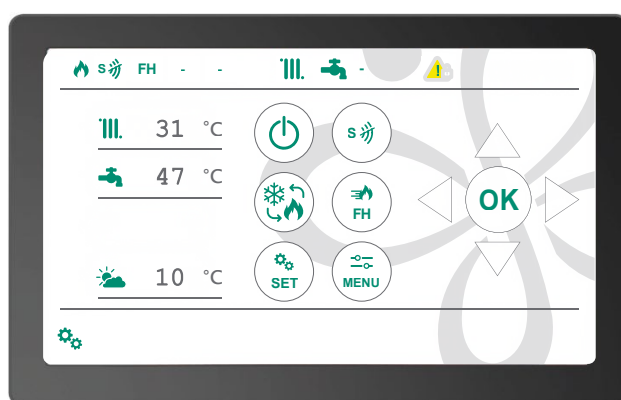


# User and installer manual

## HPM-EV control panel



---

*First of all, we would like to thank you for having chosen our product.*

*We are sure you will be happy with it because it represents the state of the art in the technology of home air conditioning.*

*By following the suggestions contained in this manual, the product that you have purchased will operate without problems giving you optimum room temperatures with minimum energy costs.*

GIACOMINI S.p.A.

## Conformity

Refer to the Installer Manual of the paired unit.

## Markings



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## GENERAL INFORMATION

### 1.1 About the manual

This manual was written to provide all the explanations for the correct management of the appliance.

-  This instruction manual forms an integral part of the device and therefore must be carefully preserved and must ALWAYS travel with it, even if you transfer the device to another owner or relocate it to other premises. If the manual gets damaged or lost, download a copy from the website.
-  Read this manual carefully before proceeding with any operation and follow the instructions in the individual chapters.
-  The manufacturer is not responsible for damages to persons or property caused by failure to follow the instructions in this manual.
-  This document is restricted in use to the terms of the law and may not be copied or transferred to third parties without the express authorization of the manufacturer.

#### 1.1.1 Editorial pictograms

The pictograms in the next chapter provide the necessary information for correct, safe use of the machine in a rapid, unmistakable way.

#### Related to security

-  **High risk warning (bold text)**
  - The operation described above presents a risk of serious physical injury, fatality, major damage to the appliance and/or to the environment if not carried out in compliance with safety regulations.
-  Low risk warning (plain text)
  - The operation described above presents a risk of minor physical injury or minor damage to the appliance and/or to the environment if not carried out in compliance with safety regulations.
-  Prohibition (plain text)
  - Refers to prohibited actions.
-  **Important information (bold text)**
  - This indicates important information that must be taken into account during the operations.

#### In the texts

- Actions required
- Expected responses following an action*
- Lists

#### In the figures

- 1 The numbers indicate the individual components.
- A The capital letters indicate component assemblies.
-  The white numbers in black marks indicate a series of actions to be carried out in sequence.
-  The black letter in white identifies an image when there are several images in the same figure.

#### 1.1.2 Pictograms on the product

Symbols are used in some parts of the appliance:

#### Related to security

-  **Caution: electrical danger**
  - The concerned personnel is informed to the presence of electricity and the risk of suffering an electric shock.

### 1.1.3 Recipients

**User**

Non-expert person capable of operating the product in safe conditions for people, for the product itself and the environment, interpreting an elementary diagnostic of faults and abnormal operating conditions, carrying out simple adjustment, checking and maintenance operations.

**Installer**

Expert person qualified to position and connect (hydraulically, electrically, etc.) the unit to the plant; this person is responsible for handling and correct installation according to the instructions provided in this manual and the national standards currently in force.

To work on the refrigeration circuit, the installer must comply with the provisions of Regulation 303/2008/EC which defines, in accordance with Directive 842/2006/EC, the requirements for companies and personnel with regard to fixed refrigeration, air conditioning and heat pump equipment containing certain fluorinated greenhouse gases (F-gas licence).

**Technical Service Centre**

Expert and qualified person authorised directly by the manufacturer to carry out all routine and supplementary maintenance operations, as well as every adjustment, check, repair and replacement of parts necessary during the life of the unit itself.

Service personnel must comply with the provisions of Regulation 303/2008/EC which defines, in accordance with Directive 842/2006/EC, the requirements for companies and personnel with regard to fixed refrigeration, air conditioning and heat pump equipment containing certain fluorinated greenhouse gases (F-gas licence).

### 1.1.4 Manual organisation

The manual is divided into sections each dedicated to one or more target groups.

**General information**

It addresses all recipients.

It contains general information and important warnings that should be known before installing and using the appliance.

**Product presentation**

It addresses all recipients.

It contains the information to identify the product, its components, compatible accessories and destination of use.

**Use**

It is addressed exclusively to the User.

It contains all the information necessary for the user to operate the appliance.

**Menu structure**

It is addressed only and exclusively to the Installer and the Technical Assistance Centre.

It contains the menu structure of the control, the operating parameters, the input and output statuses, the alarms and the installer parameters.

**Functions**

It is addressed only and exclusively to the Installer and the Technical Assistance Centre.

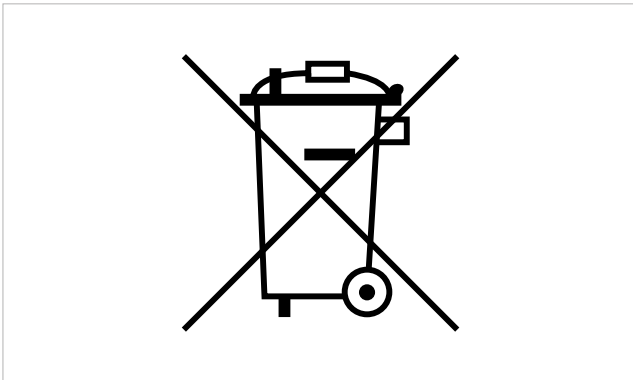
These are sections dedicated to the different types of units that use the same Control Panel and contain specific information for that combination.

**Troubleshooting**

It is addressed exclusively to the Technical Assistance Centre.

Contains troubleshooting concerning the product.

## 1.2 Disposal



The symbol on the product or its packaging indicates that the product must not be treated as normal household waste, but must be taken to the appropriate collection point for the recycling of electrical and electronic equipment. Proper disposal of this product avoids harm to humans and the environment and promotes the reuse of valuable raw materials.

For more detailed information about the recycling of this product, contact your local city office, your household waste disposal service or the shop where you purchased the product.

Illegal disposal of the product by the user involves the application of the administrative sanctions provided for by the regulations in force.

This provision is only valid in the EU Member States.

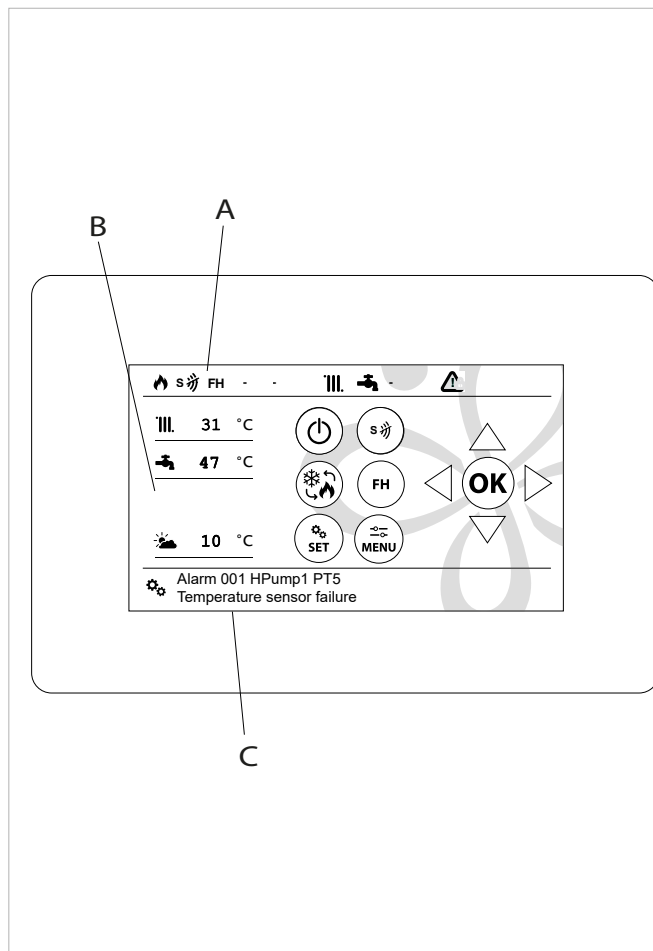
## 2.1 Interface

### 2.1.1 Description

The Control Panel regulates and coordinates all the main functions of the appliance. The device can be used to view the machine status, the main temperatures, the alarms and the main operating mode selection.

### 2.1.2 Display

Statuses and active alarms on display.



| Function area                                                                                |                                                                                    |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>OFF</b>                                                                                   | The appliance is in stand-by mode                                                  |
|             | Cooling function on                                                                |
|             | Heating function on                                                                |
|             | Heating mode for active water frost protection                                     |
|             | Heating mode with active heating element                                           |
|             | Heating mode with auxiliary generator (boiler) active                              |
|             | Heating mode with heating element and auxiliary generator (boiler) active          |
| <b>s</b>  | Silent low-noise function active                                                   |
| <b>FH</b>                                                                                    | Fast Heat function active. This function is only active in heating mode            |
| <b>III</b>                                                                                   | Plant water function active with flashing icon and called with fixed icon          |
|           | Domestic hot water function active with flashing icon and called with fixed icon   |
|           | Active alarm                                                                       |
|           | Alarm to be reset manually                                                         |
| Temperature area                                                                             |                                                                                    |
| <b>III</b>                                                                                   | Plant water temperature                                                            |
|           | Domestic hot water temperature (if the function has been activated)                |
|           | Ext. ambient temperature                                                           |
| Settings area                                                                                |                                                                                    |
|           | Settings active. When this symbol is active, the machine parameters can be changed |
| <b>A</b>                                                                                     | Function area                                                                      |
| <b>B</b>                                                                                     | Temperature area                                                                   |
| <b>C</b>                                                                                     | Settings area                                                                      |

## 2.1.3 Keys functions

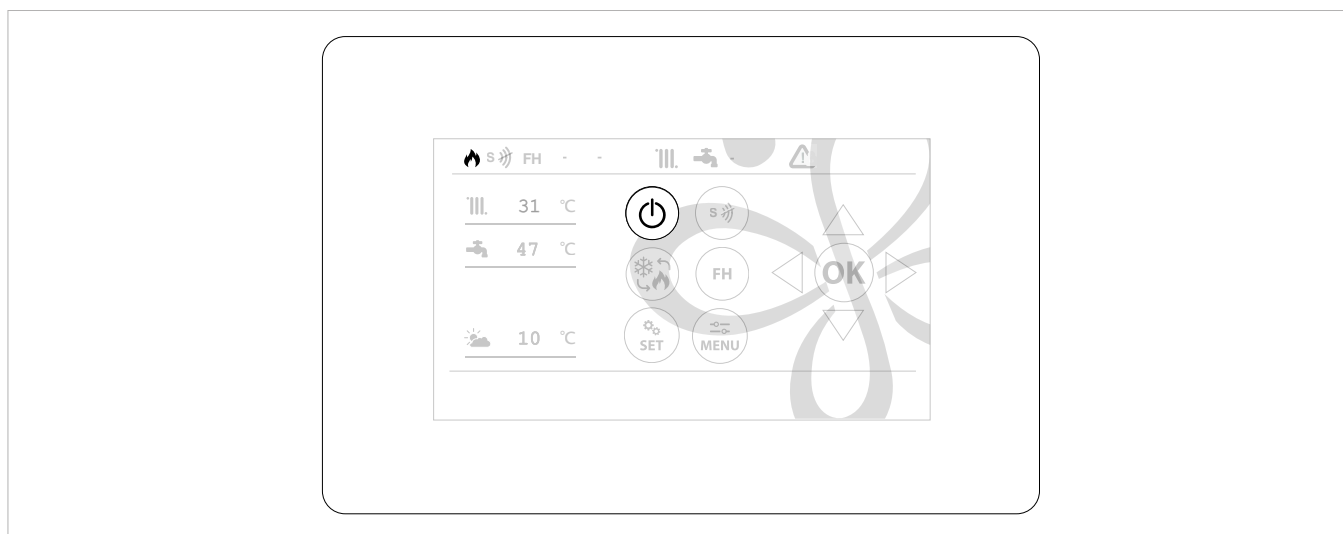
|          |                                                                                                                       |
|----------|-----------------------------------------------------------------------------------------------------------------------|
|          | This can be used to switch the unit on or off                                                                         |
|          | This can be used to select the operating mode (Cooling or Heating)                                                    |
|          | This can be used to activate the Silent low-noise function                                                            |
|          | This can be used to activate the rapid heating of the plant water                                                     |
|          | This can be used to modify the selected parameter. Press and hold the button for 3 seconds to reset the manual alarms |
|          | This can be used to enter and exit the main menus, exit without saving                                                |
|          | This can be used to enter the sub-levels of the menus and confirm selections                                          |
|          | This can be used to move between the digits of the values                                                             |
|          | This can be used to move through the menus and change parameter values                                                |
| <b>A</b> | Key area                                                                                                              |

## 2.2 Control activation

Before the activation:

- set the plant master switch in the ON position.

