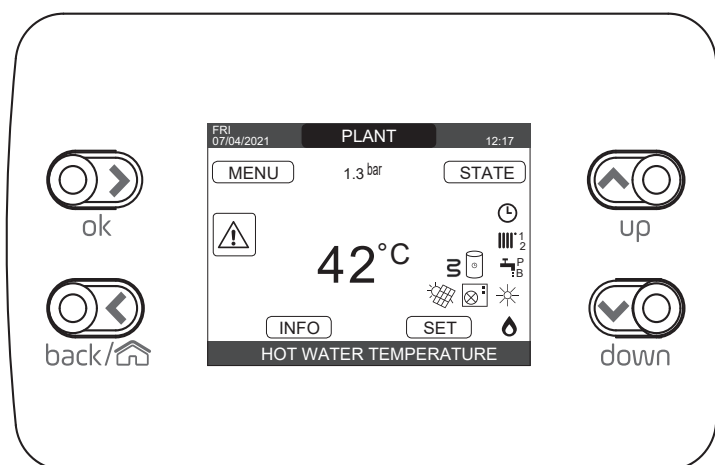


Programming Manual

Guide for managing hybrid and electric systems

REC 10MH

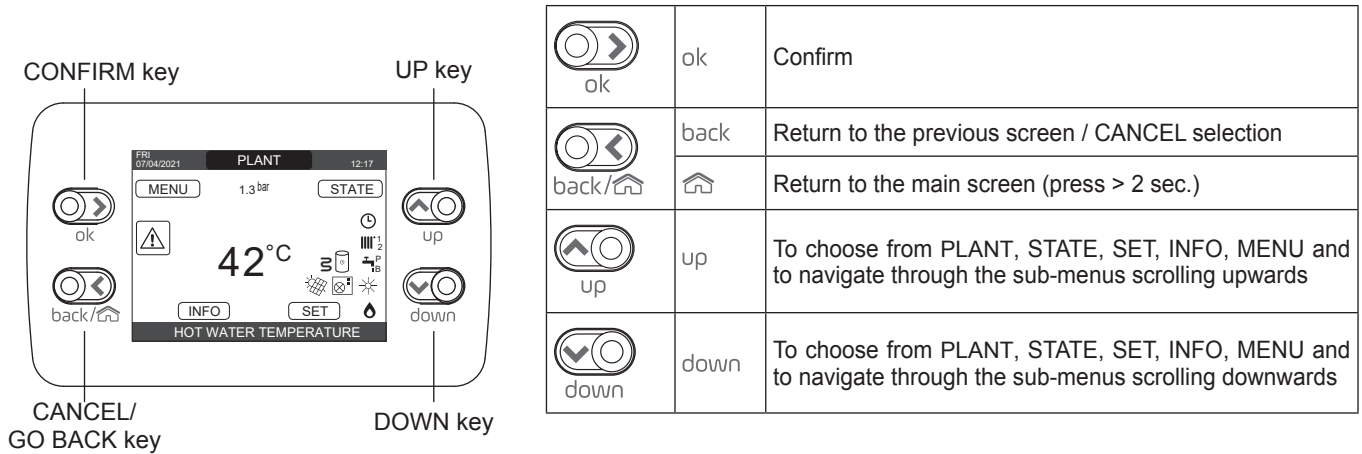


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At the end of its working life, the product must not be disposed of as solid urban waste; it must be handed over to a sorted waste collection centre.

1 REMOTE CONTROL PANEL (REC10MH)



The REC10MH has a backlit liquid crystal display and can work as a MACHINE INTERFACE, MULTI-ZONE CONTROL UNIT and AMBIENT REGULATOR (if suitably programmed). The control panel also manages functions relating to the solar system (if installed) and the heat pump. The top of the screen shows the information regarding the current date and time, as well as the outdoor temperature (if available). On the left and right sides you can see the icons indicating the system status. Their meaning is as follows:

	This icon indicates that the OFF operating status mode has been set. Each ignition request is ignored except for the anti-freeze function. The pump anti-lock and 3-way and anti-freeze functions remain active.
	This icon indicates that HEATING AND HOT WATER mode has been selected (HEATING function enabled). If a heating request from the main zone is in progress, the icon will be flashing. If a heating request from the supplementary zone is in progress, the number 1 or 2 will be flashing.
	This icon indicates that cooling is active in HOT WATER ONLY status. If a cooling request from the main zone is in progress, the icon will be flashing. If a cooling request from the supplementary zone is in progress, the number 1 will be flashing.
	This icon indicates that the DHW circuit is enabled on the boiler. When a domestic hot water request is in progress, the icon flashes. <ul style="list-style-type: none"> • Only with heating-only boilers with a water tank: outside the DHW enabling time bands, this icon will be crossed out. • Only with a combined boiler: the P above the DHW icon indicates that the boiler pre-heating function is enabled; the P when flashing indicates that a pre-heating request is in progress. • The B below the DHW icon indicates that the DHW BOOST function is active.
	When the "heating timer programming" function is enabled, this icon indicates that the heating of the relative zone is in AUTOMATIC mode (the management of the heating requests follows what has been set with the timer). Outside the heating enabling time bands, this icon will be crossed out.
	When the "heating timer programming" function is enabled, this icon indicates that the heating of the relative zone is in MANUAL mode. Heating request management does not follow the timer programming that has been set, but is always active).
OFF	When the "heating timer programming" function is not enabled, this icon indicates that the main zone has been set to OFF (not active).
	This icon indicates that heat pump management is enabled. When the heat pump is operating, the icon flashes.
	This icon indicates that solar system management is enabled (if present). The icon flashes when the solar system's circulator pump is in function.
	This icon indicates that the system is detecting the presence of a flame.
	This icon indicates the presence of an anomaly, and is always flashing.
	Only with a combined boiler: this icon indicates the presence of a water tank and a heat pump enabled for DHW. The icon appears crossed out with an "X" when the system is operating outside the time bands of the domestic hot water heat pump, while it flashes when the heat pump is working to fill the storage cylinder
	This icon indicates that photovoltaic system management is enabled. If the icon is flashing, this means the electricity production from the photovoltaic system is adequate (contact closed). The system uses the energy available.
	This icon indicates that an electric heater is connected to the system. It flashes when the electric heater for DHW integration (water tank) is active.

The visualisation of a scrolling message on the display may indicate (depending on the specific case) the type of temperature shown or the type of function currently active:

- **PLANT**

A scrolling message on the display may indicate the temperature of the water tank probe, boiler delivery probe or heat pump, depending on the function currently active.

- **STATE (when the PLANT screen is selected)**

For setting the status of the system (OFF, HOT WATER ONLY or HEATING AND HOT WATER) and, when managed by the room thermostat, the operating mode of the main zone in heating or cooling mode (ON or OFF if timer programming is disabled, AUTO according to timer programming, MANUAL or OFF if timer programming is enabled).

The STATE menu also contains the DHW sub-menu for managing the DHW operating mode (timer programming) when the boiler uses "water tank" configuration, setting also the night-time reduction function for the heat pump and - with full electric mode - the DHW BOOST function.

- **MODE (when the ZONE screen is selected)**

For setting the operating status of the zone in heating or cooling mode (ON or OFF if timer programming is disabled, AUTO according to timer programming, MANUAL or OFF if timer programming is enabled)

- **SET**

For establishing the set-point value for heating, boiler DHW, cooling, the water tank set-point, or for activating pre-heating.

In "electric" mode, SET also defines the temperature and activation time of the boost function.

NOTE: the DHW parameter assumes a different meaning according to the system layout available:

with a combined boiler: set-point of boiler DHW

with a heating-only boiler connected to a water tank: set-point of water tank DHW

with full electric the DHW parameter is not available (in this case, use the water tank set-point parameter)

- **INFO**

For displaying the value of the system variables.

- **MENU**

For accessing the system configuration menus.

The configuration **MENU** is arranged as a multi-level tree structure. Use the "ok" key to access the selected sub-menu, then the "up" and "down" keys to navigate the sub-menus, and the "back" to return to the previous level.

An access level has been defined for each sub-menu, so the USER level sub-menus are always available but those at TECHNICAL level are protected by a password (therefore not always available). To access TECHNICAL level, select MENU on the initial screen of the REC10MH. Press "ok", then keep the "back" and "down" keys pressed simultaneously (for about 5 sec) to enter the password menu.

Use the "up" and "down" keys to select the required password value, then press "ok" to confirm.

Below is a summary of the MENU tree structure of the REC10MH.



Some of the information might not be available on the REC10MH depending on the access level, the status of the machine or the system configuration.

Explanatory table of the references used in this manual

Description		Heat pump type
Type 0	→	Hydronic Unit B HE Hydronic Unit LE B - Vega B
Type 1	→	HYDRO UNIT M - Vega M
Type 2	→	HYDRO UNIT P

Depending on the type of application, some of the functions described in this manual might not be available.

A paraméter menü színeinek magyarázata

 common parameters

 hybrid specific parameters

 electrical specific parameters

MENU

SETTINGS

- TIME & DATE
- DAYLIGHT SAVINGS TIME
- LANGUAGE
- BACKLIGHT

TIME SCHEDULE

- MAIN
- ZONE 1
- ZONE 2
- DHW
- HP DHW

BIBERON

TECHNICAL

INSTALLATION

ZONES MANAGER

MODIFY ZONE

- MAIN
- ACTUATION TYPE (hybrid)
- ACTUATION TYPE PDC (electric)
- REQUEST TYPE
- BE16 ADDRESS
- HYDRAULIC CONF
- ZONE TYPE
- MIN CH SET
- MAX CH SET
- CHANGE NAME
- PI - PROPORTIONAL
- PI - INTEGRAL
- VALVE RUN
- CLOSING AT POWER ON
- OUTLET OVER
- OUTLET OVER TEST TIME
- OUTLET OVER WAIT TIME
- OUTLET OVER REST TIME
- FREEZE PROT TEMP
- FREEZE PROT OFFSET
- FREEZE PROT T EXT
- POR
- ADD ZONE
- DELETE ZONE (if more than 1 zone)
- SENSOR CALIBRATION
- SYSTEM RESET
- PARAMETERS
- ANTI-CYCLE FUNCTION
- HYST ON HIGH TEMP
- HYST OFF HIGH TEMP

DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCESS LEVEL NOTES
			USER
			USER
FUNCTION ACTIVE	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	USER
	ENGLISH/ITALIANO/.....\		USER
5 min	1 min	15 min	USER
			USER
			USER: only if POR = 1
			USER: only if POR = 1 and zone added
			USER: only if POR = 1 and zone added
			USER: only if PLANT CONFIGURATION = WATER TANK
			USER: only if HP present and USE PER DHW active
0	0	1	USER: only if instantaneous configuration and water tank with probe
			INSTALLER
			INSTALLER
			INSTALLER
MAIN	MAIN / ZONE 1 / ZONE 2		INSTALLER
ITRF05/boiler card	ITRF05/boiler card	BE16	INSTALLER: only MAIN zone
PDC	PDC	BE16	INSTALLER: only MAIN zone
THERMOSTAT	THERMOSTAT / TEMPERAURE PROBE / REC10CH MASTER / REC10CH SLAVE		INSTALLER
--	1	6	INSTALLER: only zones with ACTUATION=BE16
DIRECT ZONE	DIRECT ZONE	MIXING ZONE	INSTALLER: only zones with ACTUATION=BE16
HIGH TEMP	HIGH TEMP	LOW TEMP	INSTALLER
40°C (HT) 20°C (HT - AKM boiler card) 20°C (LT) 25°C (PDC type 1)	20°C	MAX CH SET	INSTALLER
80.5 °C (HT) 45°C (LT)	MIN CH SET	80.5 °C (HT) 45°C (LT)	INSTALLER
			INSTALLER
5	0	99	SERVICE: only mixing zones with ACTUATION=BE16
10	0	99	SERVICE: only mixing zones with ACTUATION=BE16
120 sec	0 sec	240 sec	SERVICE: only mixing zones with ACTUATION=BE16
140 sec	0 sec	240 sec	SERVICE: only mixing zones with ACTUATION=BE16
55°C	0°C	100°C	SERVICE: only LT zones with ACTUATION=BE16
0min	0min	240 min	SERVICE: only LT zones with ACTUATION=BE16
2 min	VALVE RUN	240 min	SERVICE: only LT zones with ACTUATION=BE16
2 min	0min	240 min	SERVICE: only LT zones with ACTUATION=BE16
6°C	-10°C	50°C	SERVICE: only zones with ACTUATION=BE16
5°C	1°C	20°C	SERVICE: only zones with ACTUATION=BE16
10°C	0°C	100°C	SERVICE: only zones with ACTUATION=BE16
0 (1 if REC10 in the AMBIENT)	0	1	INSTALLER
			INSTALLER
			INSTALLER
0.0°C	- 6.0°C	6.0°C	INSTALLER
			INSTALLER
			INSTALLER
3 min	0 min	20 min	INSTALLER
5°C	2°C	10°C	SERVICE
5°C	2°C	10°C	SERVICE

	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCESS LEVEL NOTES
— HYST ON LOW TEMP	3°C	2°C	10°C	SERVICE
— HYST OFF LOW TEMP	3°C	2°C	10°C	SERVICE
— SP INCR HIGH TEMP	5°C (0°C if instantaneous boiler)	0°C	10°C	SERVICE
— SP INCR LOW TEMP	0°C	0°C	6°C	SERVICE
— DECR COOLING SP	0°C	0°C	10°C	SERVICE
— PUMP DUTY CYCLE	85	41/0 on AKMxx boiler card	100	INSTALLER
— RESET CH TIMERS	FUNCTION NOT ACTIVE	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	INSTALLER
— DHW THERMOSTAT	RELATED	RELATED	ABSOLUTE	INSTALLER: only in instantaneous configuration
— SLIDING OUTLET	DEACTIVATE FUNCTION	DEACTIVATE FUNCTION	ACTIVATE FUNCTION	INSTALLER: only in "heating only" config. and water tank with probe
— CH DELAY POST-DHW	0	0	1	SERVICE
— CH DELAY TIME	6 sec	1 sec	255 sec	SERVICE: if CH DELAY POST-DHW = 1
— PRESS TRANSDUCER	according to boiler type	0	1	SERVICE
— AUTO WATER FILL ENABLE	0	0	1	SERVICE: only if PRESS TRANSDUCER = 1
— BEGIN SYSTEM FILLING	0,6	0,4	1	SERVICE: only if AUTO WATER FILL ENABLE = 1
— PREHEATING	0	0	3	SERVICE: only in instant. config. and managed by the control board
— MAX SETPOINT DHW	60°C	49°C	60°C	INSTALLER: only if provided for by the boiler card
— MIN SETPOINT DHW	37,5°C	37,5°C	49°C	INSTALLER: only if provided for by the boiler card
— DO_AUX1	0	0	2	INSTALLER: only if control boards with OT+
— DHW DELAY	0 sec	0 sec	60 sec	SERVICE: only in instant. config. and AKM boiler card
— ID14	0	0	1	INSTALLER: only if AKL07 boiler card
— TYPECOS	0	0	2	SERVICE: only if AKL06N1-AKL07 boiler card
— EXPIRE	52	0	255	SERVICE: only if AKL06N1-AKL07 boiler card
— CONFIG OTBUS	1	0	1	SERVICE: only if control boards with OT+
— SIPHON FILL	0	0	1	SERVICE: only if provided for by the boiler card
— SMART_FAN	0	0	2	INSTALLER: only in instantaneous configuration and provided for by the boiler card
— SWING REDUCTION	0	0	1	INSTALLER: only in instantaneous configuration and provided for by the boiler card
— WEATHER COMPENSATION				INSTALLER
— CLIMATIC CURVES	MAIN	MAIN / ZONE 1 / ZONE 2		INSTALLER
— FIXED SET POINT	80.5 °C (HT) 45 °C (LT)	MIN CH SET	MAX CH SET	INSTALLER: if EXTERNAL PROBE NOT connected
— NIGHT COMP	FUNCTION NOT ACTIVE	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	INSTALLER: if EXTERNAL PROBE connected
— CURVE SLOPE	2.0	1.0	3.0	INSTALLER: if EXTERNAL PROBE, request type TA and zone type HT
— AMBIENT INFLUENCE	0.4	0.2	0.8	INSTALLER: if EXTERNAL PROBE, request type TA and zone type LT
— OFFSET	2.0	1.0	5.0	INSTALLER: if request type AMBIENT PROBE or REC10
— COOLING	10	0	20	INSTALLER: if request type AMBIENT PROBE or REC10
— COOLING CURVE	20°C	20°C	40°C	INSTALLER: if request type AMBIENT PROBE or REC10
— BUILDING TYPE	18°C	4°C 5°C (PDC type 1)	20°C 25 °C (PDC type 1)	INSTALLER: if COOLING CURVE deactivated
— OUTDOOR REACTIVITY	1	1	2	INSTALLER: if COOLING CURVE activated
— ENABLE/DISABLE HEATING CURVE	5 min	5 min	20min	INSTALLER: if EXTERNAL PROBE connected
— ENABLE/DISABLE COOLING CURVE	20	0	255	INSTALLER: if EXTERNAL PROBE connected
— RANGE RATED	MAX CH	MIN	MAX CH	INSTALLER
				INSTALLER: if HP present and enable to COOLING

	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCESS LEVEL NOTES
CALIBRATION				INSTALLER
— MIN	see technical data table in the boiler manual			INSTALLER
— MAX	see technical data table in the boiler manual			INSTALLER
— RLA	see technical data table in the boiler manual			INSTALLER
— MAX CH	see technical data table in the boiler manual			INSTALLER
— RESTART	3.600	MIN	RLA	INSTALLER: only if provided for by the boiler card
COMBUSTION ANALYSIS				INSTALLER
— ACTIVATE FUNCTION				INSTALLER
— DEACTIVATE FUNCTION				INSTALLER
— MAX SPEED	MAX			INSTALLER
— RANGE RATED SPEED	RANGE RATED			INSTALLER
— MIN SPEED	MIN			INSTALLER
— CHANGE FAN SPEED	CURRENT SPEED	MIN	MAX	INSTALLER
ANTILEGIO	WEEKLY FUNCTION	FUNCTION NOT ACTIVE / DAILY FUNCTION / WEEKLY FUNCTION		INSTALLER: only if "only heating" config. and water tank with probe
— ANTELEGIO FLOW HP type 0 and 1: parameter not active in electric mode HP type 2: parameter always active	80°C	65°C	85°C	INSTALLER
— ANTELEGIO TIME	03:00	00:00	23:30	INSTALLER
— ANTELEGIO TEMP	70°C	55°C	WATER TANK T MAX	INSTALLER
AIR PURGING CYCLE	FUNCTION DISABLED	FUNCTION DISABLED	FUNCTION ENABLED	SERVICE
— FUNCTION DISABLED				SERVICE
— FUNCTION ENABLED				SERVICE
— STOP FUNCTION				INSTALLER: only if AIR PURGING CYCLE in progress
EXHAUST PROBE RESET				INSTALLER
ADD WATER TANK				INSTALLER: only if instantaneous and "only heating" config.
WATER TANK (hybrid)				INSTALLER: only if not instantaneous boiler
— REMOVE WATER TANK				INSTALLER
— WATER TANK TYPE	0	0	1	INSTALLER: only if "only heating" configuration
— WATER TANK SETPOINT	50°C	37,5	60°C (type 0 and 1) 70°C (type 2)	INSTALLER: only if HP enable to DHW and instantaneous boiler
— FREEZE PROT TEMP	7°C	0°C	100°C	SERVICE: only if HP enable to DHW and instantaneous boiler
— TANK FR PROT OFFSET	5°C	1°C	20°C	SERVICE: only if HP enable to DHW and instantaneous boiler
— WATER TANK FLOW	80°C	50°C	85°C	INSTALLER: only if "only heating" configuration with water-tank and AKMxx board
WATER TANK (electric)				INSTALLER
— REMOVE WATER TANK				INSTALLER
— WATER TANK SETPOINT	50°C	37.5°C	60°C (type 0 and 1) 70°C (type 2)	INSTALLER: only if HP enable to DHW and combi boiler
— FREEZE PROT TEMP	7°C	0°C	100°C	SERVICE: only if HP enable to DHW and combi boiler
— TANK FR PROT OFFSET	5°C	1°C	20°C	SERVICE: only if HP enable to DHW and combi boiler
— T MAX TANK	60°C	10°C	130°C	INSTALLER
— DHW TANK ON HYST	2	1	30	INSTALLER
— DHW TANK OFF HYST	0	0	30	INSTALLER
— DHW INTEGRATION TYPE	0	0	4	INSTALLER
— DHW EH MENU				INSTALLER: only if DHW INTEGRATION TYPE ≠ 0
— DHW MAX TEMP EH	70°C	55°C	80°C	INSTALLER
— EH MIN ON TIME	60 sec	0 sec	360 sec	INSTALLER
— EH MIN OFF TIME	60 sec	0 sec	360 sec	INSTALLER
— DHW BOOST	0	0	1	INSTALLER: only if HP enable to USE FOR DHW

