Regulation Manual
Manuel de régulation
Regelungshandbuch
Manuale di regolazione
Manual de regulación

PAC+
08 ÷ 12

English | Français | Deutsch | Italiano | Español

5.6 ↓ 7.1kW

7.7 ↓ 13.6kW

HFC 407C

Air-water Heat Pump
Pompe à Chaleur air-eau
Wärmepumpe Luft-Wasser
Pompa di Calore aria-acqua
Bomba de Calor aire-agua

UM PAC+ 02-N-3GB
Part number / Code / Teil Nummer / Codice / Código : **3990498GB**
Supersedes / Annule et remplace / Annulliert und ersetzt /
Annulla e sostituisce / Anula y sustituye : **UM PAC+ 02-N-2GB**

CE AFAQ ISO 9001 VERSION 2000

REGULATION MANUAL English

MANUEL DE RÉGULATION Français

REGELUNGSHANDBUCH Deutsch

MANUALE DI REGOLAZIONE Italiano

MANUAL DE REGULACIÓN Español

English

CONTENTS

POWER SUPPLY MUST BE SWITCHED OFF

BEFORE STARTING WORK IN THE ELECTRIC CONTROL BOX

GENERAL RECOMMENDATIONS

Please read the following safety precautions very carefully before installing the unit.

SAFETY DIRECTIONS

Follow the safety rules in forces when you are working on your appliance.

The installation, commissioning and maintenance of these units should be performed by qualified personnel having a good knowledge of standards and local regulations, as well as experience of this type of equipment.

The unit should be handled using lifting and handling equipment appropriate to the unit's size and weight.

Any wiring produced on site must comply with the corresponding national electrical regulations.

Make sure that the power supply and its frequency are adapted to the required electric current of operation, taking into account specific conditions of the location and the current required for any other appliance connected with the same circuit.

The unit must be EARTHED to avoid any risks caused by insulation defects.

It is forbidden to start any work on the electrical components if water or high humidity is present on the installation site.

WARNING

Cutoff power supply before starting to work on the appliance.

When making the hydraulic connections, ensure that no impurities are introduced into the pipe work.

The manufacturer declines any responsibility and the warrantly becomes void if these instructions are not respected.

If you meet a problem, please call the Technical Department of your area.

If possible, assemble the compulsory or optional accessories before placing the appliance on its final location. (see instructions provided with each accessory).

In order to become fully familiar with the appliance, we suggest to read also our Technical Instructions.

-The informations contained in these Instructions are subject to modification without advance notice.

USING THE VIVRELEC AMBIENCE THERMOSTAT

TEMPERATURE SETTINGS

The HEATING and COOLING set temperature points can be set at values between 10°C and 30°C at increments of 0.5°C (temperature set at 20°C at commissioning)

WINTER MODE

Press the MODE key to display ☼ and the measured temperature.

In this mode, the flame symbol indicates that the heating is operating.

Press the + or − key for about 2 seconds to access the HEATING set temperature point setting function.

Press the + or − key again until you reach the desired setting.

SUMMER MODE

Press the MODE key to display ❄ and the measured temperature.

Press the + or − key for about 2 seconds to access the COOLING set temperature point setting function.

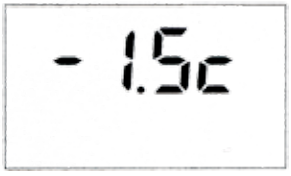
Press the + or − key again until you reach the desired setting.

TEMPERATURE CORRECTION

If you observe a variance between the set temperature and the measured temperature (e.g. with a thermometer), you can adjust temperature measurement by accessing the "correction" mode.

Press the ⏻ key for 10 seconds until the active correction value is displayed (0°C at commissioning).

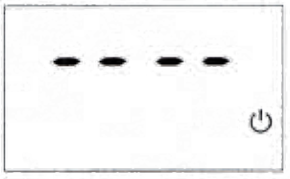
Press the + or − keys to set the correction value (adjustment possible between -5°C and +5°C).



Press the MODE key to exit the "temperature correction" mode.

SHUTDOWN MODE

To switch to standby mode for operation outside heating periods.



Press the ⏻ key.

4 dashes appear on the display.

GENERAL DESCRIPTION

The appliance is equipped with a regulator, an ambience thermostat and an electronic thermostat that measures the outdoor air temperature.

The regulator manages all functions relative to the refrigerating circuit and safety devices, and governs the logic for water circulation.

The ambience thermostat ensures that the desired ambience conditions are not exceeded (i.e. to ensure that the ambient temperature does not rise in the event of a major heat contribution from an external source, etc.)

The outdoor air thermostat only operates to provide back-up electrical heating when outdoor temperatures fall below a user-adjustable set temperature.

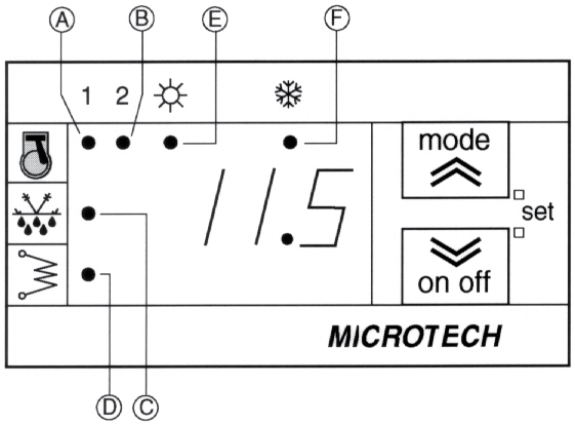
DISPLAY DESCRIPTION

The terminal enables the user to access appliance operating data. Normally, the display shows the value measured by the inlet water temperature regulation probe (IN ST1).