The display lights up in the set last mode. If OFF (icon) appears, the appliance is off.



### To activate the device

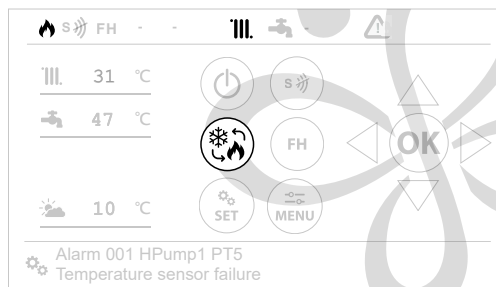
- press the key
- The symbol or lights up

The display of the control unit will switch off after a certain time. Touch the screen to reactivate it. The last screen used appears on the display.

## 2.3 Basic function

### 2.3.1 Selecting the operating mode

This can be used to select the operating mode (Cooling or Heating)

**To select:**

- in sequence press the button
  - The symbol on indicates that Cooling mode is active
  - The symbol on indicates that Heating mode is active

The unit activates in the selected mode.

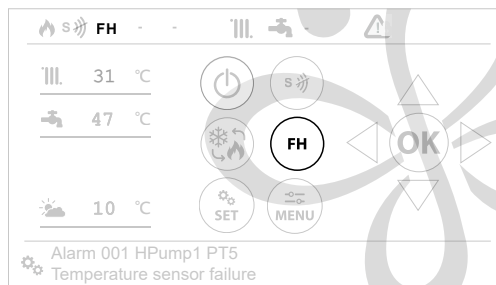
The symbol , fixed indicates that the heat pump is being called.

The symbol , flashing indicates that the heat pump has started up.

**2.3.2 Fast Heat function**

The heat pump is set by default to produce domestic hot water as a priority. If fast heating of the rooms is required, priority can be temporarily shifted to the production of plant water with the Fast Heat function.

The Fast Heat function can only be activated in heating mode.

**To activate:**

- press the key
  - The symbol **FH** appears and the function is on for 90 minutes

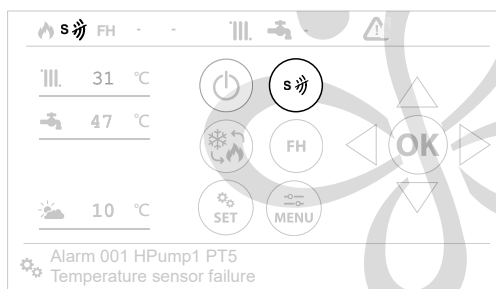
**To deactivate before the timeout:**

- press the key
  - The symbol **FH** disappears and the function is off

**2.3.3 Silent function**

In particular situations, the noise level of the appliance can be reduced by lowering the operating speed of the compressor and the fan.

Activating the Silent function reduces the unit performance. Therefore, use is recommended only when necessary and not for normal operation.

**To activate:**

- press the key 
  
The symbol appears and the function is on

**To deactivate:**

- press the key 
  
The symbol disappears and the function is off

## 2.4 Advanced features

The Control Panel provides access to advanced user functions. These features are present in the User menu:

- Set temp. Domestic hot water (only present if domestic hot water function is activated)
- Date and time
- Language

**To access the advanced features:**

- press the key 
  
The User menu appears in the settings area
- press 
  
The first menu item appears in the settings area

**To select the desired function:**

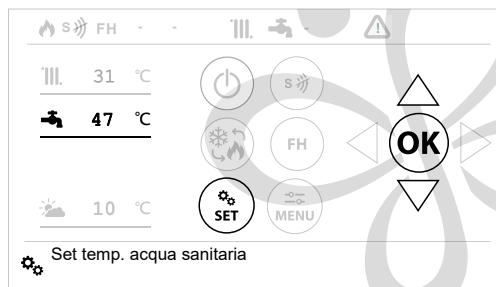
- act on
- select the desired function

In addition to the User menu, other menus for use by the Technical Assistance Centre or Installer are provided.

### 2.4.1 Domestic hot water temperature setting

This function makes it possible to set the desired hot water temperature.

The menu is only present if the Domestic Hot Water function is activated.

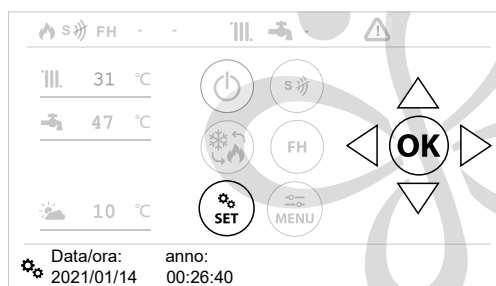
**To set:**

- press
  - The symbol appears in the settings area
  - The set value flashes in the temperature area
- act on to modify the value
- press to confirm
  - The symbol disappears in the settings area
  - The set value keeps flashing in the temperature area

The measured domestic hot water temperature value reappears when the menu is closed.

**2.4.2 Date and time setting**

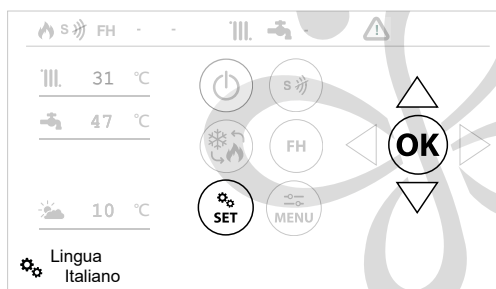
This function can be used to set the current date and time.

**To set:**

- press
  - The symbol appears in the settings area
  - The settings area displays the currently set date and time
- click on to select the parameter to be modified from among year, month, day, hours, minutes and seconds
- act on to modify the value
- press to confirm
  - The symbol disappears in the settings area

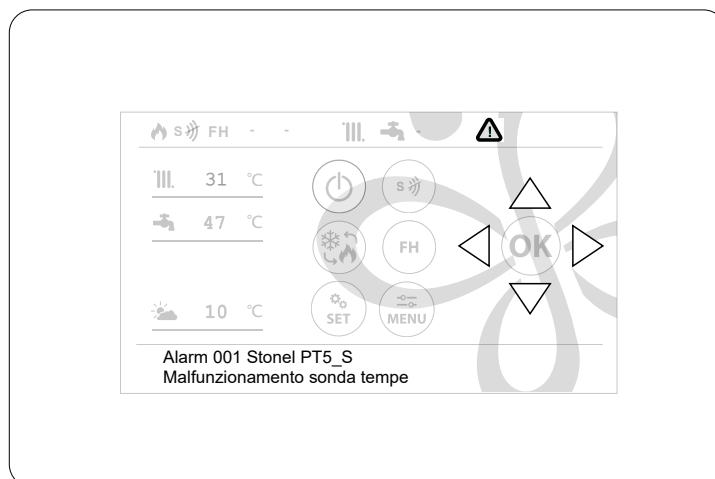
**2.4.3 Language setting**

The function can be used to set the desired language.

**To set:**

- press
  - The symbol appears in the settings area*
  - The current language appears in the settings area*
- click on to select the parameter
- press to confirm
  - The symbol disappears in the settings area*

## 2.5 Alarm signals



The faults are indicated on the display of the Control Panel by the symbol  without padlock and with a digit indicating the number of alarms that have occurred. The alarm code and description appear in the settings area.

### If more than one alarm has occurred, to display them:

- act on   
The settings area displays the alarms that have occurred

- use  to display the entire alarm message

The occurrence of the anomaly may be due to a random situation, in which case the alarm is automatically reset after some time.

 If the anomaly is repeated several times, the appliance is put in safety and the symbol  appears. In this case, the appliance components must be checked in detail by the Technical Assistance Centre.

## 2.6 Manual reset of alarms

 **Manual reset of the alarms is an operation to be carried out by the Technical Assistance Centre.**

The alarm can be reset after checking the appliance components.

### To restore:

- press and hold  for a few seconds
- the padlock disappears from the symbol 
- then the symbol  disappears

## MENU STRUCTURE

### 3.1 Remote Control Panel

#### 3.1.1 Menu navigation

**Button** 

- to enter the main menus
- to exit the menu sub-levels
- to exit without saving

**Button** 

- to enter the menu sub-levels
- to confirm

**Button** 

- to modify a parameter

**Buttons** 

- to move through the menus
- to change the parameter values

**Buttons** 

- to move between the digits of the values

#### 3.1.2 Change installer password

**To change the password for accessing the Installer Parameters Menu**

- press  to access the "Change installer PW?" parameter  
*The display shows a sequence of numbers 000000*
- use the arrows  to choose a number from 0 to 9  
*use the arrows  to move between digits*

**To confirm the change**

- press the key   
*A warning appears on the display*  
*press again the  key*  
*The setting is saved*

**To go back without saving**

- press the key   
*The setting is not saved*

 Default installer PW: 100000

### 3.1.3 Structure overview

|       |                        |   |                                                                                                  |
|-------|------------------------|---|--------------------------------------------------------------------------------------------------|
| ..... | User menu              | # | <b>Contains:</b> all the parameters that the user can modify according to the needs of the plant |
| ..... | General status         | # | <b>Contains:</b> information (in display only) on the current operation of the unit              |
| ..... | Input/output status    | # | <b>Contains:</b> information (in display only) on the input and output status of the unit.       |
| ..... | Alarm log              | # | <b>Records:</b> error and/or malfunction conditions of the unit                                  |
| ..... | Installer menu         | # | <b>Contains:</b> the parameters that only the installer or qualified personnel can modify        |
|       | ▶ Installer parameters |   |                                                                                                  |
|       | ▶ Change Password      |   |                                                                                                  |
| ..... | Service menu           | # | <b>Contains:</b> the most advanced parameters that only the Technical Service Centre can modify  |

### 3.1.4 Structure details

|       |                                |   |                                                                      |
|-------|--------------------------------|---|----------------------------------------------------------------------|
| ..... | User menu                      |   |                                                                      |
|       | ▶ Set temp. Domestic hot water | # | <b>Visible</b> only if the domestic hot water function is activated. |
|       | ▶ Date and time                |   |                                                                      |
|       | ▶ Language                     |   |                                                                      |

### Machine status

|   |                       |   |                                                                                                                           |
|---|-----------------------|---|---------------------------------------------------------------------------------------------------------------------------|
| ▶ | Set plant temperature | # | <b>Indicates:</b> required water plant temperature                                                                        |
|   |                       | # | <b>Value:</b> tenths of °C (divide the displayed value by 10 to obtain the correct value e.g. displayed 100 - 10 = 10 °C) |
| ▶ | Set DHW temp.         | # | <b>Indicates:</b> requested domestic hot water temperature                                                                |
|   |                       | # | <b>Value:</b> tenths of °C (divide the displayed value by 10 to obtain the correct value e.g. displayed 100 - 10 = 10 °C) |
| ▶ | Plant request         | # | <b>Indicates:</b> machine operating status                                                                                |
|   |                       | # | <b>0:</b> the machine is not in plant calling mode                                                                        |
|   |                       | # | <b>1:</b> the machine is in Plant Water heating call mode                                                                 |
|   |                       | # | <b>2:</b> the machine is in Plant Water cooling call mode                                                                 |
| ▶ | DHW request           | # | <b>Indicates:</b> domestic hot water function status                                                                      |
|   |                       | # | <b>0:</b> the machine is not calling for domestic hot water                                                               |
|   |                       | # | <b>1:</b> the machine is calling for domestic hot water heating                                                           |
| ▶ | Defrosting status     | # | <b>Indicates:</b> defrosting function status                                                                              |
|   |                       | # | <b>0:</b> the function is not active                                                                                      |
|   |                       | # | <b>1:</b> the function is active                                                                                          |
| ▶ | Antifreeze status     | # | <b>Indicates:</b> antifreeze function status                                                                              |
|   |                       | # | <b>0:</b> the function is not active                                                                                      |
|   |                       | # | <b>1:</b> the function is active                                                                                          |

|   |                        |                                                                                                                                                                                                                                                                               |
|---|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ▶ | Anti-Legionella status | # <b>Indicates:</b> anti-legionella function status<br># <b>0:</b> anti-legionella cycle not running or deactivated<br># <b>1:</b> anti-legionella cycle enabled but not running<br># <b>2:</b> anti-legionella cycle enabled and running                                     |
| ▶ | Set freq. compr.       | # <b>Indicates:</b> the instantaneous frequency that the compressor must reach<br># <b>Value:</b> set frequency                                                                                                                                                               |
| ▶ | Freq. compr. real      | # <b>Indicates:</b> real compressor frequency<br># <b>Value:</b> real frequency                                                                                                                                                                                               |
| ▶ | Compressor protection  | # <b>Indicates:</b> compressor protection status<br># <b>0:</b> normal operation<br># <b>2:</b> pressure too high<br># <b>4:</b> suction temperature too low<br># <b>32:</b> no water circulation<br># <b>64:</b> compressor discharge temperature over the maximum threshold |
| ▶ | Inverter driver error  | # <b>Indicates:</b> driver error code<br># <b>0:</b> no error<br># <b>&gt; 0:</b> driver error                                                                                                                                                                                |
| ▶ | Driver com. error      | # <b>Indicates:</b> connection error with the inverter driver<br># <b>0:</b> no error<br># <b>1:</b> connection error                                                                                                                                                         |
| ▶ | Pressure switch status | # <b>Indicates:</b> the pressure switch status<br># <b>0:</b> normal operation<br># <b>1:</b> low-pressure switch tripped<br># <b>2:</b> high-pressure switch tripped                                                                                                         |
| ▶ | Flow switch status     | # <b>Indicates:</b> the flow switch status<br># <b>0:</b> normal operation<br># <b>1:</b> flow switch tripped                                                                                                                                                                 |
| ▶ | EEV status             | # <b>Indicates:</b> electronic expansion valve regulation status<br># <b>0:</b> normal operation<br># <b>&gt; 0:</b> operation in protected mode                                                                                                                              |