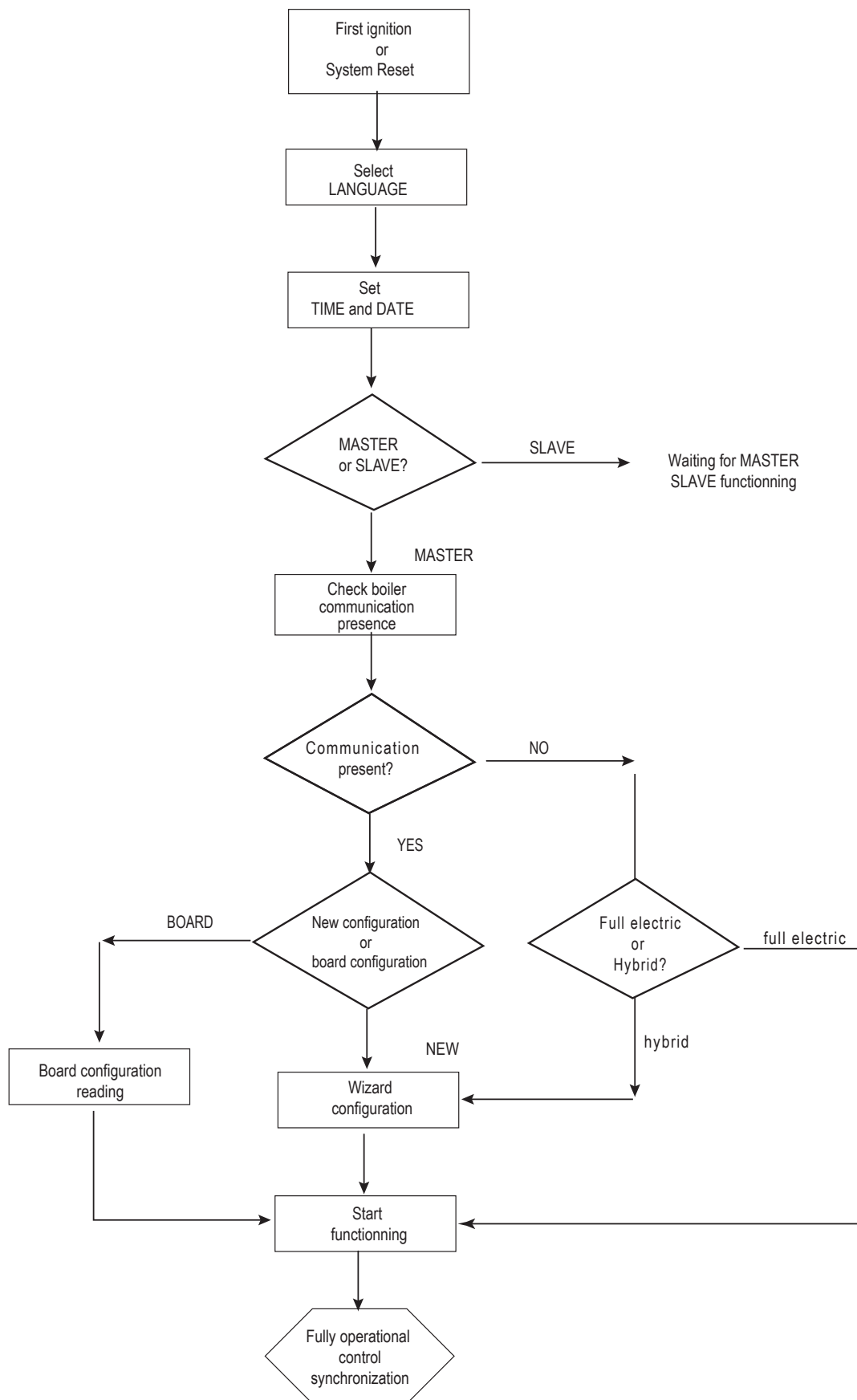
	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCESS LEVEL NOTES
—ADD SOLAR PLANT				INSTALLER: only if solar system is not configured
—SOLAR				INSTALLER
—REMOVE SOLAR PLANT				INSTALLER
—T MAX TANK	60°C	10°	130°C	INSTALLER
—DELTA T ON PUMP	8°C	DELTA T OFF PUMP	30°C	INSTALLER
—DELTA T OFF PUMP	4°C	4°C	DELTA T ON PUMP	INSTALLER
—INTEGRATION DELAY	0 min	0 min	180 min	INSTALLER
—COLLECTOR T MIN	(-)	(-)/-30°C	- °C	INSTALLER
—COLLECTOR T MAX	110°C	COLLECTOR T PROT	180°C	INSTALLER
—COLLECTOR T PROT	110°C	80 °C	COLLECTOR T MAX	INSTALLER
—COLLECTOR T AUTH	40°C	COLLECTOR T LOCK	95°C	INSTALLER
—COLLECTOR T LOCK	35°C	-20°C	COLLECTOR T AUTH	INSTALLER
—PWM COLL PUMP	0 min	0 min	30 min	INSTALLER
—TANK COOLING	FUNCTION NOT ACTIVE	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	INSTALLER
—SOLAR PUMP MODE	OFF		OFF/ON/AUTO	INSTALLER
—ADD HEAT PUMP				INSTALLER: only if HP not configured
—HEAT PUMP TYPE (+)	0 (HP type 0)	0 (HP type 0)	1 (HP type 1) 2 (HP type 2)	INSTALLER
		(+) for details of type 0 - type 1 - type 2 see table on page 4		
—HEAT PUMP				INSTALLER
—REMOVE PDC				INSTALLER: only if HEAT PUMP configured
—USE FREE CONTACTS/USE BUS	USE BUS	USE BUS	USE FREE CONTACT	SERVICE
—ENABLE/DISABLE COOLING	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	FUNCTION NOT ACTIVE	INSTALLER
—USE FOR DHW/DON'T USE FOR DHW	DHW FUNCTION NOT ACTIVE	DHW FUNCTION ACTIVE	DHW FUNCTION NOT ACTIVE	SERVICE: only if system with boiler and probe without solar
—ANTI FREEZE DELTA SET	1°C	0°C	6°C	SERVICE
—ENABLE/DISABLE NIGHT REDUCT	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	FUNCTION NOT ACTIVE	INSTALLER
—REDUCED FREQUENCY	80% 0 (HP type 1)	50% 1 (HP type 1)	100% 0 (HP type 1)	INSTALLER: if NIGHT REDUCTION active
—NIGHT MODE START TIME	20:00	00:00	23:59	INSTALLER: if NIGHT REDUCTION active
—NIGHT MODE STOP TIME	09:00	00:00	23:59	INSTALLER: if NIGHT REDUCTION active
—MIN OUTDOOR TEMP	5°C	-5°C	20°C	INSTALLER
—MIN DHW OUT TEMP	5°C	-5°C	20°C	INSTALLER: only if USE FOR DHW in HP activated
—MIN EMERG OUT T	-10°C	-20°C	10°C and in any case not over the MIN OUTDOOR TEMP value	INSTALLER
—BOILER INTEGR DELAY	30 min	1 min	240 min	INSTALLER
—HP INTEGR DELAY	30 min	1 min	240 min	INSTALLER
—BOILER WAITING	2 min	1 min	60 min	INSTALLER
—HEAT PUMP WAITING	2 min	1 min	60 min	INSTALLER
—INTEGRATION OFFSET	5°C	0°C	10°C	INSTALLER
—WINTER SUMMER DELAY	0h	0h	24h	INSTALLER
—WARNING VALIDATION (HP type 0)	60 sec	1 sec	300sec	INSTALLER
—ENABLE CIRC ON/AUTO MODE (*) (HP type 0)	AUTO	ON	AUTO	INSTALLER: if boiler in OFF and AIR PURGING CYCLE not present
	(*) HP type 1: the air purging cycle must be set on the wired controller of the heat pump			
—DHW HP SETPOINT	60°C	20°C	60°C (HP type 0 and 1) 75°C (HP type 2): in any case the value must be < DHW MAX TEMP HP	SERVICE: only if USE FOR DHW in HP activated
—DHW OFFSET	10°C	0°C	25°C	SERVICE: only if boiler with water tank with probe and USE FOR DHW in HP activated
—DHW MAX TEMP HP	55°C	45°C	65°C (type 0 and 1) 75°C (type 2)	INSTALLER
—ADD PHOTOVOLTAIC				INSTALLER
—PHOTOVOLTAIC (hybrid)				INSTALLER
—REMOVE PHOTOVOLTAIC				INSTALLER
—ELECTRIC CONVENIENCE	2	0	+10°C	INSTALLER
—PHOTOVOLTAIC (electric)				INSTALLER
—REMOVE PHOTOVOLTAIC				INSTALLER

	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCESS LEVEL NOTES
—BACKUP TYPE (HP type 0 and 2)	1	0 (1 if HYDRONIC UNIT LE B)	1	INSTALLER
—BOOSTER OAT THRESHOLD (HP type 0 and 2)	-7°C	-20°C	15°C	INSTALLER
—BOOSTER DELAY (HP type 0 and 2)	30 min	1 min	60 min	INSTALLER
—BOOSTER DELTA TEMP (HP type 0 and 2)	5°C	1°C	20°C	INSTALLER
—OAT SENSOR TYP (HP type 0)	0 (2 if HYDRONIC UNIT LE B)	0 (1 if HYDRONIC UNIT LE B)	3 (2 if HYDRONIC UNIT LE B)	INSTALLER
—MINIMUM PUMP SPEED (HP type 0: HYDRONIC UNIT LE B/HP type 2)	19%	19%	100%	INSTALLER
—MAXIMUM PUMP SPEED (HP type 0: HYDRONIC UNIT LE B/HP type 2)	100%	19%	100%	INSTALLER
—ZONE PUMP DELAY	0 sec	0 sec	240 sec	SERVICE: only zones with ACTUATION=BE16
—ENABLE ERROR HISTORY (in the first 2 hours of power on)				SERVICE
—ERROR HISTORY (if two hours of functioning have been passed)				INSTALLER
—SCREED HEATING	DEACTIVATE FUNCTION	DEACTIVATE FUNCTION	ACTIVATE FUNCTION	INSTALLER: OFF state and low temperature system
—DEACTIVATE FUNCTION				INSTALLER
—ACTIVATE FUNCTION				INSTALLER
—FUNCTION SETTINGS				SERVICE
—TFMIN	20°C	15°C	30°C	SERVICE
—TFMAX	35°C	30°C	55°C	SERVICE
—COMBUSTION MONITORING				SERVICE: only AKM boiler card
—GAS TYPE	NATURAL GAS		NATURAL GAS / LPG	INSTALLER
—BOILER TYPE	according to boiler model (see instruction manual)		A/B/C/D/E/F	SERVICE
—COMBUSTION OFFSET	RESTORE	RESTORE	RESET	SERVICE
—ACC AUTO CAL	RESTORE	RESTORE	RESET	SERVICE
—FIXCO2ALLPLUS	according to the set curve			SERVICE
—BOILER (hybrid)				
—REMOVE BOILER				INSTALLER
—HYDRAULIC CONFIG	according to the boiler installed*	0	4	INSTALLER
—ADD BOILER (electric)				INSTALLER: only if electric mode
—BOILER				INSTALLER
—REMOVE BOILER				INSTALLER: only if Hp present and combi boiler
—HYDRAULIC CONFIG	according to the boiler installed*	0	4	INSTALLER
—IPD ACTIVATION	0 = system boiler (heating only boiler) / 1 = combination boiler (instantaneous) with flowswitch / 2 = combination boiler (instantaneous) with flowmeter (Flux meter) / 3 = only heating boiler & cylinder with probe / 4 = only heating boiler & cylinder with thermostat			SERVICE
—SYSTEM INFO	"Instantaneous Power Detection" for measuring the instantaneous power value of the boiler			SERVICE

2 OPERATING LOGIC

At the first switch-on, or when a system reset needs to be made, a guided configuration procedure for the REC10MH is launched; with this procedure, you can define the system architecture.

The operating logic is shown in the following diagram:




3 ACCESSING THE TECHNICAL PARAMETERS

Via the TECHNICAL menu of the REC10MH, you can access a series of parameters that can be programmed for personalised system operation.


- Select MENU on the initial REC10MH screen, then press “ok”.
- Hold down the “back” and “down” keys at the same time to enter the password menu (about 5 sec).