There are four small lights (LED) on the display panel to provide details of appliance operating status.

LIGHT EMITTING DIODE (LED) SIGNIFICANCE.

LEDS



A - Compressor 1 LED:

- ➢ Flashing: time lag under way,
- ➢ ON: compressor 1 active,
- ➢ OFF: compressor 1 inactive.

B - Compressor 2 LED: NOT USED.

C - DEFROSTING LED :

- ➢ Flashing: demand under way,
- ➢ ON: defrosting under way,
- ➢ OFF: no defrosting or defrosting completed.

D - Electrical heating resistance LED: ON when the heating resistances are operating.

E – Heating LED ("Sun" symbol): ON when the Winter mode is selected.

F – Cooling LED ("Snowflake" symbol): ON when the Summer mode is selected.

If neither the "Heating" nor the "Cooling" LEDs are on, it means that the regulator is in standby mode.

CHANGING THE SET TEMPERATURE POINT

The set temperature displayed is the value prior to water logic correction.

SUMMER MODE SET TEMPERATURE POINT:

1. Apply one short press on the mode and on off keys simultaneously: the "SET" message will appear.
2. Repeat action **1.**: the "Coo" message will appear on the display
3. Repeat action **1.** to display the set point value. Use the UP and DOWN arrow to change it.

To confirm the change, press the mode and on off keys simultaneously for 5 seconds. The "Coo" message will appear on the display. Repeat this action a second time to display "SET", and a third time to return to normal data display.

WINTER MODE SET TEMPERATURE POINT:

Proceed with steps **1.** and **2.** as described above, then press either of the two arrow keys to make the "HEA" message appear.

Proceed with step **3.** to change the Heating set temperature point and then return to normal data display.

GENERAL NOTIONS ABOUT REVERSIBLE HEAT PUMPS, THEIR INSTALLATION AND USE.

Chilled or hot water packaged units are designed to be used for under-floor heating or cooling or for supplying our CHILLED WATER range of terminals in accordance with our technical specifications.

GENERAL THERMODYNAMIC HEATING INSTALLATION DESIGN

Some of the rules applicable for the use of a heat pump as a means of producing hot water differ from those applicable to a traditional hot water boiler system. The main differences are:

- Lower temperatures.
- Lower temperature variances. (Δt°)
- Different emitters.
- System water flow requirements.
- Temperature regulation applied to inlet (return) water, rather than to outlet water.

The hot water **temperatures** produced by a heat pump are lower than those produced by a boiler. (Between 45°C and 55°C max.: Refer to temperature limit values).

Emitters are sized accordingly and have larger heat exchange surface areas.

The **temperature variance** (Δt°) on an installation with an **PAC+** is 5°C, instead of 20°C with a traditional boiler. Accordingly, pipe work calculations have to take account of higher water flows.

Nominal and constant flow values must be observed.

A heat pump operates with a constant water flow. Therefore, as far as possible, installations should be designed without terminal regulation devices such as three-way valves or thermostatic valves. If this is not possible, the flows have to be separated by creating a primary circuit with a mixing tank.

Observing nominal water flow.

You have to take account of the water flow corresponding to "Heating" mode operation.

Ensure that this flow is equal to almost 10 % of the nominal flow calculated for all emitters. Insufficient flow negatively affects appliance performance, reduces its service life and can lead to the triggering of safety devices (E01 alarm). Excessive flow reduces the Δt° and creates an uncomfortable environment for the user.

Flow values are shown on the technical specifications charts and on the appliance's maker's plate.

The **volume** of water flowing through the installation must be sufficient to avoid compressor "short-cycling" and ensure adequate running times to guarantee its long service life. Generally, the requirement is at least 15 litres of water per kW of installed capacity. This equates to:

- 100 l for the **PAC+** 08 model.
- 150 l for the **PAC+** 10 model.
- 225 l for the **PAC+** 12 model.

The appliance is originally fitted with a buffer tank calculated for a given water volume. An auxiliary buffer tank should be fitted for other volumes.

Mains water:

Max. temp = 55°C. Max. water volume = 330 l

Max. Temp = 45°C. Max. water volume = 450 l

DETERMINING APPLIANCE CAPACITY

The capacity of the **PAC+** must be carefully tailored to the needs of the dwelling. In this area, the notion of "He who can do more, can do less" must be banished. In fact, an over-sized appliance will have shorter running times and suffer from too frequent start-ups.

Accordingly, over-sizing is harmful to the appliance's service life and counterproductive in terms of energy savings.

The total capacity of the **PAC+** + back-up electrical heating ensemble must cover basic temperature losses and enable the installation to achieve its correct operating temperature. By way of information, an Air/Water **PAC+** with a basic temperature capacity equal to 50% of building losses provides between 70% and 80 % of energy needs during the HEATING season, with the balance provided by back-up electrical heating.

HEATING REGULATION OPERATION DESCRIPTION

GENERAL PRINCIPLE FOR UNDER-FLOOR HEATING

The **PAC+** produces hot water for conveyance to the floor via its heat pump and its integrated back-up electrical heating functions,.

The temperature of this water is variable and it increases in relation to heat losses from the dwelling, i.e. as the outdoor temperature falls, the water temperature has to rise to maintain the indoor temperature at the desired level.

This characteristic is regulated by a **hot water temperature logic** integrated in the **PAC+**'s electronic regulation system.