## Input/output status

|   |       |                                                                            |
|---|-------|----------------------------------------------------------------------------|
| ▶ | PT5-S | # <b>Views:</b> water exchanger outlet temperature in split versions       |
| ▶ | PT6-S | # <b>Views:</b> water exchanger outlet temperature in split versions       |
| ▶ | PT4   | # <b>Views:</b> domestic hot water storage temperature                     |
| ▶ | PT1   | # <b>Views:</b> plant water temperature                                    |
| ▶ | PT5-M | # <b>Views:</b> water exchanger outlet temperature in the monobloc version |
| ▶ | PT6-M | # <b>Views:</b> water exchanger inlet temperature in the monobloc version  |
| ▶ | MT6   | # <b>Views:</b> external air temperature                                   |

|   |       |                                                                                                                                                                            |
|---|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ▶ | MT2   | # <b>Views:</b> compressor discharge temperature                                                                                                                           |
| ▶ | MT3   | # <b>Views:</b> battery core temperature                                                                                                                                   |
| ▶ | MT4   | # <b>Views:</b> coolant temperature on water exchanger side                                                                                                                |
| ▶ | MT5   | # <b>Views:</b> coolant temperature on air exchanger side                                                                                                                  |
| ▶ | MT1   | # <b>Views:</b> compressor suction temperature                                                                                                                             |
| ▶ | MI1   | # <b>Views:</b> high-pressure switch status<br># <b>0:</b> normal operation<br># <b>1:</b> pressure switch tripped                                                         |
| ▶ | MI2   | # <b>Views:</b> low-pressure switch status<br># <b>0:</b> normal operation<br># <b>1:</b> pressure switch tripped                                                          |
| ▶ | PI1-S | # <b>Indicates:</b> water flow switch status in split versions<br># <b>0:</b> normal operation<br># <b>1:</b> flow switch tripped                                          |
| ▶ | PI4   | # <b>Views:</b> the status of the digital input associated with Silent or Heating/Cooling switching functions<br># <b>0:</b> contact open<br># <b>1:</b> contact closed    |
| ▶ | PI3   | # <b>Views:</b> the status of the digital input associated with TA<br># <b>0:</b> contact open<br># <b>1:</b> contact closed                                               |
| ▶ | PI5   | # <b>Views:</b> the status of the digital input associated with the remote ON/OFF                                                                                          |
| ▶ | PI1-M | # <b>Indicates:</b> water flow switch status in the monoblock version<br># <b>0:</b> normal operation<br># <b>1:</b> flow switch tripped                                   |
| ▶ | BC1   | # <b>Views:</b> auxiliary generator contact status<br># <b>0:</b> output off<br># <b>1:</b> output on                                                                      |
| ▶ | MR1   | # <b>Views:</b> condensate drip tray heating element status<br># <b>0:</b> output off<br># <b>1:</b> output on                                                             |
| ▶ | PR1-S | # <b>Views:</b> activation status of auxiliary heating element with split unit<br># <b>0:</b> output off<br># <b>1:</b> output on                                          |
| ▶ | EEV   | # <b>Views:</b> opening in steps of the electronic expansion valve                                                                                                         |
| ▶ | PV1   | # <b>Views:</b> domestic hot water/plant 3-way valve status<br># <b>0:</b> output activated towards plant<br># <b>1:</b> output activated to domestic hot water production |

|   |       |                                                                                                                                                                      |
|---|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ▶ | PP3   | # <b>Views:</b> secondary circuit pump status<br># <b>0:</b> output off<br># <b>1:</b> output on                                                                     |
| ▶ | MV1   | # <b>Views:</b> 4-way valve status<br># <b>0:</b> heating<br># <b>1:</b> cooling                                                                                     |
| ▶ | MV2   | # <b>Not</b> used                                                                                                                                                    |
| ▶ | PR1-M | # <b>Views:</b> auxiliary heating element activation status with monoblock unit<br># <b>0:</b> output off<br># <b>1:</b> output on                                   |
| ▶ | BC2   | # <b>Views:</b> general alarm output (split version only)<br># <b>Voltage-free</b> contact closes when the machine is in an alarm condition that prevents activation |
| ▶ | PP1-S | # <b>Views:</b> primary pump status with split unit<br># <b>0:</b> output off<br># <b>1:</b> output on                                                               |
| ▶ | PP1-M | # <b>Views:</b> primary pump status with monoblock unit<br># <b>0:</b> output off<br># <b>1:</b> output on                                                           |
| ▶ | PP4   | # <b>Not</b> used                                                                                                                                                    |
| ▶ | COMP  | # <b>Views:</b> compressor rotation frequency                                                                                                                        |
| ▶ | FAN   | # <b>Views:</b> fan speed                                                                                                                                            |

## Alarm log

|   |          |                                                                                        |
|---|----------|----------------------------------------------------------------------------------------|
| ▶ | ALRM 001 | # <b>Indicates:</b> temperature probe malfunction<br># <b>See:</b> Input/output status |
| ▶ | ALRM 002 | # <b>Indicates:</b> low-pressure switch tripped                                        |
| ▶ | ALRM 003 | # <b>Indicates:</b> high-pressure switch tripped                                       |
| ▶ | ALRM 004 | # <b>Indicates:</b> inverter driver high temperature                                   |
| ▶ | ALRM 006 | # <b>Indicates:</b> inverter driver error                                              |
| ▶ | ALRM 007 | # <b>Indicates:</b> compressor suction low temperature                                 |
| ▶ | ALRM 008 | # <b>Indicates:</b> compressor discharge high temperature                              |
| ▶ | ALRM 009 | # <b>Indicates:</b> communication error between electronic boards                      |
| ▶ | ALRM 010 | # <b>Indicates:</b> evaporator liquid refrigerant low temperature                      |

|   |          |   |                                                                                |
|---|----------|---|--------------------------------------------------------------------------------|
| ▶ | ALRM 012 | # | <b>Indicates:</b> fan malfunction                                              |
| ▶ | ALRM 017 | # | <b>Indicates:</b> plant flow switch tripped                                    |
| ▶ | ALRM 022 | # | <b>Indicates:</b> high water temperature during domestic hot water production  |
| ▶ | ALRM 023 | # | <b>Indicates:</b> high water temperature during heating operation              |
| ▶ | ALRM 025 | # | <b>Indicates:</b> plant exchanger antifreeze cooling operation                 |
| ▶ | ALRM 027 | # | <b>Indicates:</b> domestic hot water storage tank antifreeze                   |
| ▶ | ALRM 028 | # | <b>Indicates:</b> plant exchanger and tank antifreeze during cooling operation |

## Installer menu

|   |                                                                          |
|---|--------------------------------------------------------------------------|
| ▶ | Installer parameters (PF)                                                |
| ▶ | Configuration                                                            |
| ▶ | PF1                                                                      |
|   | # <b>Enables:</b> Heating mode                                           |
|   | # <b>0:</b> off                                                          |
|   | # <b>1:</b> on (default)                                                 |
| ▶ | PF2                                                                      |
|   | # <b>Enables:</b> Cooling mode                                           |
|   | # <b>0:</b> off                                                          |
|   | # <b>1:</b> on (default)                                                 |
| ▶ | PF3                                                                      |
|   | # <b>Enables:</b> domestic hot water production                          |
|   | # <b>0:</b> off (default)                                                |
|   | # <b>1:</b> on                                                           |
| ▶ | PF4                                                                      |
|   | # <b>Selects:</b> ON/Standby from digital input                          |
|   | # <b>0:</b> off (default)                                                |
|   | # <b>1:</b> ON with contact closed                                       |
|   | # <b>2:</b> ON with open contact                                         |
| ▶ | PF5                                                                      |
|   | # <b>Selects:</b> Silent or Switching Cooling/Heating from digital input |
|   | # <b>0:</b> off (default)                                                |
|   | # <b>1:</b> Cooling on closed contact                                    |
|   | # <b>2:</b> Heating on closed contact                                    |
|   | # <b>3:</b> Silent on closed contact                                     |
| ▶ | PF6                                                                      |
|   | # <b>Enables:</b> TA via Modbus                                          |
|   | # <b>0:</b> deactivated (default)                                        |
|   | # <b>1:</b> on                                                           |
| ▶ | PF7                                                                      |
|   | # <b>Enables:</b> TA from outside temperature                            |
|   | # <b>0:</b> off (default)                                                |
|   | # <b>1:</b> on                                                           |
| ▶ | PF8                                                                      |
|   | # <b>Selects:</b> the plant water temperature control probe              |
|   | # <b>0:</b> PT1 plant (circuit breaker or buffer tank)                   |
|   | # <b>1:</b> PT5 plant delivery                                           |
|   | # <b>2:</b> PT6 plant return (default)                                   |

- ▶ PF9
  - # **Enables:** dynamic set
  - # **0:** off (default)
  - # **1:** on
- ▶ PF10
  - # **Enables:** continuous mode primary pump
  - # **0:** off
  - # **1:** on (default)
- ▶ PF11
  - # **Sets:** Fast Heat function duration
  - # **Unit** of measurement: minutes
  - # **Minimum:** 10
  - # **Maximum:** 240
  - # **Setting:** 90
- ▶ PF12
  - # **Sets:** compressor power reduction for Silent mode
  - # **Unit** of measurement: percentage
  - # **Minimum:** 0
  - # **Maximum:** 100
  - # **Setting:** 90
- ▶ PF13
  - # **Sets:** fan power reduction for Silent mode
  - # **Unit** of measurement: percentage
  - # **Minimum:** 0
  - # **Maximum:** 100
  - # **Setting:** 75
- ▶ Plant Water
  - ▶ PF21
    - # **Sets:** Heating temperature setting
    - # **Units** of measure: °C
    - # **Minimum:** 10
    - # **Maximum:** 55
    - # **Setting:** 30
  - ▶ PF22
    - # **Sets:** Cooling temperature setting
    - # **Units** of measure: °C
    - # **Minimum:** 7
    - # **Maximum:** 40
    - # **Setting:** 12
  - ▶ PF23
    - # **Sets:** minimum water temperature
    - # **Units** of measure: °C
    - # **Minimum:** 1
    - # **Maximum:** 9
    - # **Setting:** 4
  - ▶ PF27
    - # **Sets:** maximum plant tank temperature
    - # **Units** of measure: °C
    - # **Minimum:** 30
    - # **Maximum:** 70
    - # **Setting:** 60
- ▶ Domestic hot water
  - ▶ PF24
    - # **Sets:** domestic hot water temperature
    - # **Units** of measure: °C
    - # **Minimum:** 10
    - # **Maximum:** 75
    - # **Setting:** 48

---

► PF25

# **Sets:** domestic hot water temperature hysteresis  
# **Units** of measure: °C  
# **Minimum:** 1  
# **Maximum:** 9  
# **Setting:** 2.5

---

► PF28

# **Sets:** maximum domestic hot water tank temperature  
# **Units** of measure: °C  
# **Minimum:** 30  
# **Maximum:** 90  
# **Setting:** 70

---

► Dynamic set cooling

---

► PF34

# **Sets:** maximum dynamic set temperature  
# **Units** of measure: °C  
# **Minimum:** 25  
# **Maximum:** 50  
# **Setting:** 35

---

► PF35

# **Sets:** minimum outdoor temperature and activation temperature for TA function from outdoor temperature  
# **Units** of measure: °C  
# **Minimum:** 10  
# **Maximum:** 25  
# **Setting:** 15

---

► PF36

# **Sets:** dynamic set plant maximum water temperature  
# **Units** of measure: °C  
# **Minimum:** 10  
# **Maximum:** 25  
# **Setting:** 15

---

► PF37

# **Sets:** dynamic set plant minimum water temperature  
# **Units** of measure: °C  
# **Minimum:** 5  
# **Maximum:** 10  
# **Setting:** 7

---

► Dynamic set heating

---

► PF38

# **Sets:** maximum temperature and activation temperature for TA function from outdoor temperature  
# **Units** of measure: °C  
# **Minimum:** 5  
# **Maximum:** 25  
# **Setting:** 15

---

► PF39

# **Sets:** minimum dynamic set temperature  
# **Units** of measure: °C  
# **Minimum:** -10  
# **Maximum:** 15  
# **Setting:** 0

---

► PF40

# **Sets:** dynamic set plant maximum water temperature  
# **Units** of measure: °C  
# **Minimum:** 20  
# **Maximum:** 50  
# **Setting:** 35