- Use the “up” and “down” keys to select the value of the password to access the INSTALLER authorisation level (depending on the level of the tree menu), then press “ok”.
- Use the “up” and “down” keys to select TECHNICAL, then confirm.
- Access the required menu and change/view the parameter concerned (refer to the tree menu).

You can return to the initial screen at any time by pressing the “back” key for at least 2 seconds.

 Certain parameters might not be available, depending on the system configuration.

4 PROGRAMMING THE SYSTEM

 The first switch-on should be made by authorised, skilled personnel from After Sales Service.

Before beginning the programming, make sure all the system elements are connected and powered

At the first switch-on, the system might ask you to make the following choices:

- LANGUAGE: you can choose between IT - EN - PL
- TIME & DATE
- MASTER or SLAVE: Master for boiler control, Slave for ambient control.

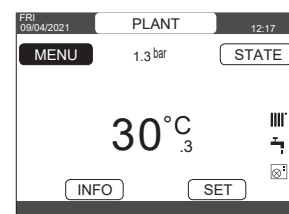
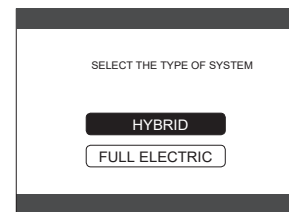
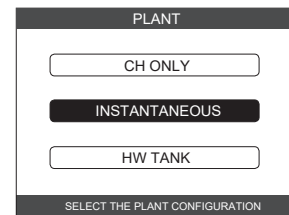
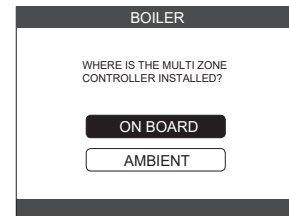
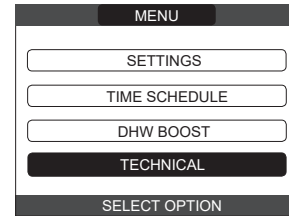
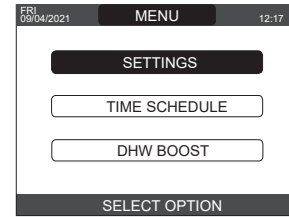
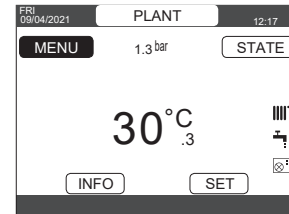
Notes

- The TIME & DATE, DAYLIGHT SAVINGS TIME, LANGUAGE and back-lighting activation time settings can be changed later, by accessing MENU from the main screen and then selecting SETTINGS.
- The device manages the change from Standard Time to Daylight Saving Time (and vice versa) automatically.

After selecting the MASTER option, wait a few seconds for the REC10MH to run a communication test with the boiler:

- if the test is passed, the panel is configured to manage a HYBRID system and will ask you to set the hydraulic configuration of the boiler. Note: the heat pump is optional and can be added at any moment
- if the test fails, the panel asks you to specify the type of system you want to configure - HYBRID or ELECTRIC. If you choose hybrid, you will return to the previous point; if you choose ELECTRIC, the configuration procedure ends here and the system is automatically configured with a heat pump.

In both cases, other components such as an DHW water tank, electric heater or solar/photovoltaic system can be added and configured at any time by accessing the parameters as explained in paragraph “3 Accessing the technical parameters”.

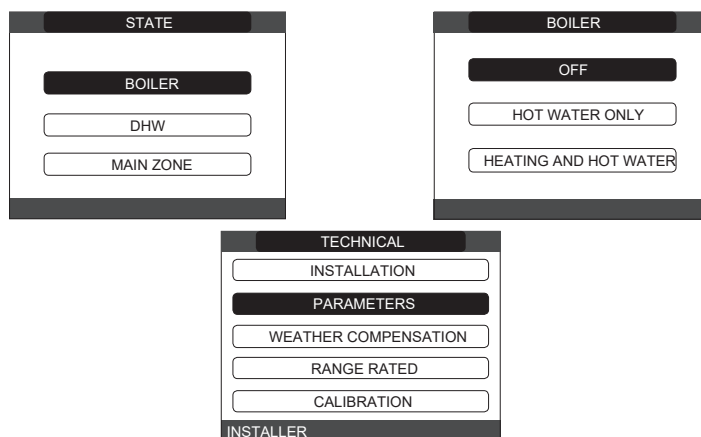


4.1 HYBRID configuration


- Set the system to OFF, selecting STATE and then BOILER.
- Access the parameters as explained in paragraph “3 Accessing the technical parameters”.
- Use the “up” and “down” keys to select the PARAMETERS item, then confirm.

The following programmable parameters are available:

- **ANTI-CYCLE FUNCTION:** this parameter allows you to change the FORCED HEATING TIMING OFF, regarding the delay time introduced for re-igniting the burner after deactivation due to the heating temperature being reached. The factory setting for this parameter is 3 minutes, but it can be set between 0 and 20 min using the “up” and “down” keys and then confirming the selection.
- **HYST ON HIGH TEMP:** temperature to be subtracted from the boiler delivery setpoint to obtain the intervention temperature of the “heating thermostat ON” in high temperature systems.
- **HYST OFF HIGH TEMP:** temperature to be added to the boiler delivery setpoint to obtain the intervention temperature of the “heating thermostat OFF” in high temperature systems.
- **HYST ON LOW TEMP:** temperature to be subtracted from the boiler delivery setpoint to obtain the intervention temperature of the “heating thermostat ON” in low temperature systems.
- **HYST OFF LOW TEMP:** temperature to be added to the boiler delivery setpoint to obtain the intervention temperature of the “heating thermostat OFF” in low temperature systems.
- **SP INCR HIGH TEMP:** offset to be applied to the boiler delivery setpoint when heating heat is requested from high temperature systems.
- **SP INCR LOW TEMP:** offset to be applied to the boiler delivery setpoint when heating heat is requested from low temperature systems.
- **PUMP DUTY CYCLE:** this parameter allows you to set the management mode of the boiler pump.
- **RESET CH TIMERS:** this parameter allows you to reset the MAXIMUM REDUCED HEATING OUTPUT TIMING (during which the speed of the fan is limited to 75% of the maximum heating output that has been set) and the FORCED HEATING TIMING OFF. The factory setting for this parameter is FUNCTION NOT ACTIVE; select FUNCTION ACTIVE using the “up” and “down” keys, confirming the selection to reset the timings.
- **DHW THERMOSTAT** (available with an instantaneous boiler): this parameter allows you to set the type of DHW THERMOSTAT. The factory setting for this parameter is RELATED, i.e. in DHW mode the boiler switches off at setpoint +5°C and restarts at setpoint +4°C. To select the “ABSOLUTE” value, whereby in DHW mode the boiler always switches off at 65°C and restarts at 63°C, use the “up” and “down” keys and confirm the selection to reset the timings.
- **SLIDING OUTLET** (available with a heating-only boiler): this parameter allows you to activate the SLIDING OUTLET function for changing the delivery setpoint used by the boiler in DHW mode. In this case, the setpoint for delivery to the water tank is automatically calculated by the boiler using the difference between the required temperature and the temperature measured by the water tank probe. The factory setting for this parameter is DEACTIVATE FUNCTION.
Note: this function should not be activated for water tanks with a capacity greater than 100 litres, as the tank loading process would be too slow.
Warning: it might be necessary to reset the value of this parameter when replacing the adjustment board.
- **PREHEATING** (available with a combined boiler): impostando il setting **PREHEATING = 1**, the boiler’s domestic hot water function activates. This function keeps the water in the domestic hot water exchanger hot, to reduce standby times when a request is made. When the pre-heating function is enabled, the symbol P comes on with a steady light above the DHW icon. During burner ignition following a pre-heating request, the letter P will begin to flash. To deactivate the pre-heating function, set the parameter to **PREHEATING = 0**; the symbol P switches off. The function is not active when the boiler is OFF.



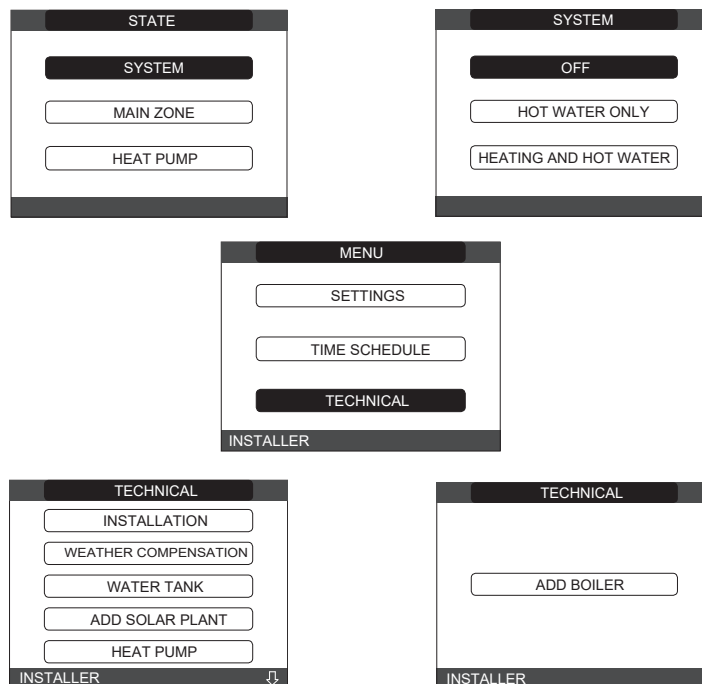
- **TOUCH & GO:** if you don’t want to leave the PREHEATING function always active and you need hot water ready immediately, you can preheat the domestic water just a few moments before drawing it. Set the **PREHEATING = 2** parameter to activate the Touch & Go function. By opening and closing the tap, this function allows instant preheating to be activated, which prepares hot water only for that tap.
- **SMART_FAN:** set the **PREHEATING = 3** parameter to activate the Smart_Fan function. When the function is active, post-circulation at the end of the heating request takes place with three-way positioned in DHW until one of the following conditions is met:
 - ΔT (delivery - return probe) < 2 °C
 - Post-circulation duration > 20 sec
 - Return temperature > 65 °C.
- **DO_AUX1:** this value configures the functions associated with the digital output used to manage the supplementary pump or zone valve.
- **ID14** (boiler with AKL07 board only): this value enables cascade management when a crono OT+ is connected.
- **TYPECOS:** this parameter allows periodic control of the boiler according to an operating period set in the EXPIRE parameter. There are three setting values:
 - 0 = function disabled
 - 1 = function enabled according to the following rule:
 - if EXPIRE < 4 the display shows the CALL FOR SERVICE signal;
 - if EXPIRE = 0 the display shows the STOP FOR SERVICE signal which indicates the permanent inhibition of all requests for heating and DHW. Not resettable
 - 2 = function enabled:
 - when EXPIRE = 0 the display shows the CALL FOR SERVICE signal without any operation stop.
- **EXPIRE:** indicates the operating period set in the TYPECOS parameter.
- **CONFIG OTBUS:** this parameter is used to enable remote management of the boiler through an OpenTherm device:
 - 1 = FACTORY VALUE. OT+ function enabled, the message “OPEN THERM CONNECTED” appears on the display, when an OT+ device is connected.

 The OpenTherm connection is not enabled in the presence of a heat pump.