The electronic regulator has two regulation stages:

- The first stage governs the production of thermodynamic energy (compressor operation control).
- The second stage governs the back-up electrical heating. The back-up electrical heating resistances themselves comprise two stages.

In order to maximise energy savings, **the regulator always gives priority to running the compressor** rather than to running the back-up electrical heating, **irrespective of outdoor temperature conditions**.

The regulator only moves up to the second stage if the thermodynamic capacity is not capable of maintaining the water at the temperature required by the **water logic**.

An ambience thermostat that includes ON/OFF controls and the means for selecting Summer/Winter operating modes acts as a temperature regulator in relation to the indoor temperature of the premises. It also acts as a temperature governor. The ambience thermostat intervenes to fine tune the ambient temperature proposed by the electronic regulator. For example, it shuts down the heating function in bright sunshine or if an open fire is lit in the room. The ambience thermostat must be located in a main room (refer to our recommendations in the installation manual)

BACK-UP ELECTRICAL HEATING MODE OPERATION

When the water logic calls for recourse to back-up electrical heating, the electrical resistances are only triggered if the following conditions are simultaneously present:

1. Continuous request for system operation from the ambience thermostat during a period of at least 20 minutes. This condition is satisfied when the variance between the ambient temperature and the thermostat set temperature is above 0.9° K. If the ambient temperature is close to the set temperature, heating system operation is limited to the compressor only.
2. Outdoor temperature is below the KA6 thermostat set temperature. This set temperature is adjustable (factory setting: +5° C). This condition enables the electrical heating resistances to operate to return to set ambient temperatures during mid-season operation.

If both these conditions are observed simultaneously, the first stage of the back-up electrical heating (2 kW) is activated. If the demand for back-up heating lasts for longer than 30 minutes without interruption, the second stage (4 kW) is activated.

When the demand for back-up heating ends, all power to the electrical heating resistances is switched off.

TO SUM UP: Therefore, there are three operating phases during the heating season:

Phase I:

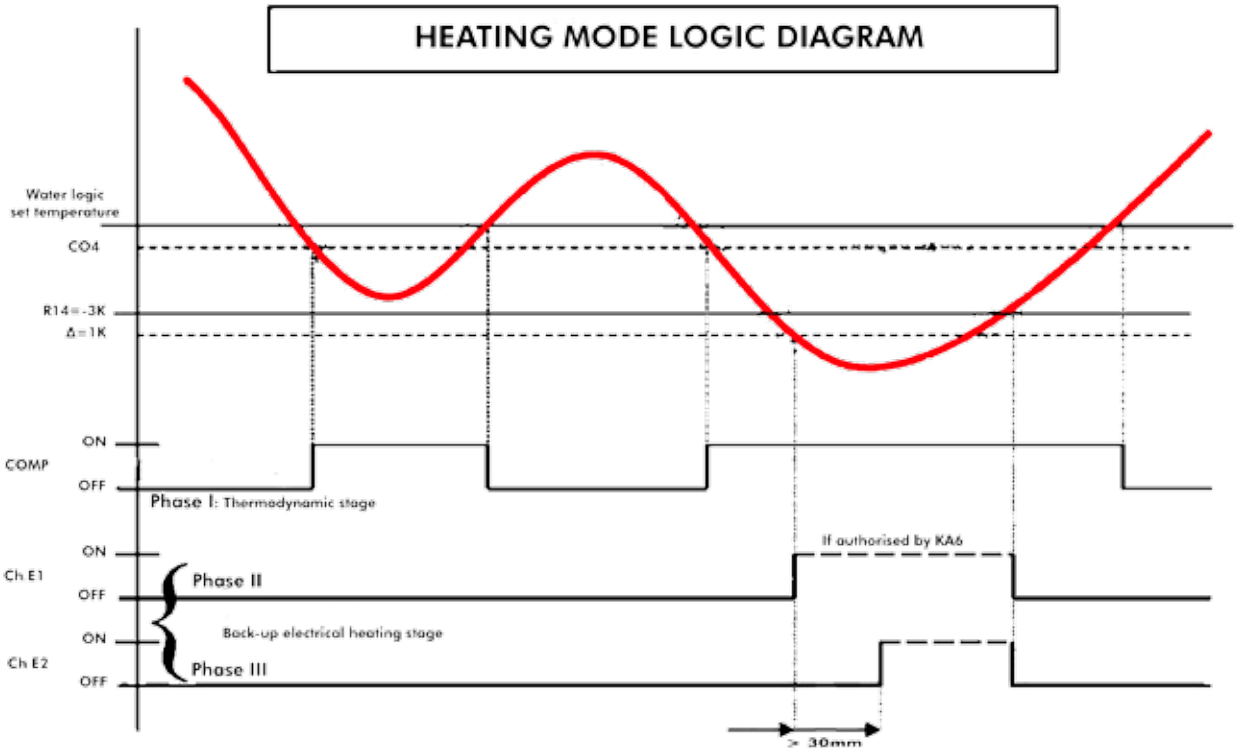
➢ Heating via the heat pump only (thermodynamic energy production) in all-or-nothing regulation mode.

Phase II:

➢ Heating via heat pump in continuous operation with all-or-nothing regulation of the first stage of the back-up electrical heating.

Phase III:

➢ Heating via heat pump in continuous operation with all-or-nothing regulation of both stages of the back-up electrical heating.