---

- ▶ PF41
  - # **Sets:** dynamic set plant minimum water temperature
  - # **Units** of measure: °C
  - # **Minimum:** 15
  - # **Maximum:** 35
  - # **Setting:** 25
- ▶ Auxiliary generator
  - ▶ PF47
    - # **Enables:** the presence of a heat generator (boiler) for domestic hot water integration
    - # **0:** off (default)
    - # **1:** on
  - ▶ PF48
    - # **Enables:** the presence of a heat generator (boiler) for plant water integration
    - # **0:** off (default)
    - # **1:** on
  - ▶ PF49
    - # **Enables:** the presence of heating element for domestic hot water integration
    - # **0:** off (default)
    - # **1:** on
  - ▶ PF50
    - # **Enables:** the presence of heating element for plant water integration
    - # **0:** off (default)
    - # **1:** on
  - ▶ PF51
    - # **Enables:** the heat pump to work together with the auxiliary generator
    - # **0:** off (default)
    - # **1:** on
  - ▶ PF52
    - # **Enables:** auxiliary generator activation for plant water temperature threshold
    - # **0:** off (default)
    - # **1:** on
  - ▶ PF53
    - # **Enables:** activation of auxiliary generation for domestic hot water temperature threshold
    - # **0:** off (default)
    - # **1:** on
  - ▶ PF54
    - # **Sets:** plant water temperature threshold for auxiliary generator activation
    - # **Units** of measure: °C
    - # **Minimum:** 35
    - # **Maximum:** 70
    - # **Setting:** 55
  - ▶ PF55
    - # **Sets:** plant water temperature threshold hysteresis for auxiliary generator activation
    - # **Units** of measure: °C
    - # **Minimum:** 1
    - # **Maximum:** 9
    - # **Setting:** 3
  - ▶ PF56
    - # **Sets:** maximum domestic hot water temperature for auxiliary generator activation
    - # **Units** of measure: °C
    - # **Minimum:** 45
    - # **Maximum:** 55
    - # **Setting:** 53
  - ▶ PF57
    - # **Enables:** auxiliary generator activation for outdoor temperature threshold
    - # **0:** off (default)
    - # **1:** on

|                   |                                                                                                 |
|-------------------|-------------------------------------------------------------------------------------------------|
| ▶ PF58            | # <b>Sets:</b> outdoor air temperature threshold for auxiliary generator activation             |
|                   | # <b>Units</b> of measure: °C                                                                   |
|                   | # <b>Minimum:</b> -25                                                                           |
|                   | # <b>Maximum:</b> 15                                                                            |
|                   | # <b>Setting:</b> -10                                                                           |
| ▶ PF59            | # <b>Sets:</b> external air temperature threshold hysteresis for auxiliary generator activation |
|                   | # <b>Units</b> of measure: °C                                                                   |
|                   | # <b>Minimum:</b> 1                                                                             |
|                   | # <b>Maximum:</b> 10                                                                            |
|                   | # <b>Setting:</b> 2                                                                             |
| ▶ PF60            | # <b>Enables:</b> auxiliary generator activation for heating timeout                            |
|                   | # <b>0:</b> off (default)                                                                       |
|                   | # <b>1:</b> on                                                                                  |
| ▶ PF61            | # <b>Sets:</b> plant water auxiliary generator activation timeout                               |
|                   | # <b>Unit</b> of measurement: minutes                                                           |
|                   | # <b>Minimum:</b> 5                                                                             |
|                   | # <b>Maximum:</b> 360                                                                           |
|                   | # <b>Setting:</b> 120                                                                           |
| ▶ PF62            | # <b>Sets:</b> domestic hot water auxiliary generator activation timeout                        |
|                   | # <b>Unit</b> of measurement: minutes                                                           |
|                   | # <b>Minimum:</b> 5                                                                             |
|                   | # <b>Maximum:</b> 360                                                                           |
|                   | # <b>Setting:</b> 90                                                                            |
| ▶ Anti-legionella |                                                                                                 |
| ▶ PF67            | # <b>Enables:</b> Anti-legionella on/off                                                        |
|                   | # <b>0:</b> off (default)                                                                       |
|                   | # <b>1:</b> on                                                                                  |
| ▶ PF68            | # <b>Sets:</b> set Anti-legionella temperature                                                  |
|                   | # <b>Units</b> of measure: °C                                                                   |
|                   | # <b>Minimum:</b> 55                                                                            |
|                   | # <b>Maximum:</b> 70                                                                            |
|                   | # <b>Setting:</b> 60                                                                            |
| ▶ PF69            | # <b>Sets:</b> anti-legionella cycle time                                                       |
|                   | # <b>Unit</b> of measurement: minutes                                                           |
|                   | # <b>Minimum:</b> 30                                                                            |
|                   | # <b>Maximum:</b> 240                                                                           |
|                   | # <b>Setting:</b> 60                                                                            |
| ▶ PF70            | # <b>Sets:</b> anti-legionella cycle interval                                                   |
|                   | # <b>Unit</b> of measurement: hours                                                             |
|                   | # <b>Minimum:</b> 72                                                                            |
|                   | # <b>Maximum:</b> 720                                                                           |
|                   | # <b>Setting:</b> 720                                                                           |
| ▶ PF71            | # <b>Sets:</b> preferred activation time                                                        |
|                   | # <b>Unit</b> of measurement: time                                                              |
|                   | # <b>Minimum:</b> 00                                                                            |
|                   | # <b>Maximum:</b> 23                                                                            |
|                   | # <b>Sets:</b> 02 (two o'clock at night)                                                        |

## HPM-EV FUNCTION SETTING

### 4.1 Introduction

The unit is designed to provide:

- water to plant for heating or cooling the rooms
- domestic hot water

If necessary, it is possible to support the heat output generated by the appliance with auxiliary heating systems (backup), which may be:

- heating elements available as accessories and mounted inside the unit from the factory
- combustion heaters (boilers)

The appliance has functions that allow the operation to be set to suit the type of plant on which it has been installed.

The settings and function management is done through:

- the Control Panel display

**⚠** Digital inputs for activating or deactivating some functions or for connecting external enabling (see the Installation Manual of the unit) are provided in the terminal board of the Control Panel.

- via Modbus supervisor

### 4.2 Plant water management

The following plant types are provided:

- plant with direct delivery and buffer tank
- plant with hydraulic separator and secondary pump
- plant with direct delivery

According to the plant type and the required control type, the plant water temperature can be controlled through:

**PT6-M:** heat pump input probe (default setting). To be used in case of a plant with direct flow and presence of buffer storage on the return line, when the stability of the heat pump operation is preferred.

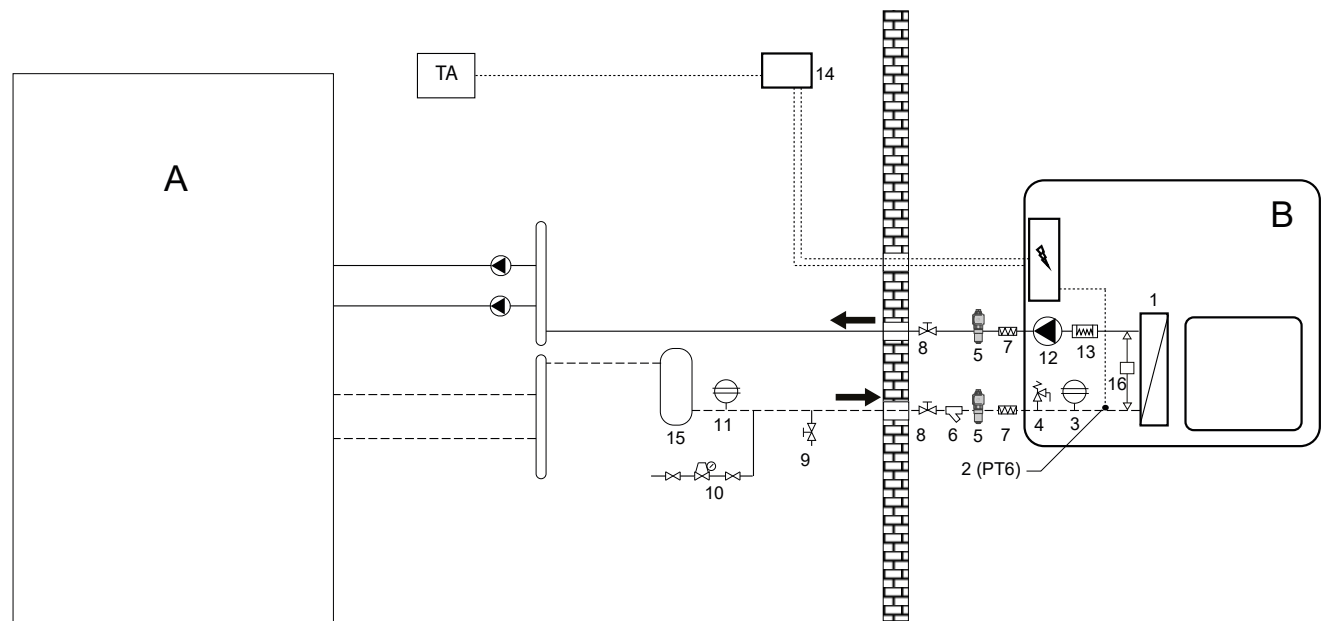
**PT1:** plant probe. To be used in the case of a plant with a hydraulic separator and secondary pump, it guarantees the stability of both heat pump operation and water temperature for the consumers.

**PT5-M:** heat pump delivery probe. To be used in case of a plant with direct delivery when guaranteeing the stability of the water temperature for the consumers is necessary.

#### 4.2.1 Schematic diagram with direct delivery and buffer tank

|           |                      |
|-----------|----------------------|
| <b>A</b>  | Plant                |
| <b>B</b>  | HPM-EV               |
| <b>1.</b> | Plate exchanger      |
| <b>2.</b> | PT6 probe            |
| <b>3.</b> | Expansion vessel     |
| <b>4.</b> | 3-bar safety valve   |
| <b>5.</b> | Antifreeze valve     |
| <b>6.</b> | Network water filter |
| <b>7.</b> | Flexible connections |

|            |                                            |
|------------|--------------------------------------------|
| <b>8.</b>  | Shut-off valves                            |
| <b>9.</b>  | Plant drain cock                           |
| <b>10.</b> | Automatic plant filling assembly           |
| <b>11.</b> | Expansion vessel                           |
| <b>12.</b> | PP1 primary circulation pump               |
| <b>13.</b> | Electric heating element (accessory)       |
| <b>14.</b> | Control Panel                              |
| <b>15.</b> | Buffer storage                             |
| <b>16.</b> | Flow switch (differential pressure switch) |



## Water temperature control

Control setting on PT6-M (plant return)

 Factory setting.

**"PF8" p. 20: 2 (default)**

**⚠** The installer will be in charge of selecting the correct set-points for the heating and cooling functions, both with fixed point and with dynamic set adjustment, who will take into consideration the type of terminal and the temperature adjustment point.

**PP1 primary circulation pump**

The primary pump is set for continuous operation with TA on call.

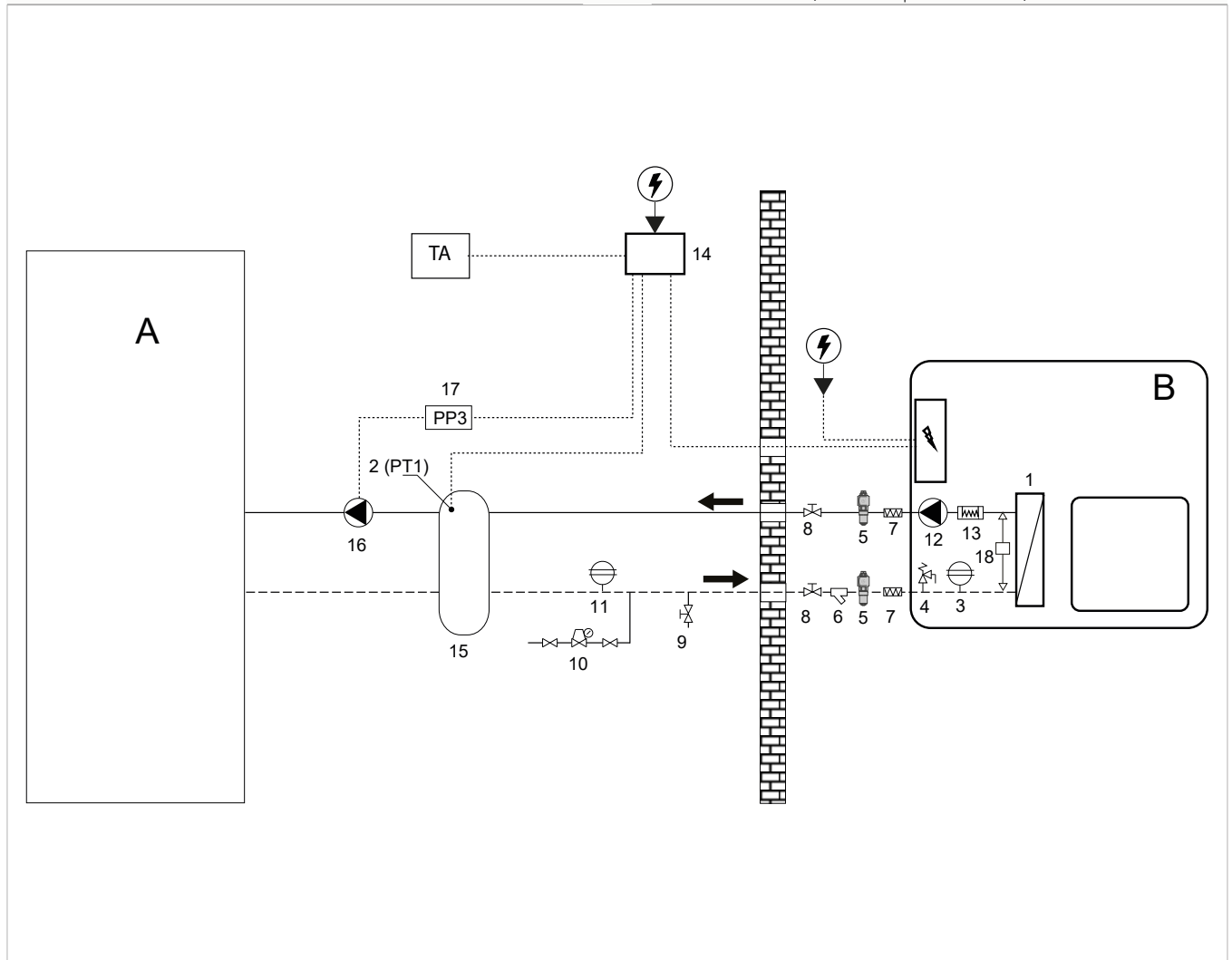
 The default setting must be left for this type of plant.