 - 0 = OT+ functionality disabled. By setting this parameter to 0, any OT+ connection is instantly interrupted.
- **SIPHON FILL (HIGH EFFICIENCY):** the boiler is equipped with an automatic function which is activated when it is first powered or after 60 days of non-use (boiler powered electrically). In this mode, the boiler, for 60 minutes, limits the heating power to a minimum and the maximum DHW temperature at 55°C. Activating the chimney sweep temporarily disables this function. During execution of the function, the scrolling message HIGH EFFICIENCY MODE is displayed.
- **BIBERON:** the bottle function allows you to block the value set in the DHW setpoint, preventing anyone from being able to inadvertently modify it. To activate the bottle function, select BIBERON from the MENU and set the value to 1.

4.3 ELECTRIC configuration

- Set the system to OFF, selecting STATE and then SYSTEM.
- Access the parameters as explained in section “2 Accessing the technical parameters”.
- Use the “up” and “down” keys to select the TECHNICAL item, then confirm.
- Make the configuration by setting the parameters.



4.2 Setting the zones

This menu is used to program the zone parameters. The main zone is already loaded on the system by default, so if you are configuring a single zone you only need to set the relative parameters. If the system is configured for two zones however, you will have to add the second zone. To add the second zone, proceed as follows:

- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- select the items INSTALLATION/ZONES MANAGER/ADD ZONE (in this order)
- assign a name to the new zone, using the “up” and “down” keys to scroll through the letters of the graphic keypad and then confirming
- to end the zone insertion procedure, select the DONE key and confirm.

Now configure the heating zones from the **ZONES MANAGER** menu:

- go to the **MODIFY ZONE** menu
- select the **required heating zone**
- set the parameters

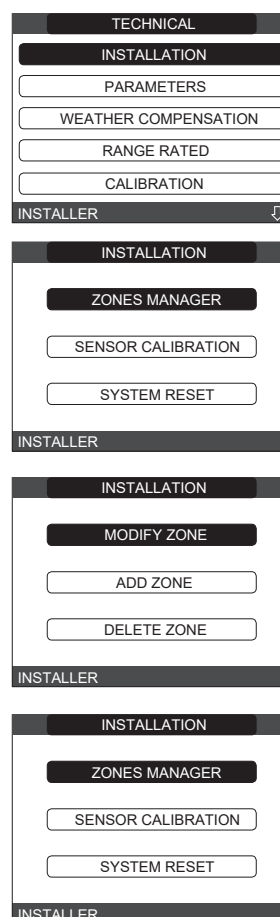
ACTUATION TYPE (main zone only)

Set the parameter in question on BE16 if the main zone is managed by a BE16 board.

REQUEST TYPE

This parameter allows you to specify the type of heat request. Choose from the following options:

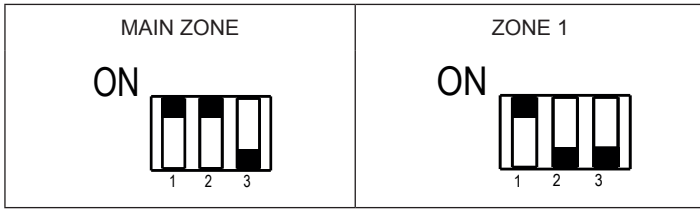
- **ROOM THERMOSTAT** (factory setting): the heat request is generated with an ON/OFF thermostat. In hybrid mode, the room thermostat is connected to the boiler, whereas with full electric it is connected to the heat pump (refer to the specific boiler manual for hybrid and the heat pump manual for full electric).
- **TEMPERATURE PROBE**: the heat request is generated by an ambient probe (not supplied)
- **REC10MH MASTER**: the heat request is generated by the REC10MH MASTER. In this case, the REC10MH assumes the dual function of MACHINE INTERFACE and AMBIENT REGULATOR - see paragraph “4.16 REC10MH master used as an ambient regulator”.
- **REC10MH SLAVE**: the heat request is generated by the REC10MH SLAVE. In this case, the REC10MH Slave is different from the REC10MH Master already used as a machine interface, and assumes the sole function of AMBIENT REGULATOR.



BE16 ADDRESS (only if ACTUATION TYPE = BE16 for the main zone)

This parameter defines the physical address of the BE16 board associated with the zones, and must necessarily be set to ensure the system works properly.

Set the parameter on the basis of the figure below:



HYDRAULIC CONF

This parameter specifies the hydraulic configuration of the zone in question. Choose from the following options:

- DIRECT ZONE (factory setting)
- MIXING ZONE

ZONE TYPE

This parameter specifies the type of zone to be heated. Choose from the following options:

- HIGH TEMP (factory setting)
- LOW TEMP

MIN CH SET

This parameter specifies the minimum possible heating setpoint (range 20°C - 80.5°C, default 40°C for high temperature systems; range 20°C - 45°C, default 20°C for low temperature systems). For heat pump type 1, the minimum adjustable heating setpoint (range 25°C - 80.5°C, default 40°C for high temperature systems - range 25°C - 45°C, default 25°C for low temperature systems).

MAX CH SET

This parameter specifies the maximum possible heating setpoint (range 20°C - 80.5°C, default 80.5°C for high temperature systems; range 20°C - 45°C, default 45°C for low temperature systems).

CHANGE NAME

This parameter allows you to attribute a specific name to the heating zone.

POR

This parameter enables timer heating programming for the zone in question.

- **Timer programming not enabled = 0**
When the room thermostat contact closes, the heat request is always met without any time band limitation.
- **Timer programming enabled = 1**
When the room thermostat contact closes, the heat request is enabled according to the timer programming set.

Note: make sure the zone operating mode is set to AUTO.

PI - PROPORTIONAL

Weight of the proportional action of the PID for the mixing valve adjustment of the mixed zone.

PI - INTEGRAL

Weight of the integral action of the PID for adjusting the mixing valve of the mixed zone.

VALVE RUN

Closing time of the mixing valves.

CLOSING AT POWER ON

Closing time of the mixing valves at power on.

OUTLET OVER

ZONE flow temperature value, after which the system blocks the pump relating to the ZONE.

OUTLET OVER TEST TIME

Time after which, after the ZONE delivery temperature has exceeded the **OUTLET OVER** value, the system blocks the pump related to the ZONE.

OUTLET OVER WAIT TIME

Time in which the pump, after the ZONE delivery temperature has exceeded the **OUTLET OVER** value, remains off. After this time the pump is reactivated.

OUTLET OVER REST TIME

Time after which, after the pump has been reactivated for exceeding the **OUTLET OVER** temperature, the regulation cycle is re-activated.

FREEZE PROT TEMP

Zone flow temperature value below which, if TEXT < FREEZE PROT T EXT, the zone antifreeze function is activated.

FREEZE PROT OFFSET

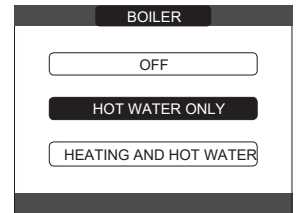
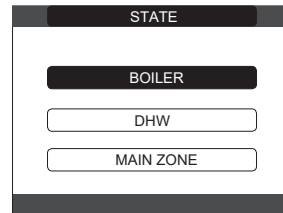
Offset value to be considered on the antifreeze temperature to deactivate the zone antifreeze function.

FREEZE PROT T EXT

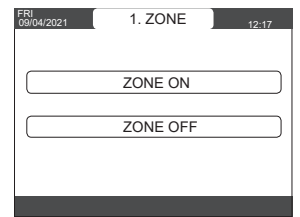
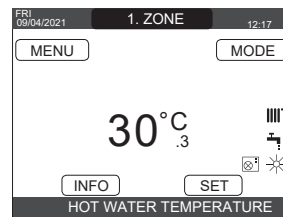
Outside temperature value below which, if ZONE OUTLET < FREEZE PROT TEMP, the zone antifreeze function is activated.

If you want to deactivate the zone in summer or winter, it is necessary to act as follows:

- select STATE/BOILER and then the season in which you want to deactivate the HOT WATER ONLY or HEATING AND HOT WATER zone



- from the page of the zone in question, select MODE and then OFF.



With every POWER_ON, if HYDRAULIC CONF = MIXING ZONE, the BE16 board commands the mixer valve to close for a time equal to 2min20sec. This allows the system to begin an adjustment phase, starting from the “all closed” situation; the pump is kept disabled and heat requests from the zone are inhibited.


At the end of the heat request, if HYDRAULIC CONF = MIXING ZONE, the mixer valve is closed for 2min. During this time, the pump remains enabled unless there are other zones with a heat request (in which case the pump is immediately switched off). Any new heat requests from the same zone are not taken into consideration until the 2min mixer valve closure time has ended.

The BE16 board has a 2-colour LED (green/red):

fixed green	mixer valve closed
fixed red	mixer valve open
flashing red	communication lost
LED OFF	mixer valve idle

4.4 Setting heating temperature adjustment

Temperature adjustment only works if the outdoor temperature sensor is connected and is active for HEATING only.

 In the case of heating temperature adjustment with full electric, the remote OAT probe must be installed.

This will enable the WEATHER COMPENSATION function in HEATING mode.

The outdoor temperature sensor is the one connected to the boiler in hybrid systems, or the one connected to the heat pump in electric systems.

The temperature measured by the outdoor temperature sensor is displayed at the top right of the initial screen, alternating with the display of the time.

When temperature adjustment is enabled (outdoor temperature sensor installed), the algorithm for automatically calculating the delivery setpoint depends on the type of heat request.

In any case, the algorithm does not directly use the outdoor temperature, but a calculated outdoor temperature that takes into account the building's insulation: in buildings that are well insulated, the outdoor temperature variations will have less impact than in those more poorly insulated.

The REC10MH can be used to set the value of the following parameters:

CLIMATIC CURVES

BUILDING TYPE

Indicates the frequency with which the value of the calculated outdoor temperature for temperature adjustment is updated; a low value will be used for buildings that have little insulation.

Setting range: [5min - 20min]

Factory setting: [5min]

OUTDOOR REACTIVITY

Indicates the speed with which variations of the outdoor temperature affect the calculated outdoor temperature value for temperature adjustment; low values indicate high speeds.

Setting range: [0 - 255]

Factory setting: [20]

To alter the value of the parameters above:

- access the parameters as explained in paragraph "3 Accessing the technical parameters"
- use the "up" and "down" keys to select the password value that enables INSTALLER level, then press "ok"
- select WEATHER COMPENSATION, BUILDING TYPE, OUTDOOR REACTIVITY with the "up" and "down" keys, then confirm
- use the "up" and "down" keys to set the required value, then confirm.

Keep the "back" key pressed for at least 2 sec to return to the initial screen.

Note: the calculated outdoor temperature value used by the temperature adjustment algorithm is displayed in the INFO menu, under FILTERED OUTDOOR TEMP.

4.4.1 Request from room thermostat

In this case the delivery setpoint depends on the outdoor temperature value to produce a reference ambient temperature of 20°C. There are 2 parameters used to calculate the delivery setpoint:

- slope of the compensation curve (KT)
- reference ambient temperature offset.