The heat pump is not equipped with an operating limit thermostat for winter conditions. For example, the **PAC+** can easily handle the occasional extreme temperatures of below -10°C experienced in France without any problems. Please consult us for installations intended to operate at altitudes above 1,000m.

CUSTOMISED SETTINGS AND PARAMETERS

To obtain the best conditions of comfort combined with optimum energy savings, **you should set the thermostat (KA6) and the regulator parameters** in relation to the dwelling's heating needs and the under-floor slab calculations.

The purpose of this paragraph is to detail the two stages that enable you to achieve the correct settings and parameters.

To achieve this, you must take account of:

- The base outdoor temperature for heat losses (e.g.: -10°C).
- The dwelling's heat losses at the base temperature (e.g.: 12 kW).
- The outlet hot water temperature for the outdoor base temperature in question (e.g.: 35°C for -10°C).

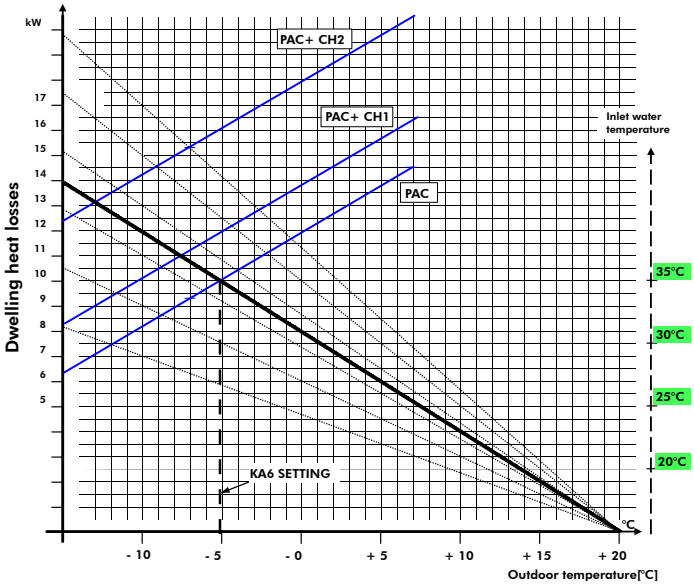
NOTE: When making these settings you must remember that the heat pump's electronic regulator determines operating status based on the **water inlet (return) temperature** and not based on the outlet temperature as is the case with a traditional hot water boiler. As a reminder, the variance between the outlet and the inlet temperature in a properly calculated installation is 5°C for 7°C of outdoor temperature and may vary up to 6°C.

KA6 THERMOSTAT SETTING

Determining the heating balance point in order to set the back-up heating triggering point:

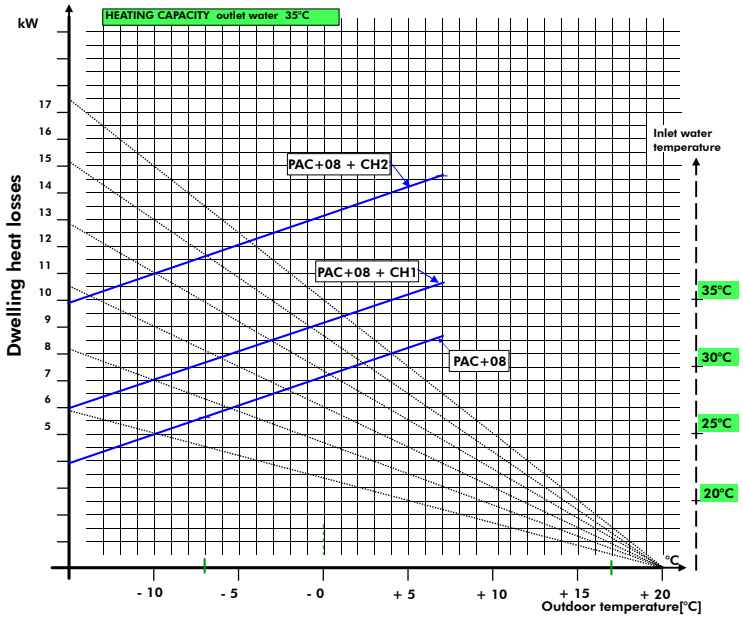
On the graph corresponding to your unit

- Draw a line from the intersection between the base temperature for calculating heat losses and the calculated heat losses value.
- Read the KA6 setting on the lower axis.
- Set the KA6 thermostat.

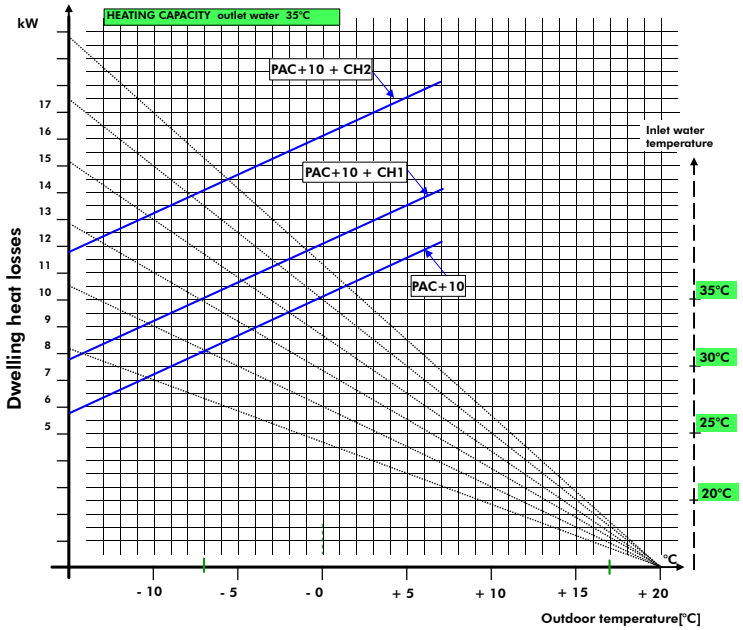


Comment: The balance points calculated in this manner and the resulting thermostat settings include the free heat contribution phenomenon estimated at 3°C that takes account of heat sources inside the premises and sunshine).