**"PF10" p. 21: 1 (default)**

⚠ Check the primary pump head with the pressure drop of the plant. If this is not sufficient, manifolds must be provided on the delivery and return lines of secondary pumps.

#### 4.2.2 Schematic diagram with hydraulic separator and secondary pump

|           |                               |            |                                              |
|-----------|-------------------------------|------------|----------------------------------------------|
| <b>A</b>  | Plant                         | <b>9.</b>  | Plant drain cock                             |
| <b>B</b>  | HPM-EV                        | <b>10.</b> | Automatic plant filling assembly             |
| <b>1.</b> | Plate exchanger               | <b>11.</b> | Expansion vessel                             |
| <b>2.</b> | Plant temperature probe (PT1) | <b>12.</b> | PP1 primary circulation pump                 |
| <b>3.</b> | Expansion vessel              | <b>13.</b> | Electric heating element (accessory)         |
| <b>4.</b> | 3-bar safety valve            | <b>14.</b> | Control Panel                                |
| <b>5.</b> | Antifreeze valve              | <b>15.</b> | Hydraulic separator                          |
| <b>6.</b> | Network water filter          | <b>16.</b> | Secondary circulation pump PP3               |
| <b>7.</b> | Flexible connections          | <b>17.</b> | Secondary circulation pump control relay PP3 |
| <b>8.</b> | Shut-off valves               | <b>18.</b> | Flow switch (differential pressure switch)   |



#### Water temperature control

Setting of the control on PT1 probe to be placed in the separator

"PF8" p. 20: 0

#### PP1 primary circulation pump

The primary pump is set for continuous operation with TA on call.

Continuous operation may be disabled so that the pump stops when the set-point is reached for this type of plant.

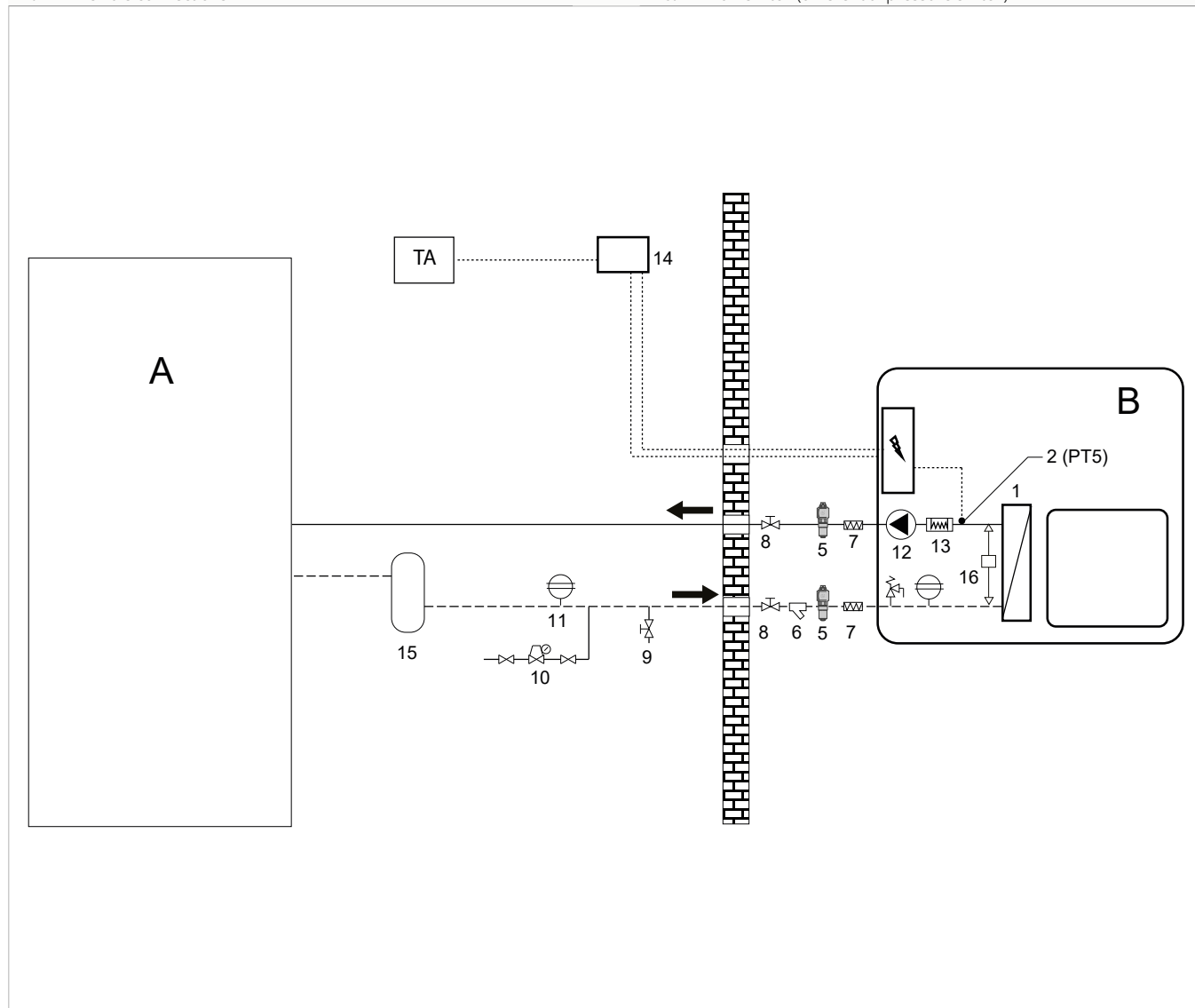
"PF10" p. 21: 0

⚠ Check the primary pump head with the pressure drop of the plant. If this is not sufficient, manifolds must be provided on the delivery and return lines of secondary pumps.

### 4.2.3 Principle diagram with direct delivery

|           |                      |
|-----------|----------------------|
| <b>A</b>  | Plant                |
| <b>B</b>  | HPM-EV               |
| <b>1.</b> | Plate exchanger      |
| <b>2.</b> | PT6 probe            |
| <b>3.</b> | Expansion vessel     |
| <b>4.</b> | 3-bar safety valve   |
| <b>5.</b> | Antifreeze valve     |
| <b>6.</b> | Network water filter |
| <b>7.</b> | Flexible connections |

|            |                                            |
|------------|--------------------------------------------|
| <b>8.</b>  | Shut-off valves                            |
| <b>9.</b>  | Plant drain cock                           |
| <b>10.</b> | Automatic plant filling assembly           |
| <b>11.</b> | Expansion vessel                           |
| <b>12.</b> | PP1 primary circulation pump               |
| <b>13.</b> | Electric heating element (accessory)       |
| <b>14.</b> | Control Panel                              |
| <b>15.</b> | Buffer tank                                |
| <b>16.</b> | Flow switch (differential pressure switch) |



#### Water temperature control

Control setting on PT5-M (plant delivery)

"PF8" p. 20: 1

⚠ The minimum water content of the plant indicated in the installer manual of the unit being installed must be respected. If necessary, provide for the use of a buffer tank on the plant return line.

#### PP1 primary circulation pump

The primary pump is set for continuous operation with TA on call.

⚠ The default setting must be left for this type of plant.

"PF10" p. 21: 1 (default)

⚠ Check the primary pump head with the pressure drop of the plant. If this is not sufficient, manifolds must be provided on the delivery and return lines of secondary pumps.

#### 4.2.4 Plant cooling/heating function enabling from TA

The connection and activation of an external consents (TA) is essential for the operation of the unit:

- TA from room thermostat
- TA from outside temperature
- TA from Modbus Supervisor

The three types of TA consents can co-exist and the unit will activate when it receives a call from at least one of the three.

#### TA from room thermostat or a generic potential-free contact contact

##### Function Logic:

The TA must be connected to digital input PI3:

- on the terminal board of the Control Panel for monoblock versions

##### Contact logic:

- Closed contact: the unit is switched on for heating or cooling the plant water.
- Open contact: the unit is switched off for heating or cooling the plant water

⚠ If the domestic hot water function is active, this function has priority even when the contact is open.

#### TA from outside temperature

##### Function Logic:

The room thermostat is enabled according to the outside temperature.

##### Logic:

- Outdoor temperature > PF35 the unit switches to Cooling mode
- Outside temperature < PF38 the unit switches to Heating mode

⚠ Hysteresis 2 °C

⚠ **The unit does not automatically change the operating mode.**

⚠ If the domestic hot water function is active, this function has priority.

##### Enabling:

Use must be enabled by parameter **"PF7"** *p. 20*.

#### TA from Modbus Supervisor

##### Function Logic:

The room thermostat is enabled by Modbus Supervisor and controlled by the Modbus register with address 10.

##### Logic of the register:

The call is managed by the Modbus Supervisor.

- Value 1: the unit is switched on for heating or cooling the plant water.
- Value 0: the unit is switched off for heating or cooling the plant water.

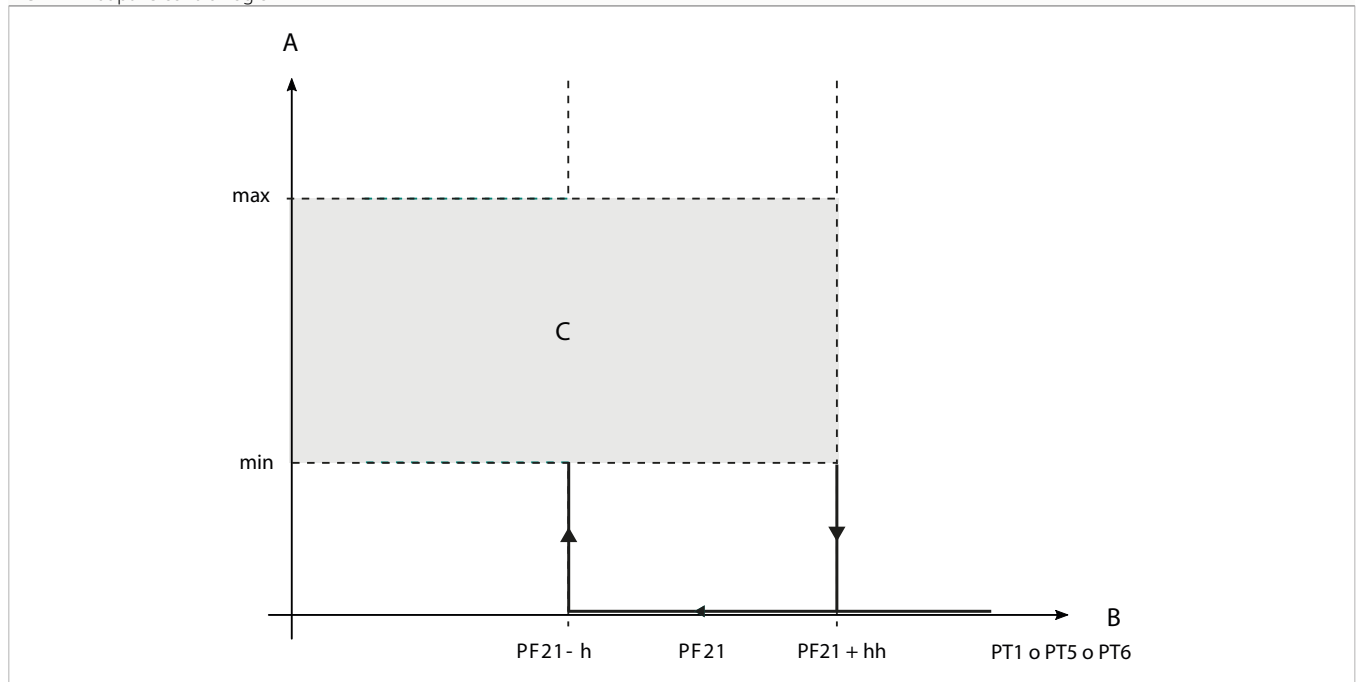
⚠ If the domestic hot water function is active, this function has priority.

##### Enabling:

Use must be enabled by parameter **"PF6"** *p. 20*.

## 4.2.5 Heating logic

|          |                         |
|----------|-------------------------|
| <b>A</b> | Frequency               |
| <b>B</b> | Plant water temperature |
| <b>C</b> | Adaptive control logic  |



⚠ Min and max depend on the logic corresponding to the active mode (heating) and the configuration of the unit.