CHOOSING THE COMPENSATION CURVE

The compensation curve for heating maintains a theoretical temperature of 20°C indoors, when the outdoor temperature is between +20°C and -20°C. The choice of the curve depends on the minimum outdoor temperature envisaged (and therefore on the geographical location), and on the delivery temperature envisaged (and therefore on the type of system). It is carefully calculated by the installer on the basis of the following formula:

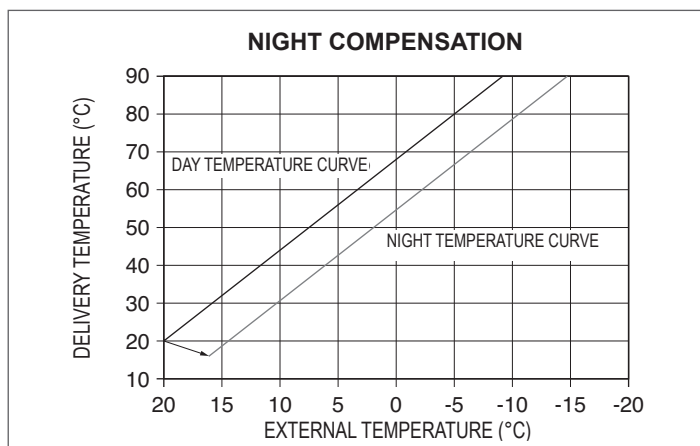
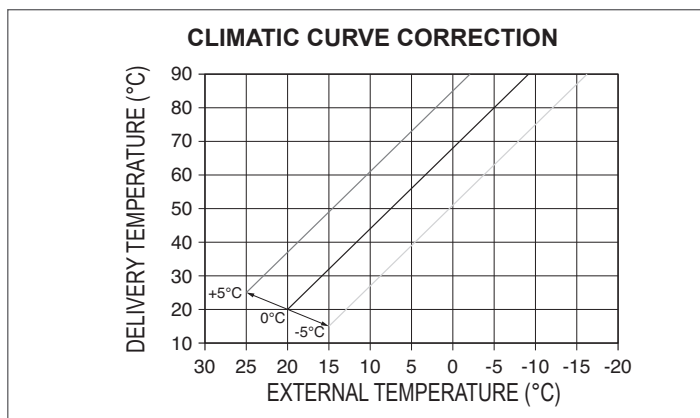
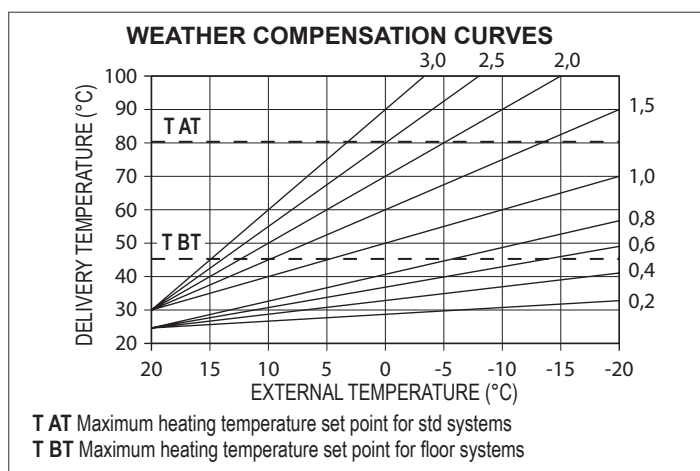
$$KT = \frac{\text{envisaged delivery } T - T_{\text{shift}}}{20 - \text{min. envisaged external } T}$$

Tshift = 30°C standard system
25°C floor installations

If the calculation produces an intermediate value between two curves, you are advised to choose the compensation curve nearest the value obtained.

Example: if the value obtained from the calculation is 1.3, this is between curve 1 and curve 1.5. Choose the nearest curve, i.e. 1.5. The settable KT values are as follows:

- standard system: 1.0-3.0
- underfloor system 0.2-0.8.



Using the REC10MH, it is possible to set the selected temperature adjustment curve:

- access the parameters as explained in paragraph "3 Accessing the technical parameters"
- select WEATHER COMPENSATION and then CLIMATIC CURVES with the "up" and "down" keys, then confirm
- select the required heating zone with the "up" and "down" keys, then confirm
- set the required climatic curve with the "up" and "down" keys, then confirm.

REFERENCE AMBIENT TEMPERATURE OFFSET

In any case, the user can indirectly modify the value of the HEATING setpoint by inserting an offset (that can vary within the range -5-+5 (offset 0 = 20°C)) on the reference temperature.

NIGHT-TIME COMPENSATION

If a timer is connected to the ROOM THERMOSTAT input, the NIGHT COMP function can be enabled from the TECHNICALWEATHER COMPENSATION\CLIMATIC CURVES\MAIN menu.

In this case, when the CONTACT is CLOSED, the heat request is made by the delivery probe on the basis of the outdoor temperature, to obtain a nominal ambient temperature on DAY level (20°C).

The OPENING OF THE CONTACT does not produce a switch-off, but a reduction (parallel transfer) of the climatic curve on NIGHT level (16°C).

In this case too, the user can indirectly modify the HEATING setpoint value by inserting an offset (that can vary within the range [-5+5]) on the reference DAY temperature (20°C) or NIGHT temperature (16°C).

4.4.2 Request from REC10MH master/slave or ambient probe

In this case, the delivery setpoint depends on the outdoor temperature value and the ambient temperature.

There are 3 parameters used to calculate the delivery setpoint:

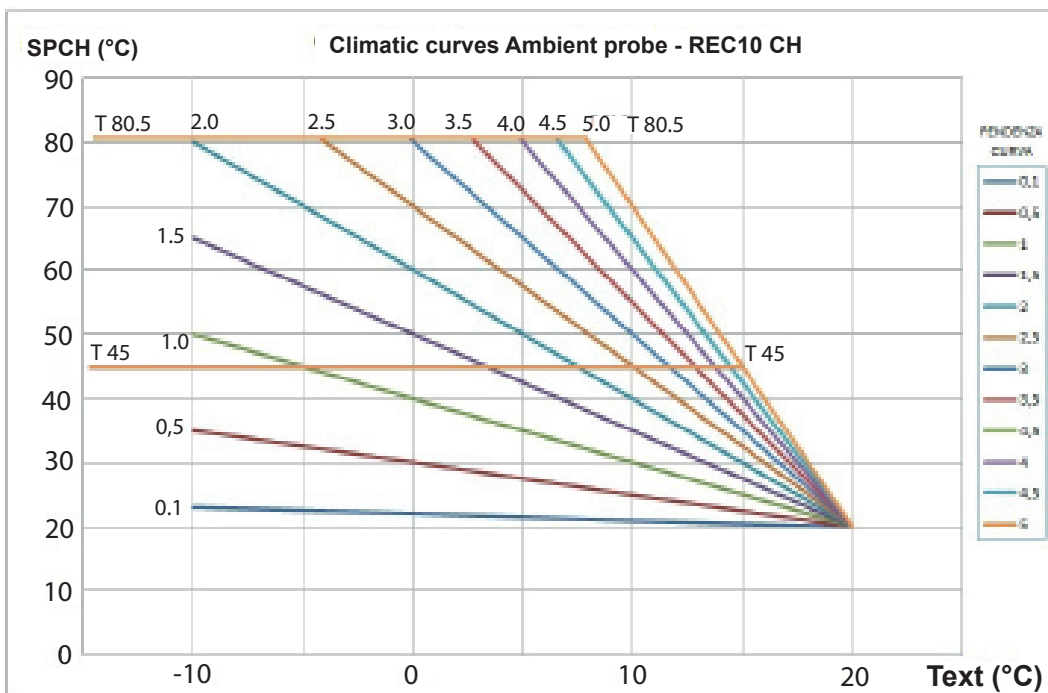
- slope of the curve
- influence of the ambient
- fixed point offset

as per the following formula:

$$SP_{Mandata} = \left\{ \left[\left(SP_{Amb} - T_{Amb} \right) \cdot \frac{Infl_{Amb}}{2} + T_{Amb} \right] - T_{ext} \right\} \cdot Curva + Offset$$

⚠ The above parameters can be seen in the TECHNICAL - WEATHER COMPENSATION - CLIMATIC CURVES and Heating only menu (when an outdoor temperature sensor is connected).

Key	Description
SP _{Delivery}	Delivery setpoint
SP _{Amb}	Ambient setpoint
T _{Amb}	Ambient temperature
Infl _{Amb}	Influence of the ambient (KORR)
T _{ext}	Outdoor temperature
Curve	Climatic curve
Offset	Fixed point offset



SPAmb: 20°C
 OFFSET: 20°C
 Ambient influence: 0

SPCH: delivery setpoint
 Text: external temperature
 SPAmb: ambient setpoint

Slope of the curve

The REC10MH calculates the delivery temperature on the basis of the climatic curve set in the CURVE CHOICE parameter.

When the set value increases, the slope of the climatic curve increases and so the delivery temperature rises.

The input parameter (X coordinate axis) of this function is the outdoor temperature.

Influence of the ambient (KORR)

Climatic compensation with ambient influence corrects the value calculated by the climatic curve, taking into account the temperature difference between the ambient setpoint and the ambient probe.

As the parameter increases towards its maximum value, the influence of the setpoint deviation on the control also increases.

Fixed point offset

This is a temperature added to the delivery temperature calculated by the algorithm, to produce a shift in the curve.

4.5 Setting the delivery temperature for zones in cooling mode (with heat pump activated in cooling mode)

Unlike in heating mode, temperature adjustment in COOLING can work with a fixed point even when an outdoor temperature sensor is connected.

To activate/deactivate the temperature adjustment curves in cooling mode, proceed as follows:

- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- select WEATHER COMPENSATION and then ENABLE COOLING/DISABLE COOLING with the “up” and “down” keys, then confirm.

If the temperature adjustment curves in cooling mode are **deactivated**, the system will work with a fixed point:

- Setting range [4°C to 20°C]
- Factory setting [18°C]

To set the value of this parameter, proceed as follows:

- access the parameters as explained in section “2 Accessing the technical parameters”
- select WEATHER COMPENSATION and then CLIMATIC CURVES with the “up” and “down” keys, then confirm
- select the required heating zone with the “up” and “down” keys, then confirm
- use the “up” and “down” keys to set the required COOLING value, then confirm.

If the temperature adjustment curves in cooling mode are activated, the cooling delivery setpoint will be calculated automatically by an algorithm that takes into account the climatic curve set and the outdoor temperature measured. Bear in mind that, as for heating, the temperature adjustment algorithm does not directly use the measured outdoor temperature but a calculated outdoor temperature that also considers the building's insulation.