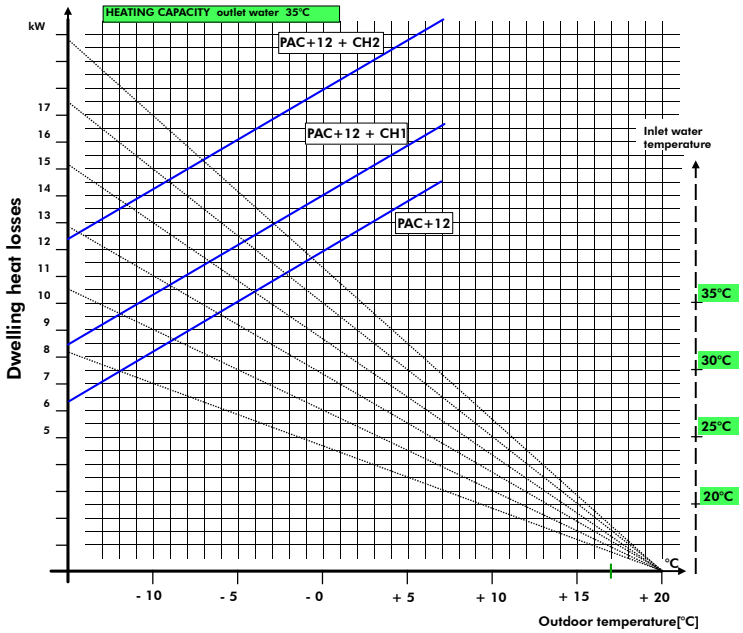
MODEL 8



MODEL 10



MODEL 12



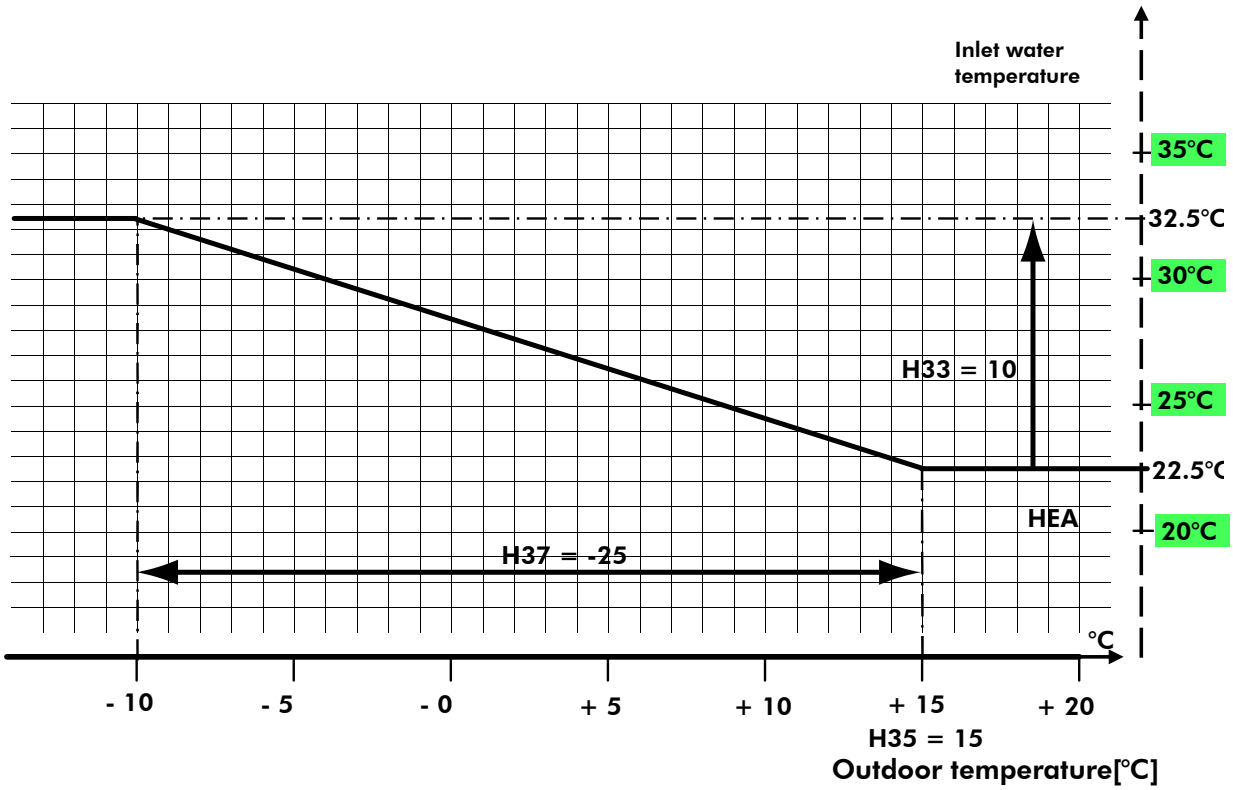
HEATING SLOPE SETTING..

Determining the heating slope.