**PT1, 5, 6:** Plant temperature probe. This depends on the setting of "**PF8**" [p. 20](#)

**"PF21" [p. 21](#): Setpoint**

⚠ If the external climate control is active, the reference setpoint is not PF21, but the dynamically calculated setpoint. View chapter "Dynamic set adjustment" [p. 37](#).

**h:** general hysteresis (2°C)

**hh:** upper hysteresis (3 °C)

⚠ The function is inhibited by the simultaneous request for domestic hot water (which higher priority) but the priority can be reversed for 90 minutes ("**PF11**" [p. 21](#)) by pressing the Fast Heating button

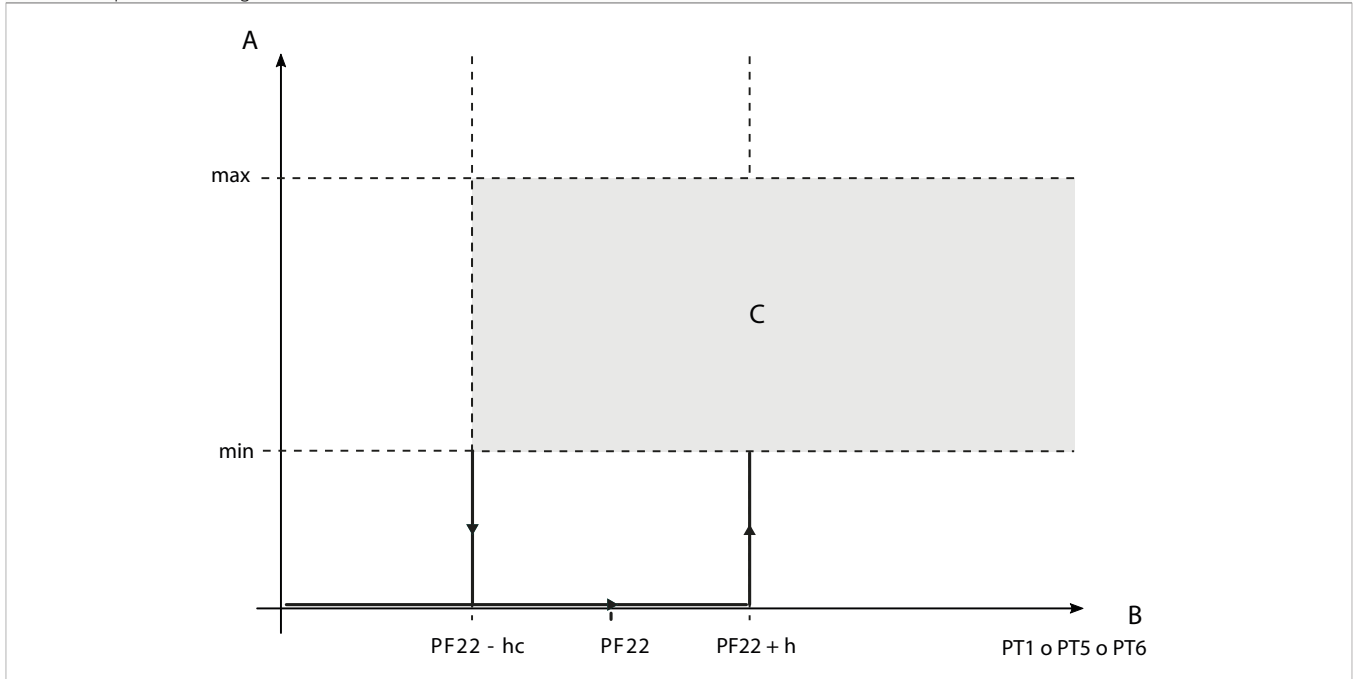
⚠ The temperature in the separator may not exceed 60 °C.

⚠ During the start-up phase, the compressor reaches the maximum frequency in 3 minutes.

⚠ The dynamic set adjustment is not active.

## 4.2.6 Cooling logic

|          |                         |
|----------|-------------------------|
| <b>A</b> | Frequency               |
| <b>B</b> | Plant water temperature |
| <b>C</b> | Adaptive control logic  |



⚠ Min and max depend on the logic corresponding to the active mode (cooling) and the configuration of the unit.

**PT1, 5, 6:** Plant temperature probe. This depends on the setting of "**PF8**" [p. 20](#)

**"PF22" [p. 21](#): Setpoint**

⚠ If the external climate control is active, the reference setpoint is not PF22, but the dynamically calculated setpoint. View chapter "Dynamic set adjustment" [p. 37](#).

**h:** general hysteresis (2°C)

**hc:** lower hysteresis (2 °C)

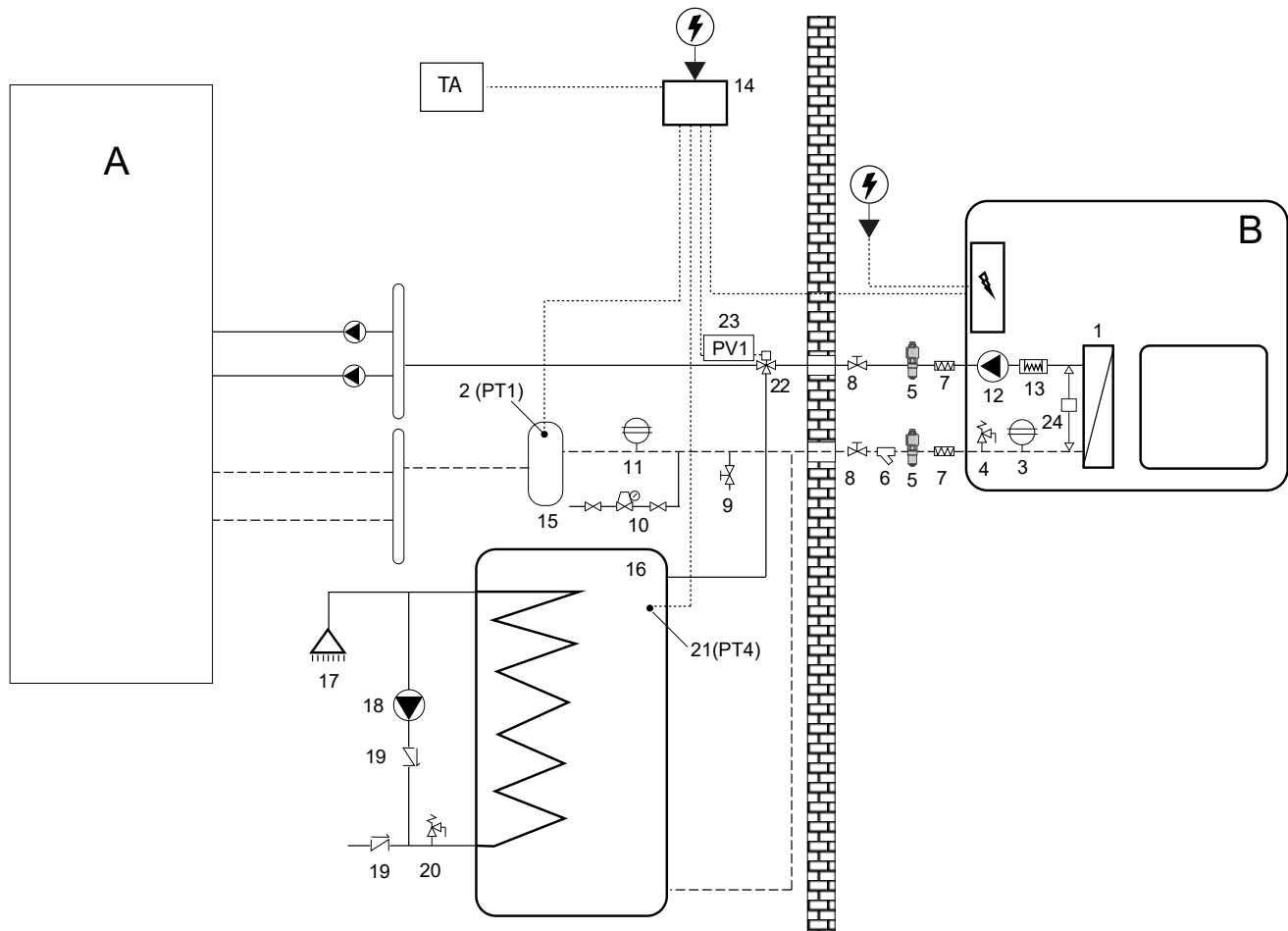
⚠ The function is inhibited by the simultaneous request for domestic hot water (which higher priority) but the priority can be reversed for 90 minutes ("**PF11**" [p. 21](#)) by pressing the Fast Heating button

### 4.3 Domestic hot water management

#### 4.3.1 Schematic diagram with instantaneous domestic hot water storage tank and heating elements

|            |                                  |
|------------|----------------------------------|
| <b>A</b>   | Plant                            |
| <b>B</b>   | HPM-EV                           |
| <b>1.</b>  | Plate exchanger                  |
| <b>2.</b>  | Plant temperature probe (PT1)    |
| <b>3.</b>  | Expansion vessel                 |
| <b>4.</b>  | 3-bar safety valve               |
| <b>5.</b>  | Antifreeze valve                 |
| <b>6.</b>  | Network water filter             |
| <b>7.</b>  | Flexible connections             |
| <b>8.</b>  | Shut-off valves                  |
| <b>9.</b>  | Plant drain cock                 |
| <b>10.</b> | Automatic plant filling assembly |
| <b>11.</b> | Expansion vessel                 |

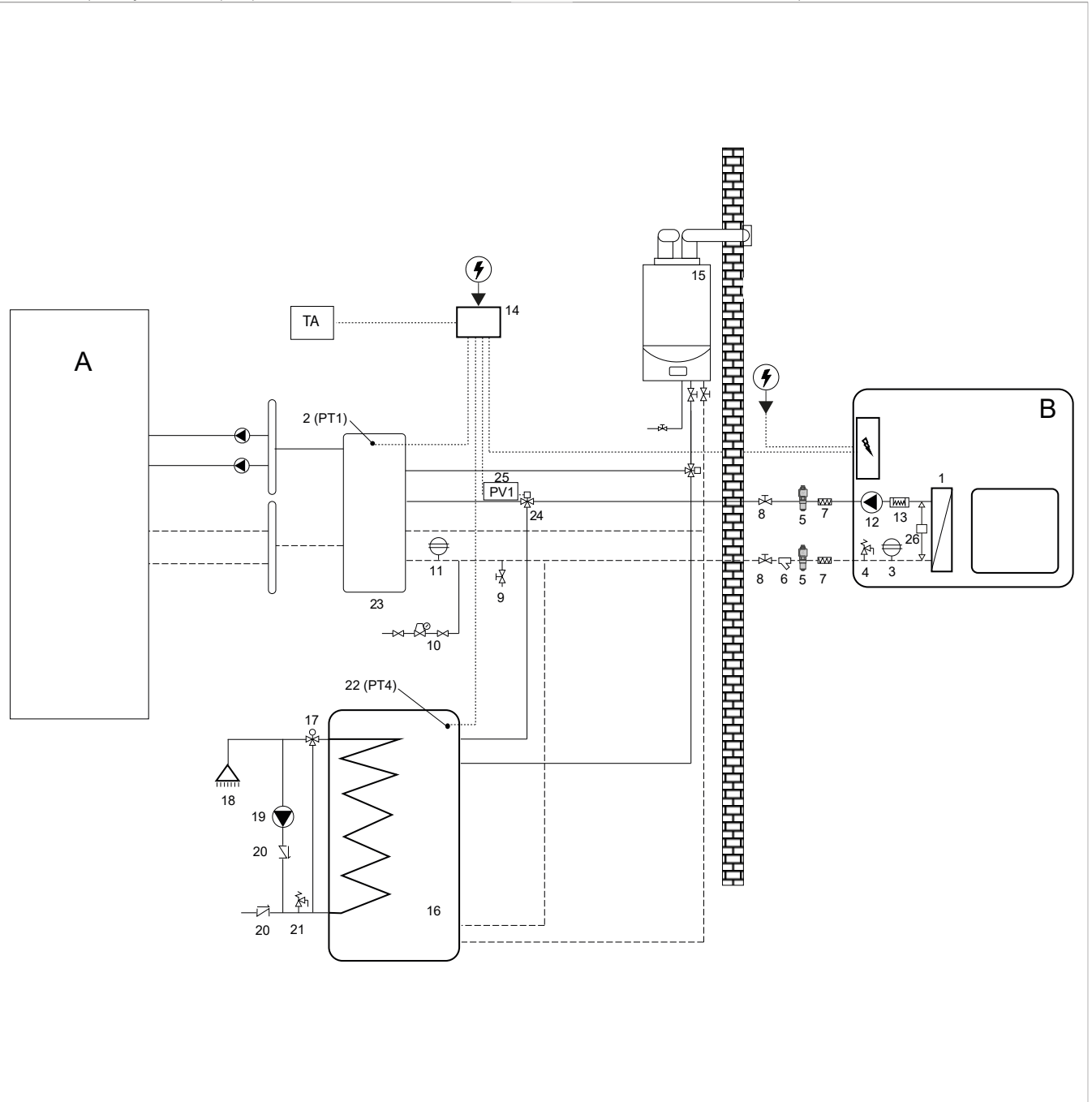
|            |                                                 |
|------------|-------------------------------------------------|
| <b>12.</b> | PP1 primary circulation pump                    |
| <b>13.</b> | Electric heating element (accessory)            |
| <b>14.</b> | Control Panel                                   |
| <b>15.</b> | Buffer storage                                  |
| <b>16.</b> | Instant domestic hot water preparation storage  |
| <b>17.</b> | Domestic hot water consumers                    |
| <b>18.</b> | Domestic hot water recirculation pump           |
| <b>19.</b> | Check valve                                     |
| <b>20.</b> | Safety valve                                    |
| <b>21.</b> | Domestic hot water tank temperature probe (PT4) |
| <b>22.</b> | 3-way on/off valve PV1                          |
| <b>23.</b> | Three-way on/off valve control relay            |
| <b>24.</b> | Flow switch (differential pressure switch)      |