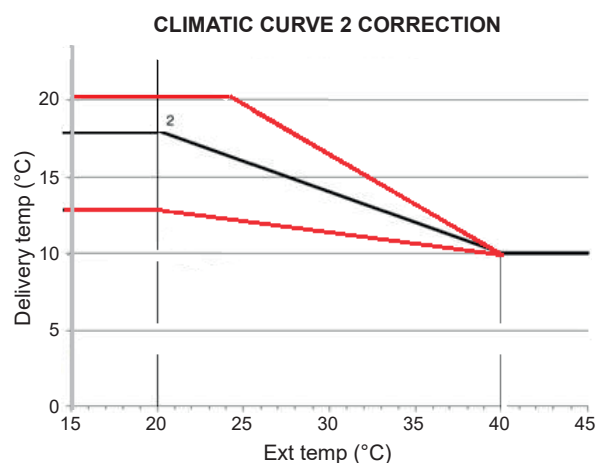
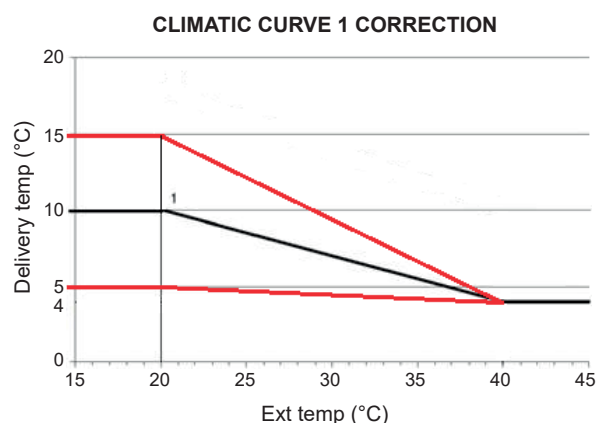
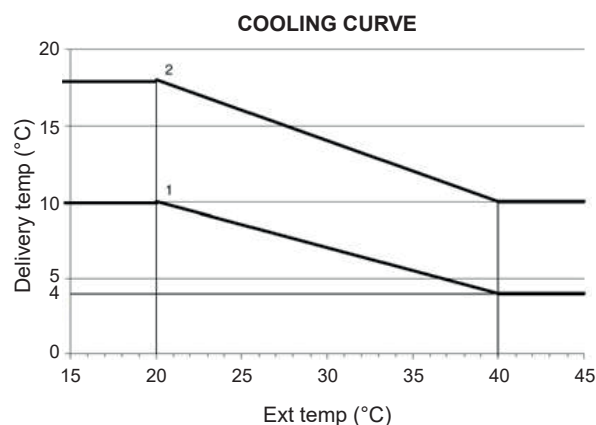
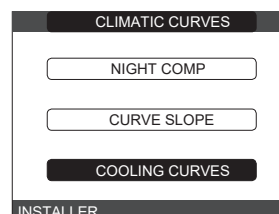
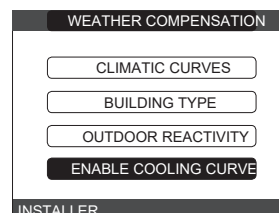
Note: the calculated outdoor temperature value used by the temperature adjustment algorithm is displayed in the INFO menu, under FILTERED OUTDOOR TEMP.

To set the climatic curve value, proceed as follows:

- access the parameters as explained in section “2 Accessing the technical parameters”
- select WEATHER COMPENSATION and then CLIMATIC CURVES with the “up” and “down” keys, then confirm
- select the required zone with the “up” and “down” keys, then confirm
- use the “up” and “down” keys to set the required COOLING CURVE value, then confirm
- Setting range [1 - 2]
- Factory setting [1]

CALCULATED DELIVERY TEMPERATURE OFFSET

The user can directly modify the calculated COOLING setpoint value by altering the slope of the curve (climatic curve correction charts 1-2). This is done by adding an offset (within the range -5+5) to the maximum cooling setpoint value envisaged by the curve.



4.6 Adding devices for the hybrid system

If the system is configured as HYBRID, there must be a boiler.

- If necessary, add other components following these instructions: access the parameters as explained in paragraph "3 Accessing the technical parameters".
- Add the devices by programming according to the type of system.
- If the boiler is configured as CH ONLY or INSTANTANEOUS, and a DHW water tank is installed, use the "up" and "down" keys to select ADD WATER TANK and then confirm.
When the water tank has been added, the anti-legio function becomes available (see paragraph "4.17 Antilegio function on the DHW water tank").
- If there is a solar system, use the "up" and "down" keys to select ADD SOLAR PLANT and then confirm.
Note: the ADD SOLAR PLANT function is only available once the water tank has been added.
- If there is a heat pump, use the "up" and "down" keys to select ADD HEAT PUMP and then confirm.

⚠ For system layouts with water tank pre-heating via the heat pump, set the USE FOR DHW parameter in the HEAT PUMP menu.

⚠ If the heat pump is also used for cooling, the specific parameter must be activated in the HEAT PUMP menu.

HP TYPE

Select **HP TYPE** to set the type of heat pump installed:

0	→	Hydronic Unit B HE Hydronic Unit LE B - Vega B
1	→	HYDRO UNIT M - Vega M
2	→	HYDRO UNIT P

The default value is 0

⚠ With type 1 heat pump, the following must be done on the heat pump remote control:

- set time, date and language at first start
- turn off the domestic hot water function as follows:
 - enter the parameters by setting the password (psw 234 SERVICE)
 - select DHW MODE SETTING
 - set DHW MODE = NO.

Please refer to the HP remote control user manual for more details.

- With a heat pump and a photovoltaic system with ON/OFF contact for signalling the electricity production status, use the "up" and "down" keys to select ADD PHOTOVOLTAIC in the HEAT PUMP menu, then confirm.

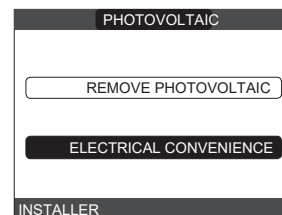
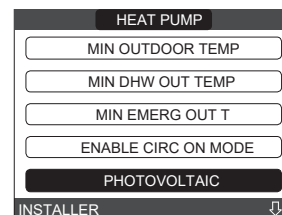
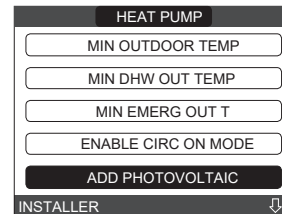
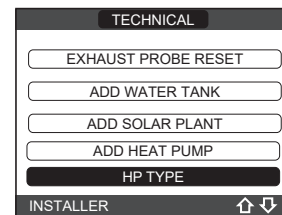
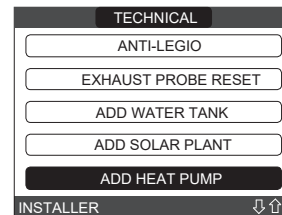
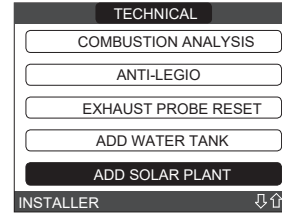
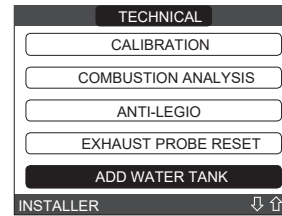
4.7 Photovoltaic option for the hybrid system

The menu in question is displayed in the HEAT PUMP menu if the ADD PHOTOVOLTAIC parameter has been selected.

Choose from the following options:


- REMOVE PHOTOVOLTAIC
This function disables photovoltaic operation (so the relative configuration menu will no longer be accessible).
- ELECTRIC CONVENIENCE
When the photovoltaic contact closes and remains in that state for at least 1 min, the values of MIN OUTDOOR TEMP and MIN DHW OUT TEMP are reduced by the value set in ELECTRIC CONVENIENCE, to favour the contribution of the heat pump.
This condition persists until the contact opens for at least 30 min, after which MIN OUTDOOR TEMP and MIN DHW OUT TEMP return to their original values.
- setting range: [0°C to +10°C]
- factory setting: [2°C].

Complete the configuration of the additional devices by referring to the specific paragraphs.




4.8 Adding devices for the *electric system*

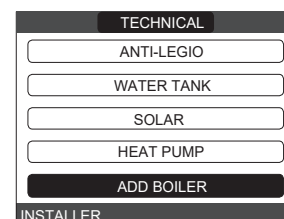
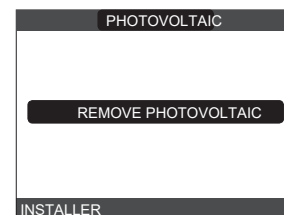
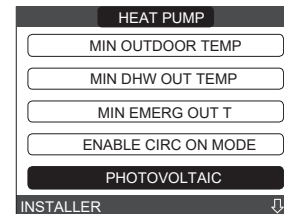
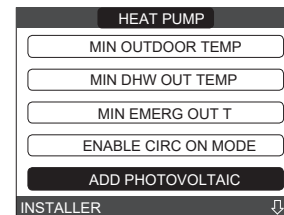
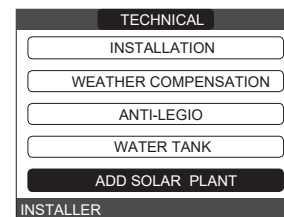
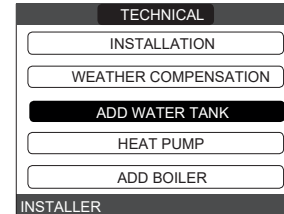
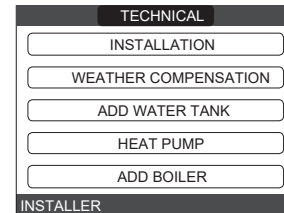
- If the system is configured as FULL ELECTRIC, there must be a heat pump.
- If necessary, add other components following these instructions: access the parameters as explained in paragraph “3 Accessing the technical parameters”.
- If there is a water tank, select ADD WATER TANK and then confirm. When the water tank has been added, the antilegio function becomes available (see paragraph “4.17 Antilegio function on the DHW water tank”).

 Go to the HEAT PUMP menu and set the USE FOR DHW parameter.

- If a water tank has been added, you can select ADD SOLAR PLANT and then confirm.
- If there is a photovoltaic system with ON/OFF contact for signaling the electricity production status, use the “**up**” and “**down**” keys to select ADD PHOTOVOLTAIC in the HEAT PUMP menu, then confirm.

 PHOTOVOLTAIC management in full electric configuration is not available even outside the DHW time programming, except for system status OFF.

- Select ADD BOILER. If this configuration is selected, the system quits electric mode and adopts the hybrid management configuration.



Complete the configuration of the additional devices by referring to the specific paragraphs.

4.9 Configuring the water tank for the hybrid system

- In this case, the water tank can be filled from the boiler only, from the heat pump only, or from both generators, depending on the system configuration. In the last two cases, the heat pump must be enabled for DHW by setting the relative parameter in the HEAT PUMP menu.
- Access the parameters as explained in paragraph “3 Accessing the technical parameters”.
- Use the “up” and “down” keys to select HW TANK, then confirm.
- Select REMOVE WATER TANK or WATER TANK SETPOINT.

REMOVE WATER TANK

This function disables the operation of the DHW water tank. When the water tank is disabled, the relative configuration menu is no longer accessible.

TANK TYPE (available with a heating-only boiler connected to a DHW water tank)

This parameter sets the type of DHW water tank:

- 0 (default value) - water tank with thermostat
- 1 - water tank with probe.

WATER TANK SETPOINT (only with an instantaneous boiler and with a heat pump installed and enabled for DHW)

This parameter sets the temperature of the hot water in the water tank; this value is reached thanks to the heat from the heat pump. Setting range 37.5 - 60°C (default value 50°C).

4.10 Configuring the water tank for the electric system

In this case, the water tank can be filled from the pump only or from the heat pump and a supplementary DHW electric heater, depending on the system configuration. The heat pump must be enabled for DHW by setting the relative parameter in the HEAT PUMP menu.