This appliance is delivered to you with a heating slope set for the majority of under-floor heating applications. The parameter settings are detailed below:

FACTORY SETTINGS

HEA	Set point before correction	22.5°C
H33	Maximum HEA correction	Δ = +10°C
H35	Foot of slope temperature	15°C
H37	Proportional correction band	Δ = -25°C



Comment on the parameter value setting: HEA = 22.5

The water set temperature point (HEA) corresponds to the temperature at which the compressor stops. It is restarted when a non-adjustable temperature difference of 2.5°K is present. If we take 20° C as the minimum starting temperature, the HEA parameter must be increased by 2.5°K.

COOLING REGULATION OPERATION DESCRIPTION

During the summer, the **PAC+** is used for cooling the dwelling and distributes cold water through the floor slab.

As with under-floor heating, under-floor cooling is based on the radiation principle. Accordingly, by lowering the temperature by about 3° C, we can obtain conditions of comfort similar to those created by an air conditioner with between 5° C and 6° C of temperature reduction.

Lowering the temperature via the floor is limited by the latter's capacity to transmit the cooling effect, as it is only possible to lower the water temperature, and consequently the floor temperature, down to the **limit of appearance of condensation on the floor**.

Possible standard parameter setting: Coo = 23

GENERAL PRINCIPLE OF CONVECTOR FAN OPERATION

In each room, the convector fan adjusts the temperature via its in-built thermostat by acting on the preferred fan mode or by acting on a hot water valve.

The **PAC+** produces water at a constant temperature in order to avoid draughts. The ambience thermostat is no longer used.

The method of determining balance points is identical to that of under-floor heating.

Heating slope parameter setting: **This must be deactivated**.

➢ Parameter : H31 = 0

Setting the inlet (return) water constant temperature:

➢ Outlet hot water temperature defined by the heating study: 45° C

➢ Corresponding inlet (return) temperature: 45 – 5 (Δt°): 40° C

➢ Parameter HEA = 40

PAC+ EMERGENCY OPERATION SWITCH

Switch situated on the indoor module control panel.

IMPORTANT: This function should only be used in the event of a fault in the PAC's thermodynamic systems that has caused the compressor to stop running.

Tipping the switch over to the emergency position (orange "emergency" light on) cancels the conditions for triggering the back-up electrical heating, i.e.:

➢ Demand for continuous running from the ambience thermostat during 20 minutes.

➢ Outdoor temperature conditions provided by the thermostat KA6.

In the emergency position (orange "emergency" light on), the triggering of the back-up electrical heating resistances depends on demand for back-up heating from the regulator in accordance with the water logic.

The 2 kW stage is triggered first without any other condition. The 4kW stage kicks in if the continuous duration of the demand for heating exceeds 30 minutes.

When demand for back-up heating ceases, all power to the back-up electrical heating is cut.

ELECTRICAL HEATING SAFETY THERMOSTAT RESETTING

The electrical heating system is protected by an automatic reset safety thermostat that trips at 70°C and by a manual reset safety thermostat that trips at 90°C. Both these thermostats are in contact with the heating element.

THE MANUAL RESET THERMOSTAT CAN ONLY BY RESET BY A QUALIFIED TECHNICIAN AFTER POWER TO THE APPLIANCE HAS BEEN DISCONNECTED.

The manual reset safety thermostat is triggered by an operating fault that must be rectified prior to resetting the device.

REGULATOR ALARMS

ALARMS DISPLAY	DECRIPTION	TYPE
25.2	Appliance inlet water temperature	Normal
E00	Appliance shut down by the ambiance thermostat	Normal
E01	High pressure or compressor heat overload cut-out	Alarm
E02	Low pressure or phase inversion cut-out	Alarm
E05	Water circuit anti-freeze protection	Alarm
E06	Outlet water probe fault (ST2)	Alarm
E07	Battery probe fault (ST3)	Alarm
E41	Low water flow, air in circuit or convector fans.	Alarm
E42	Outdoor air temperature probe fault (ST4)	Alarm