### 4.3.2 Schematic diagram with sanitary hot water storage and heating generator

|            |                                  |
|------------|----------------------------------|
| <b>A</b>   | Plant                            |
| <b>B</b>   | HPM-EV                           |
| <b>1.</b>  | Plate exchanger                  |
| <b>2.</b>  | Plant temperature probe (PT1)    |
| <b>3.</b>  | Expansion vessel                 |
| <b>4.</b>  | 3-bar safety valve               |
| <b>5.</b>  | Antifreeze valve                 |
| <b>6.</b>  | Network water filter             |
| <b>7.</b>  | Flexible connections             |
| <b>8.</b>  | Shut-off valves                  |
| <b>9.</b>  | Plant drain cock                 |
| <b>10.</b> | Automatic plant filling assembly |
| <b>11.</b> | Expansion vessel                 |
| <b>12.</b> | PP1 primary circulation pump     |

|            |                                                 |
|------------|-------------------------------------------------|
| <b>13.</b> | Electric heating element (accessory)            |
| <b>14.</b> | Control Panel                                   |
| <b>15.</b> | Heat generator (boiler)                         |
| <b>16.</b> | Instant domestic hot water preparation storage  |
| <b>17.</b> | Thermostatic mixer                              |
| <b>18.</b> | Domestic hot water consumers                    |
| <b>19.</b> | Domestic hot water recirculation pump           |
| <b>20.</b> | Check valve                                     |
| <b>21.</b> | Safety valve                                    |
| <b>22.</b> | Domestic hot water tank temperature probe (PT4) |
| <b>23.</b> | Separator                                       |
| <b>24.</b> | 3-way on/off valve PV1                          |
| <b>25.</b> | Three-way on/off valve control relay            |
| <b>26.</b> | Flow switch (differential pressure switch)      |



### Domestic hot water temperature check

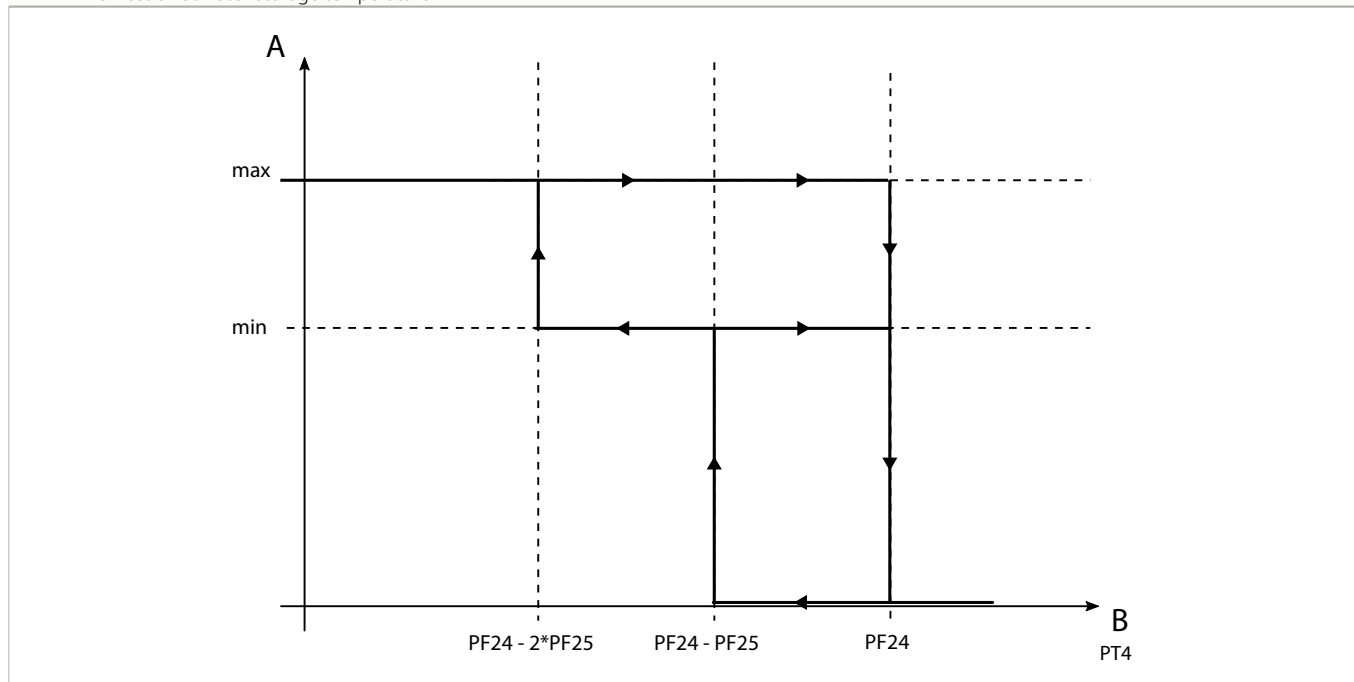
The domestic hot water temperature is controlled by the PT4 probe that must be positioned in the domestic hot water storage tank.

### 4.3.3 Enable domestic hot water production

The domestic hot water function must be enabled by parameter "PF3" [p. 20](#)

### 4.3.4 Domestic hot water logic

**A** Compressor frequency  
**B** Domestic hot water storage temperature



⚠ Min and max depend on the logic corresponding to the active mode (domestic hot water production) and the configuration of the unit.

"PF24" [p. 21](#): set domestic hot water temperature

"PF25" [p. 22](#): domestic hot water temperature hysteresis (2.5 °C)

## 4.4 Auxiliary heater management (heating element or support heat generator)

The system allows the implementation of an auxiliary heating element or a heat generator (Boiler) to support the heat pump. The auxiliary generators can intervene for producing plant water or domestic hot water with a difference:

- the electrical heating element can operate either in cooperation with the heat pump or switching with heat pump circulation pump
- the boiler can operate only in switching mode using its own circulator

⚠ **The backup boiler cannot work at the same time as the heat pump.**

### 4.4.1 Function enabling

The auxiliary generators must be enabled by parameter:

"PF47" [p. 23](#): the presence of a heat generator (boiler) for domestic hot water integration

"PF48" [p. 23](#): the presence of a heat generator (boiler) for system water integration

"PF49" [p. 23](#): the presence of a heating element for domestic hot water integration

"PF50" [p. 23](#): the presence of a heating element for plant water integration

⚠ The parameters are already preset if the kit is factory-fitted.

⚠ Adjustments and parameter changes must be carried out by the Technical Service Department or a competent person.

### 4.4.2 Activation logics

The activation logic is the same for the plant water and the domestic hot water.

⚠ The production of domestic hot water has priority over plant water heating.

The auxiliary heating element or boiler is activated to support the heat pump in case of:

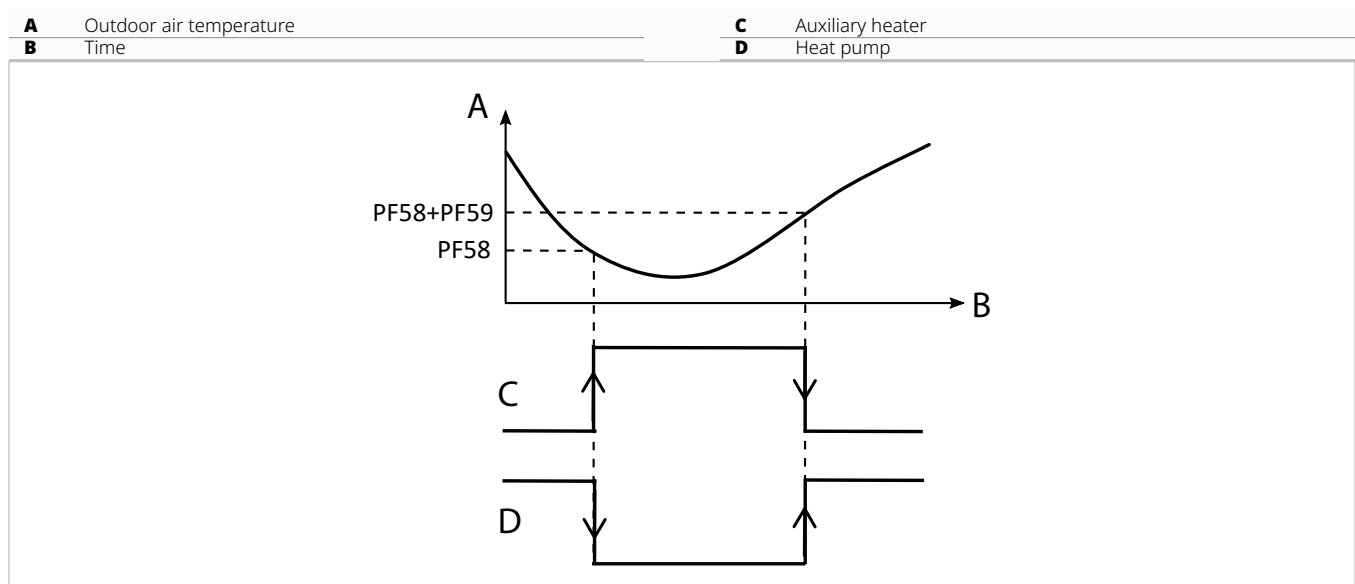
- Outdoor temperature too low
- setpoint timeout
- water temperature demand higher than the limit that the heat pump can manage

The boiler will shut down in the event of:

- domestic hot water storage temperature too high alarm
- plant water temperature too high

### Outdoor temperature too low

The system activates the auxiliary generator when the outside temperature falls below the threshold value. In this case, three situations may occur according to the parameter setting:



| PF51 | PF57 | Activation methods                     | Type of operation     |
|------|------|----------------------------------------|-----------------------|
| 1    | 1    | Heat pump + Heating element            | In collaboration with |
| 0    | 1    | Heat pump or Heating element or Boiler | Switching             |
| 0    | 0    | Only heat pump                         | -                     |

"PF58" *p. 24*: sets the threshold value

"PF59" *p. 24*: sets the hysteresis value

### Setpoint timeout

When the heat pump fails to reach the setpoint within a given time, three situations can occur depending on the setting of the connected parameters:

| PF51 | PF60 | Activation methods                     | Type of operation     |
|------|------|----------------------------------------|-----------------------|
| 1    | 1    | Heat pump + Heating element            | In collaboration with |
| 0    | 1    | Heat pump or Heating element or Boiler | Switching             |
| 0    | 0    | Only heat pump                         | -                     |

"PF61" *p. 24*: sets the plant water timeout value

"PF62" *p. 24*: sets the domestic hot water timeout value

### Water high-temperature request

The intervention of the auxiliary generator can be enabled when the required water temperature exceeds the maximum value that can be reached by the heat pump:

The setting can be differentiated for plant water and domestic hot water.

**Plant Water**

| PF52 | Operating methods                      | Type      |
|------|----------------------------------------|-----------|
| 1    | Heat pump or Heating element or Boiler | Switching |

"PF54" *p. 23*: sets the plant water threshold value

"PF55" *p. 23*: sets the plant water hysteresis

**Domestic hot water**

| PF53 | Operating methods                      | Type      |
|------|----------------------------------------|-----------|
| 1    | Heat pump or Heating element or Boiler | Switching |

"PF56" *p. 23*: sets the threshold value for domestic hot water

 The auxiliary backup generators will shut down when the storage temperature is less than the maximum allowed temperature.

