEGAMENTI ELETTRICI PER GESTIONE IMPIANTO
ELECTRICAL WIRING FOR OPERATING SYSTEM



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