PARAMETERS LIST

							Under-floor Version-PA
NB	**REF**	**Set temperature parameters**	**Unit**	**min**	**max**	**Protection**	**Value**
0	Coo	"Cooling" mode set temperature value	°C	H04	H03	OPEN	23
1	Hea	"Heating" mode set temperature value	°C	H02	H01	OPEN	22.5
		Configuration parameters					
3	H01	Maximum "Heating" mode set temperature value	°C	22	99	PASSWORD	35
4	H02	Minimum "Heating" mode set temperature value	°C	-40	22	PASSWORD	20
5	H03	Maximum "Cooling" mode set temperature value	°C	20	90	PASSWORD	25
6	H04	Minimum "Cooling" mode set temperature value	°C	-40	20	PASSWORD	10
7	H05	ST1 configuration	Num.	0	5	PASSWORD	1
8	H06	ST2 configuration	Num.	0	4	PASSWORD	1
9	H07	ST3 configuration	Num.	0	5	PASSWORD	1
10	H08	ST4 configuration	Num.	0	3	PASSWORD	3
15	H13	ID4 digital input polarity	flag	0	1	PASSWORD	1
16	H14	ID5 digital input polarity	flag	0	1	PASSWORD	0
26	H24	RL4 output relay configuration	Num.	0	2	PASSWORD	2
28	H26	Series protocol configuration (non managed)	flag	0	1	PASSWORD	0
29	H27	Operating mode selection	Num.	0	2	PASSWORD	1
31	H29	Programming mode	°C	0	255	PASSWORD	10
32	H30	Differential selection mode	°C	0	25.5	PASSWORD	15
33	H31	Dynamic set temperature point authorisation	flag	0	1	PASSWORD	1
34	H32	Maximum offset in "cooling" (dynamic set temperature point)	°C	-12.7	12.7	PASSWORD	0
35	H33	Maximum offset in "heating" (dynamic set temperature point)	°C	-12.7	12.7	PASSWORD	10
36	H34	Outdoor temperature in "cooling" (dynamic set temperature point)	°C	-127	127	PASSWORD	22
37	H35	Outdoor temperature in "heating" (dynamic set temperature point)	°C	-127	127	PASSWORD	15
38	H36	Outdoor temperature differential in "cooling" (dynamic set temperature point)	°C	-12.7	12.7	PASSWORD	0
39	H37	Outdoor temperature differential in "heating" (dynamic set temperature point)	°C	-30	-30	OPEN	-25
40	H38	Changeover valve polarity	flag	0	1	PASSWORD	0
41	H39	ST1 offset	°C	-12.7	12.7	PASSWORD	0
42	H40	ST2 offset	°C	-12.7	12.7	PASSWORD	0
43	H41	ST3 offset	°C/10-KPa*10	-127	127	PASSWORD	0
44	H42	ST4 offset	°C	-12.7	12.7	PASSWORD	0
45	H43	Mains frequency	flag	0	1	INTERDIT	0
46	H44	Family series address	Num.	0	14	PASSWORD	0
47	H45	Device series address	Num.	0	14	PASSWORD	0
49	H47	Memory stick writing password	Num.	0	255	OPEN	2
54	H52	° C or ° F selection	flag	0	1	PASSWORD	0
55	H53	SET appliance air/air display	Flag	0	1	OPEN	0
56	H54	Client code 1	Num.	0	999	OPEN	0
57	H55	Client code 2	Num.	0	999	OPEN	0
58	H56	Alarm relay polarity	Flag	0	1	OPEN	0
59	H57	Alarm relay live in OFF position (when stopped)	Flag	0	1	OPEN	0

NB	REF	Alarm parameters	Unit	min	max	Protection	Under-floor Version-PA Value
60	A01	LP pressostat by-pass time lag	s	0	255	PASSWORD	90
61	A02	Number of events/hour before Low Pressure manual reset	Num.	0	255	PASSWORD	4
62	A03	Pump activation flow controller by-pass	s	0	255	PASSWORD	10
63	A04	Controller input time - active flow	s	0	255	PASSWORD	10
64	A05	Controller input time –inactive flow	s	0	255	PASSWORD	15
65	A06	Flow controller - number of incidents / hour	Num.	0	255	PASSWORD	1
66	A07	Compressor thermal by-pass by compressor activation	s	0	255	PASSWORD	5
67	A08	Number of events/hour for compressors 1 and 2 thermal overload protection	Num.	0	255	PASSWORD	2
68	A09	Number of events/hour for fan thermal overload protection	Num.	0	255	PASSWORD	2
69	A10	Anti-freeze protection alarm by-pass via ON/OFF	min	0	255	PASSWORD	0
70	A11	Anti-freeze protection alarm activation programming	°C	-127	127	PASSWORD	3
71	A12	Anti-freeze protection alarm hysteresis	°C	0	25.5	PASSWORD	1
72	A13	Number of events/hour for anti-freeze protection alarm	Num.	0	255	PASSWORD	2
73	A14	High pressure analogue input activation programming	°C/10-KPa*10	0	900	PASSWORD	600
74	A15	High pressure analogue input hysteresis	°C/10-KPa*10	0	255	PASSWORD	10
75	A16	Low pressure analogue input by-pass activation	s	0	255	PASSWORD	120
76	A17	Low pressure analogue input programming activation	°C/10-KPa*10	-500	800	PASSWORD	-400
77	A18	Low pressure analogue input hysteresis	°C/10-KPa*10	0	255	PASSWORD	10
78	A19	Number of events/hour for low pressure analogue input	Num.	0	255	PASSWORD	5
79	A20	Appliance no-load differential	°C	0	25.5	PASSWORD	0.3
80	A21	Appliance no-load by-pass	min	0	255	PASSWORD	30
81	A22	Appliance no-load duration	min	0	255	PASSWORD	15
82	A23	Appliance no-load alarm activation	flag	0	1	PASSWORD	0
83	A24	Anti-freeze protection minimum alarm active	flag	0	1	PASSWORD	0
84	A25	Over-temperature programming	°C	0	255	PASSWORD	80
85	A26	ON over-temperature duration	s*10	0	255	PASSWORD	20
		Compressor parameters					
86	C01	OFF-ON anti-short cycling time lag	s*10	0	255	PASSWORD	9
87	C02	ON-ON anti-short cycling time lag	s*10	0	255	PASSWORD	30
88	C03	Cooling thermo-regulator hysteresis	°C	0	25.5	PASSWORD	1.5
89	C04	Heating thermo-regulator hysteresis	°C	0	25.5	PASSWORD	2.5
90	C05	Step settings intervention differential	°C	0	25.5	PASSWORD	1
91	C06	First-second compressor intervention interval (running)	s	0	255	PASSWORD	20
92	C07	First-second compressor power cut-off interval (running)	s	0	255	PASSWORD	5