## 4.5 Dynamic set adjustment

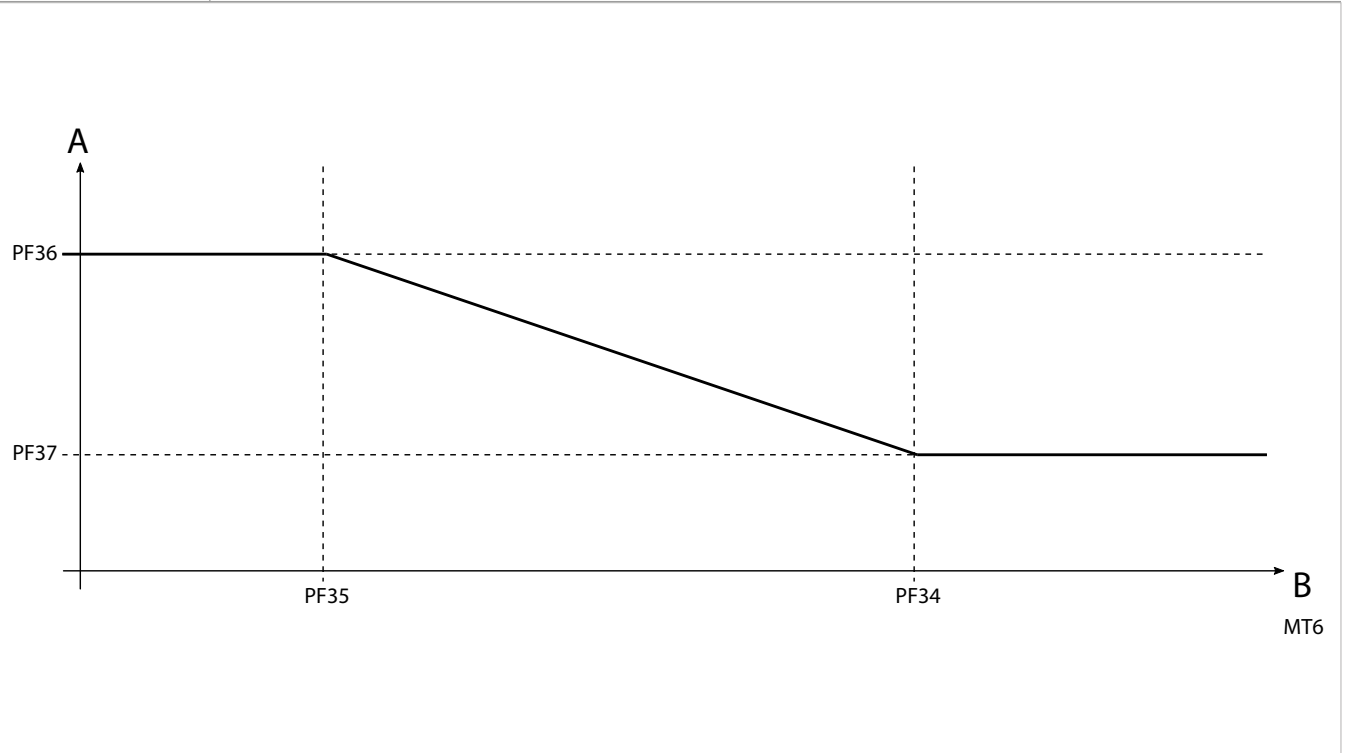
The dynamic set function allows the creation of compensation algorithms based on the settable parameters according to the operating mode.

### 4.5.1 Function enabling

The dynamic set adjustment must be enabled by parameter **"PF9"** *p. 21*

### 4.5.2 Cooling mode settings

**A** System water temperature setpoint  
**B** Outdoor air temperature



Settable parameters:

**"PF34"** *p. 22*: dynamic set maximum temperature

**"PF35"** *p. 22*: dynamic set minimum temperature

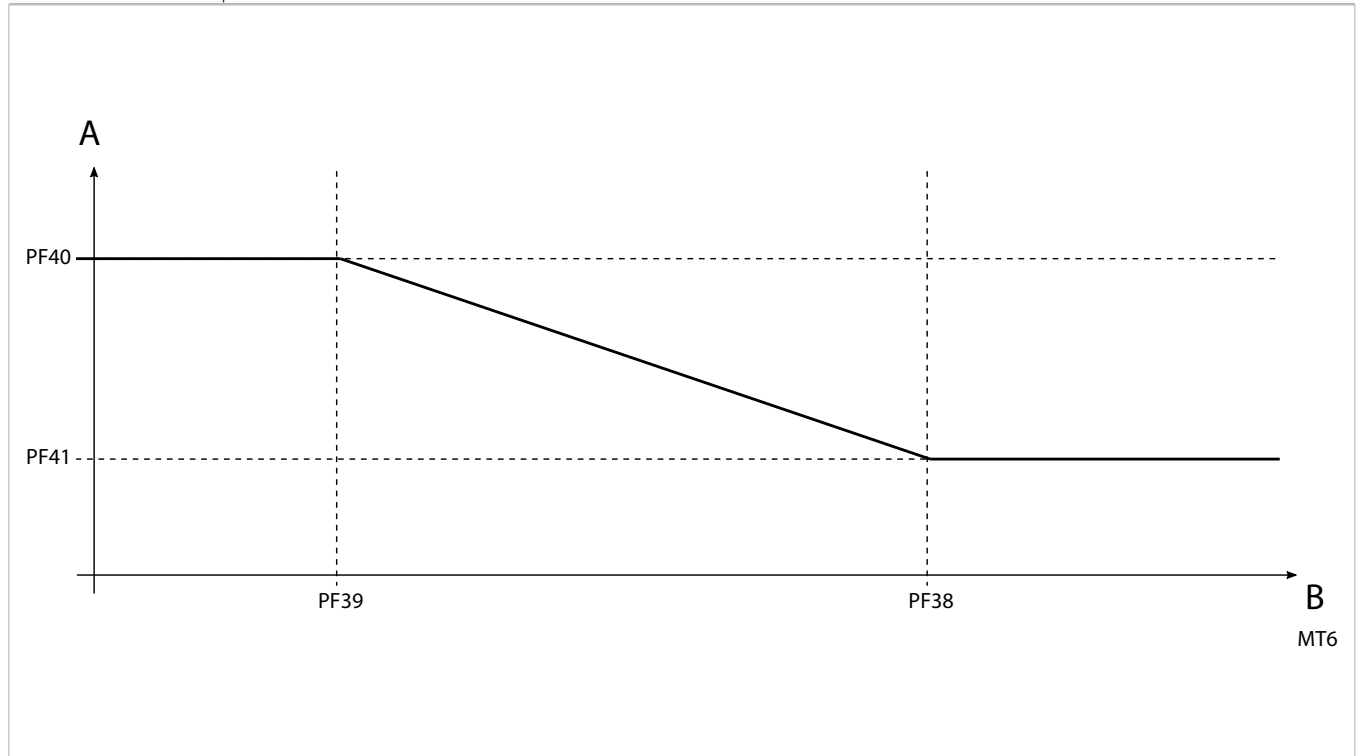
**"PF36"** *p. 22*: maximum water setpoint temperature in the climatic system

**"PF37"** *p. 22*: minimum temperature setpoint water system climate

**⚠** Check carefully how the parameter setting affects the plant water flow temperature. An excessively high temperature will not allow air dehumidification treated by the hydronic terminals.

### 4.5.3 Heating mode settings

**A** System water temperature setpoint  
**B** Outdoor air temperature



Settable parameters:

"PF38" [p. 22](#): dynamic set maximum temperature

"PF39" [p. 22](#): dynamic set minimum temperature

"PF40" [p. 22](#): maximum water setpoint temperature in the climatic system

"PF41" [p. 23](#): minimum temperature setpoint water system climate

⚠ Check carefully how the parameter setting affects the plant water flow temperature. An excessively low temperature will not allow sufficient heating of the air treated by the hydronic terminals.

## 4.6 Anti-legionella

The anti-legionella function must be activated if domestic hot water is stored in a boiler.

The function is not necessary if domestic hot water is produced by the plant water using a rapid exchanger.

⚠ The anti-legionella function is only possible with the electric heater kit.

⚠ The anti-legionella function is only possible with the electric heater kit.

### 4.6.1 Function enabling

The anti-legionella function must be enabled by parameter "PF67" [p. 24](#)

### 4.6.2 Settings

Settable parameters:

"PF68" [p. 24](#): anti-legionella temperature setting

"PF69" [p. 24](#): anti-legionella cycle duration

"PF70" [p. 24](#): anti-legionella cycle frequency

"PF71" [p. 24](#): preferred activation time

## TROUBLESHOOTING

## 5.1 Troubleshooting Table

| Alarm    | Description                                                 | Correlated variables                               | Correlated parameters | Activation conditions                                                    | Restoration conditions                 | Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|-------------------------------------------------------------|----------------------------------------------------|-----------------------|--------------------------------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ALRM 001 | Temperature probe malfunction                               | PT1, PT4, PT5, PT6, MT1-6                          | -                     | Probe disconnected, faulty or abnormal value                             |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ALRM 002 | Low-pressure switch tripped                                 | MI2                                                | -                     | Open pressure switch opening contact                                     |                                        | <ul style="list-style-type: none"> <li>Insufficient refrigerant charge</li> <li>Excessive amount of antifreeze</li> <li>Insufficient air flow to air cooler</li> </ul>                                                                                                                                                                                                                                                                                                                                      |
| ALRM 003 | High-pressure switch tripped                                | MI1                                                | -                     | Open pressure switch opening contact                                     |                                        | <ul style="list-style-type: none"> <li>Excessive refrigerant charge</li> <li>Presence of non-condensable gases (air)</li> <li>Insufficient air flow to air cooler</li> <li>Set point setting too high</li> <li>Air temperature outside operating limits</li> </ul>                                                                                                                                                                                                                                          |
| ALRM 004 | Inverter driver high temperature                            | -                                                  | -                     | Driver temperature > 100 °C                                              | Driver temperature < 90 °C             | <ul style="list-style-type: none"> <li>Heat sink obstruction</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ALRM 006 | Inverter driver error                                       | -                                                  | -                     | Driver active alarm                                                      |                                        | <ul style="list-style-type: none"> <li>Faulty driver card</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ALRM 007 | Compressor suction low temperature                          | MT1                                                | PM24, PM25            | MT1 < PM24                                                               | MT1 > PM24 + PM25                      | <ul style="list-style-type: none"> <li>Insufficient refrigerant charge</li> <li>Excessive amount of antifreeze</li> <li>Insufficient air flow to air cooler</li> </ul>                                                                                                                                                                                                                                                                                                                                      |
| ALRM 008 | Compressor discharge high temperature                       | MT2                                                | PM23                  | MT2 > PM23                                                               | MT2 < PM23 - 10 °C                     | <ul style="list-style-type: none"> <li>Incorrect refrigerant charge</li> <li>Presence of non-condensable gases (air)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                             |
| ALRM 009 | Outdoor unit communication error                            | -                                                  | -                     | Serial connection fault between indoor and outdoor units terminals H+ L- |                                        | <ul style="list-style-type: none"> <li>Cable interrupted or disconnected</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ALRM 010 | Evaporator liquid refrigerant low temperature               | MT4 (cooling), MT5 (heating)                       | PM102, PM1            | t < PM102                                                                | t > PM102 + PM1                        | Heating: <ul style="list-style-type: none"> <li>insufficient air flow to air cooler</li> </ul> Cooling: <ul style="list-style-type: none"> <li>insufficient water flow rate</li> <li>excessive amount of antifreeze</li> </ul>                                                                                                                                                                                                                                                                              |
| ALRM 012 | Fan malfunction                                             | -                                                  | -                     | No feedback from fan                                                     |                                        | <ul style="list-style-type: none"> <li>Faulty fan motor</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ALRM 017 | Plant flowmeter tripped                                     | PI1, PP1                                           | -                     | PP1 active but PI1 open (with delay)                                     | PP1 active and PI1 closed (with delay) | Check that: <ul style="list-style-type: none"> <li>the check valves are open</li> <li>the 3-way valve for hot-cold diversion (if present) is in the correct position</li> <li>there are no air bubbles inside the circuit</li> <li>at least one of the consumers has an open circuit or is equipped with a 3-way valve</li> <li>the external sieve filter is not clogged</li> <li>the plant water pressure is correct</li> <li>the circulation pump is working properly (unlock it if necessary)</li> </ul> |
| ALRM 022 | High water temperature during domestic hot water production | The maximum value between PT5, PT6, PT4            | PF28, PM1             | t > PF28                                                                 | t < PF28 - PM1                         | <ul style="list-style-type: none"> <li>Set point setting too high</li> <li>Incorrect type of domestic hot water storage tank</li> <li>Domestic hot water temperature probe PT4 not positioned correctly</li> </ul>                                                                                                                                                                                                                                                                                          |
| ALRM 023 | High water temperature during heating operation             | The maximum value between PT5, PT6, PT1 if enabled | PF27, PM1             | t > PF27                                                                 | t < PF27 - PM1                         | <ul style="list-style-type: none"> <li>Set point setting too high</li> <li>Minimum water flow rate</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                               |

| Alarm    | Description                                                    | Correlated variables                               | Correlated parameters | Activation conditions | Restoration conditions | Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|----------------------------------------------------------------|----------------------------------------------------|-----------------------|-----------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ALRM 025 | Plant exchanger antifreeze cooling operation                   | The minimum value between PT5 and PT6              | PF23                  | $t < PF23$            | $t > PF23 + PM1$       | Check that: <ul style="list-style-type: none"> <li>nothing is preventing the good water circulation in the plant (air, partially closed valves, clogged sieve filter, etc.)</li> <li>the thermal gradient between the delivery and return is between 4-7 °C. Query the t1 and t3 parameters</li> <li>Set a lower circulation pump speed if the thermal gradient is less than 4 °C.</li> <li>If the thermal gradient is greater than 7 °C, check that all the valves on the plant are open and if necessary add an external pump to increase the water flow rate or insert a hydraulic separator.</li> </ul> |
| ALRM 027 | Domestic hot water storage antifreeze during cooling operation | PT4                                                | PF23                  | $t < PF23$            | $t > PF23 + PM1$       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| ALRM 028 | Plant exchanger and tank antifreeze during cooling operation   | The minimum value between PT5, PT6, PT1 if enabled | PF23                  | $t < PF23$            | $t > PF23 + PM1$       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

- Note:**
- In general, alarm resetting is automatic when the activation condition is established again.
- The activation or reset conditions must remain for a preset time (e.g. 30 s) before the alarm is activated or deactivated on the display. The duration of the preset time depends on the alarm type.
- If the alarm trips multiple times in a given time (e.g. 3 times in 1 hour), it must be reset manually by the Technical Service Centre.

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