NB	REF	Fan parameters	Unit	min	max	Protection	Under-floor Version-PA Value
93	F01	Fan outlet configuration	Num.	0	3	PASSWORD	0
94	F02	Fan start-up time lag	s/10	0	255	PASSWORD	50
95	F03	Fan de-phasing	%	0	100	PASSWORD	5
96	F04	Triac firing impulse time	uS*10	0	255	PASSWORD	8
97	F05	Compressor driven operation	flag	0	1	PASSWORD	0
98	F06	Minimum speed in Cooling mode	%	0	100	PASSWORD	50
99	F07	"Silent" speed in Cooling mode	%	0	100	PASSWORD	100
100	F08	Temperature/pressure programming – minimum speed in Cooling mode	°C/10-KPa*10	-500	800	PASSWORD	300
101	F09	Proportional band in Cooling mode	°C/10-KPa*10	0	255	PASSWORD	100
102	F10	Disconnection differential	°C/10-KPa*10	0	255	PASSWORD	100
103	F11	Disconnection hysteresis	°C/10-KPa*10	0	255	PASSWORD	10
104	F12	Disconnection by-pass time lag	s	0	255	PASSWORD	20
105	F13	Maximum speed in Cooling mode	%	0	100	PASSWORD	100
106	F14	Temperature/pressure programming – maximum speed in Cooling mode	°C/10-KPa*10	-500	800	PASSWORD	350
107	F15	Minimum speed in Heating mode	%	0	100	PASSWORD	100
108	F16	"Silent" speed in Heating mode	%	0	100	PASSWORD	100
109	F17	Temperature/pressure programming – minimum speed in Heating mode	°C/10-KPa*10	-500	800	PASSWORD	150
110	F18	Proportional band in Heating mode	°C/10-KPa*10	0	255	PASSWORD	20
111	F19	Maximum speed in Heating mode	%	0	100	PASSWORD	100
112	F20	Temperature/pressure programming – maximum speed in Heating mode	°C/10-KPa*10	-500	800	PASSWORD	150
113	F21	Internal fan steps differential	°C	0	25.5	PASSWORD	2
114	F22	Internal fan steps hysteresis	°C	0	25.5	PASSWORD	1
115	F23	Hot start set value	°C	0	255	PASSWORD	50
116	F24	Hot start hysteresis	°C	0	25.5	PASSWORD	1
117	F25	Pre-ventilation in Cooling mode	s	0	255	PASSWORD	0
		Pump parameters					
118	P01	Pump operating mode	Num.	0	4	PASSWORD	0
119	P02	Time lag STOP pump – STOP compressor	s	0	255	PASSWORD	30
120	P03	Time lag STOP compressor – STOP pump	s	0	255	PASSWORD	180

							Under-floor Version-PA
NB	**REF**	**Boiler parameters**	**Unit**	**min**	**max**	**Protection**	**Value**
121	R01	Resistance configuration in anti-freeze protection mode	flag	0	1	PASSWORD	0
122	R02	Active resistance configuration in Cooling mode	flag	0	1	PASSWORD	0
123	R03	Active resistance configuration in Heating mode	flag	0	1	PASSWORD	1
124	R04	Anti-freeze protection resistances setting probe configuration in Heating mode	flag	0	1	PASSWORD	1
125	R05	Anti-freeze protection resistances setting probe configuration in Cooling mode	flag	0	1	PASSWORD	1
126	R06	Resistance configuration in OFF or stand-by mode	flag	0	1	PASSWORD	1
127	R07	Internal anti-freeze protection set value in Heating mode	°C	-10	90	PASSWORD	2
128	R08	Internal anti-freeze protection set value in Cooling mode	°C	-10	90	PASSWORD	1
129	R09	Maximum limit for anti-freeze protection resistances set value	°C	-10	127	PASSWORD	90
130	R10	Maximum limit for anti-freeze protection resistances set value	°C	-127	90	PASSWORD	-10
131	R11	Anti-freeze protection resistance hysteresis	°C	0	25.5	PASSWORD	0.1
132	R12	Outdoor anti-freeze protection resistances set value	°C	-10	90	PASSWORD	5
133	R13	Outdoor temperature programming for boiler activation.	°C	-127	127	PASSWORD	-20
134	R14	Boiler de-activation differential	°C	0	25.5	PASSWORD	3
135	R15	Regulator resistances integration	flag	0	1	PASSWORD	1
		Anti-freeze protection parameters					
136	D01	Anti-freeze protection authorisation	flag	0	1	PASSWORD	1
137	D02	Start of anti-freeze protection temperature/ pressure	°C/10-KPa*10	-500	800	PASSWORD	-20
138	D03	Anti-freeze protection interval (demand time lag)	Min.	0	255	PASSWORD	45
139	D04	End of anti-freeze protection temperature/pressure	°C/10-KPa*10	-500	800	PASSWORD	180
140	D05	Maximum anti-freeze protection time lag (time-out)	Min.	0	255	PASSWORD	10
141	D06	Compressor*valve (anti-purge) waiting time lag	s	0	255	PASSWORD	0
142	D07	Drip time	s	0	255	PASSWORD	0
143	D08	Anti-freeze protection start temperature if H49=1	°C	-50	80	PASSWORD	-2
144	D09	Anti-freeze protection end temperature if H49=1	°C	-50	80	PASSWORD	18
145	D10	Compensation authorisation	flag	0	1	PASSWORD	1
146	D11	Temperature/pressure compensation offset	°C/10-KPa*10	-255	255	PASSWORD	-100
147	D12	Temperature/pressure set compensation	°C	-127	127	PASSWORD	0
148	D13	Temperature/pressure compensation delta	°C	-25.5	25.5	PASSWORD	-7

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