- Access the parameters as explained in paragraph “3 Accessing the technical parameters”.
- Use the “up” and “down” keys to select HW TANK, then confirm.

The following parameters are available:

REMOVE WATER TANK

This function disables the operation of the DHW water tank. When the water tank is disabled, the relative configuration menu is no longer accessible.

WATER TANK SETPOINT

This parameter sets the temperature of the hot water in the water tank; this value is reached thanks to the heat from the heat pump. Setting range 37.5°C to 60°C (type 0 and 1) • 75°C (type 2). Default 50°C.

T MAX TANK

This parameter sets the maximum temperature permitted in the upper part of the water tank when filled from a heat pump, supplementary DHW electric heater, or solar system.

Range [10°C - 130°C].

Default 60°C.

Note: with the hybrid configuration, this parameter can be found in the SOLAR menu.

DHW TANK ON HYST

The water tank filling request is activated when the temperature measured by the water tank probe is lower than the WATER TANK SETPOINT - DHW TANK ON HYST value.

Range [1°C - 30°C].

Default 2°C.

DHW TANK OFF HYST

The water tank filling request is deactivated when the temperature measured by the water tank probe is higher than the WATER TANK SETPOINT + DHW TANK OFF HYST value.

Range [0°C to 30°C].

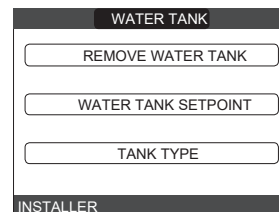
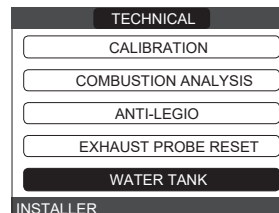
Default 0°C.

DHW INTEGRATION TYPE

The DHW INTEGRATION TYPE parameter defines the availability of an electric heater for heating a water tank, and its operating mode. For more details, refer to paragraph “9 RULES FOR SYSTEM, DHW ELECTRIC HEATER INTEGRATION AND SYSTEM ELECTRIC HEATER”.

Range [0, 1, 2, 3, 4]

Default 0



DHW BOOST (only available if a heat pump is enabled)

This parameter activates the DHW BOOST function.

Range [0, 1]

Default 0 (not active)

DHW EH MENU

When the DHW electric heater is activated (DHW INTEGRATION ≠ 0), the following menu becomes available:

DHW MAX TEMP EH

This parameter sets the maximum temperature that can be reached in the water tank using the DHW electric heater.

DHW MAX TEMP EH cannot be more than WATER TANK MAX TEMP HP.

If there is a DHW electric heater, the WATER TANK SETPOINT temperature cannot exceed the higher of the two values DHW MAX TEMP HP and DHW MAX TEMP EH.

Range [55°C - 80°C]

Default 70°C

EH MIN ON TIME

This defines the minimum operating time of the DHW electric heater from the moment when it is activated.

Range [0 sec - 360 sec]


Default 60 sec

EH MIN OFF TIME

This defines the minimum time that must elapse between a DHW electric heater switch-off and the next switch-on.

Range [0 sec - 360 sec]

Default 60 sec

The  icon flashes when the electric heater is working.

4.11 Configuring the heat pump for the *hybrid system*

The REC10MH allows you to access, via the TECHNICAL menu, a series of programmable parameters for personalising HEAT PUMP operation on the basis of the type of system:

- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- select HEAT PUMP with the “up” and “down” keys, then confirm.

The following parameters are available:

REMOVE PDC

This function disables heat pump operation. When the heat pump is disabled, the relative configuration menu is no longer accessible.

ENABLE COOLING/DISABLE COOLING

This parameter activates/deactivates heat pump cooling mode.

USE FOR DHW (if a water tank has been added)

This parameter enables the pre-heating of the heat pump on the DHW water tank.

Select USE FOR DHW.

ENABLE NIGHT REDUCT

This parameter reduces the noise made by the heat pump, by limiting the maximum operating frequency of the compressor in the time band defined with the NIGHT MODE START TIME and NIGHT MODE STOP TIME parameters.

REDUCED FREQUENCY (if ENABLE NIGHT REDUCT is active)

This parameter becomes available when night-time reduction has been activated, and allows you to set the maximum compressor frequency percentage when this function is active. By setting this parameter at 100%, the function is deactivated.

- Setting range : [50% - 100%]
- Factory setting : [80%]

NIGHT MODE START TIME (if ENABLE NIGHT REDUCT is active)

This parameter sets the starting time for the limiting of the heat pump compressor frequency when the night-time reduction function is enabled

Range 00:00 - 23:30

Default 22:00

NIGHT MODE STOP TIME (if ENABLE NIGHT REDUCT is active)

This parameter sets the finishing time for the limiting of the heat pump compressor frequency when the night-time reduction function is enabled

Range 00:00 - 23:30

Default 09:00

MIN OUTDOOR TEMP

This parameter sets the minimum external temperature value below which the heat pump will not operate (unless there is a boiler fault).

- Setting range : [-5°C to 20°C]
- Factory setting : [5°C]

MIN DHW OUT TEMP (if USE FOR DHW is active)

This parameter sets the minimum external temperature value below which the heat pump will not operate in DHW mode (unless there is a boiler fault).

- Setting range: [-5°C to 20°C]
- Factory setting: [5°C]

MIN EMERG OUT T

This parameter sets the minimum external temperature value above which the heat pump can operate when the boiler is not available because of a fault.

- Setting range : [-10°C to -20°C]
- Factory setting : [-10°C]

ENABLE CIRC ON/AUTO MODE

This parameter activates the heat pump circulator (ON). The circulator can only be activated with the system OFF and with the flue cleaning, purging or antifreeze, or hot water functions disabled.

The electronic 3-way valve is set to heating.

ADD/REMOVE PHOTOVOLTAIC

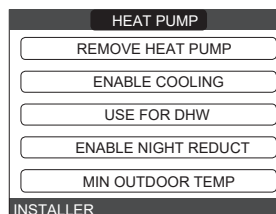
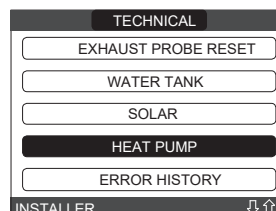
This parameter activates/deactivates the PHOTOVOLTAIC menu for managing the photovoltaic input.

ELECTRIC CONVENIENCE

When the PHOTOVOLTAIC menu is active, this parameter can be used to define how many degrees the value of the MIN OUTDOOR TEMP and MIN DHW OUT TEMP parameters should be lowered by when the photovoltaic input is closed

Range [0°C to +10°C]

Default = 2°C



BACKUP TYPE (type 0 and 2)

This parameter defines the type of electric integration for the heat pump:

0 = no integration

1 = supplementary heating element.

BOOSTER OAT THRESHOLD (type 0 and 2)

This parameter sets the external temperature threshold below which both the heat pump and the supplementary electric heater are activated, unless the external temperature is higher than the MIN OUTDOOR TEMP or MIN DHW OUT TEMP.

BOOSTER DELAY (type 0 and 2)

This parameter sets the delay time for activating the supplementary heater. The delay time countdown begins when HP OUTLET TEMPERATURE < SETPOINT VALUE - BOOSTER DELTA TEMP.

BOOSTER DELTA TEMP (type 0 and 2)

This parameter sets the temperature hysteresis for activating the supplementary external heater.

OAT SENSOR TYPE (type 0)

This parameter sets the type of remote outdoor temperature sensor connected to the heat pump:

0 = no outdoor temperature sensor connected

1 = 10 KOhms

2 = 5 KOhms

3 = 3 KOhms.

4.12 Configuring the heat pump for the *electric system*

With this configuration, there is always a heat pump.

The REC10MH allows you to access, via the TECHNICAL menu, a series of programmable parameters for personalising HEAT PUMP operation on the basis of the type of system:

- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- select HEAT PUMP with the “up” and “down” keys, then confirm.

The following parameters are available:

ENABLE COOLING/DISABLE COOLING

This parameter activates/deactivates heat pump cooling mode.

USE FOR DHW (if a water tank has been added)

This parameter enables the pre-heating of the heat pump on the DHW water tank.

Select USE FOR DHW, then confirm for systems with water tank pre-heating via the heat pump.

ENABLE NIGHT REDUCT

This parameter reduces the noise made by the heat pump, by limiting the maximum operating frequency of the compressor in the time band defined with the NIGHT MODE START TIME and NIGHT MODE STOP TIME parameters.

REDUCED FREQUENCY (if ENABLE NIGHT REDUCT is active) - PDC type 0

This parameter becomes available when night-time reduction has been activated, and allows you to set the maximum compressor frequency percentage when this function is active. By setting this parameter at 100%, the function is deactivated.

- Setting range : [50% - 100%]
- Factory setting : [80%]

NIGHT MODE START TIME (if ENABLE NIGHT REDUCT is active)

This parameter sets the starting time for the limiting of the heat pump compressor frequency when the night-time reduction function is enabled

Range 00:00 - 23:30

Default 22:00

NIGHT MODE STOP TIME (if ENABLE NIGHT REDUCT is active)

This parameter sets the finishing time for the limiting of the heat pump compressor frequency when the night-time reduction function is enabled

Range 00:00 - 23

MIN EMERG OUT T

This parameter sets the minimum external temperature value below which the supplementary electric heater can operate (if available).

Setting range: [-20°C to 10°C]

Factory setting: [-10°C]

ENABLE CIRC ON/AUTO MODE

This parameter activates the heat pump circulator (ON). The circulator can only be activated with the system OFF and with the heating and DHW antifreeze functions disabled.

The electronic 3-way valve (if installed) is set to heating.

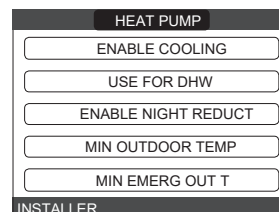
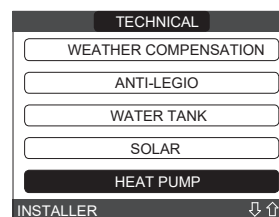
DHW MAX TEMP HP (if a water tank has been added)

This parameter sets the maximum temperature that can be reached in the water tank using the heat pump.

- Range [45°C - 65°C] (type 0 and 1) • 75°C (type 2)
- Default 50°C

ADD/REMOVE PHOTOVOLTAIC

This parameter activates/deactivates the PHOTOVOLTAIC menu for managing the photovoltaic input.



BACKUP TYPE (type 0 and 2)

This parameter defines the type of electric integration for the heat pump:

0 = no integration

1 = supplementary heating element.

BOOSTER OAT THRESHOLD (type 0 and 2)

This parameter sets the external temperature threshold below which both the heat pump and the supplementary electric heater are activated, unless the external temperature is higher than the MIN OUTDOOR TEMP or MIN DHW OUT TEMP.

BOOSTER DELAY (type 0 and 2)

This parameter sets the delay time for activating the supplementary heater. The delay time countdown begins when HP OUTLET TEMPERATURE < SETPOINT VALUE - BOOSTER DELTA TEMP.

BOOSTER DELTA TEMP (type 0 and 2)

This parameter sets the temperature hysteresis for activating the supplementary external heater.

OAT SENSOR TYPE (type 0)

This parameter sets the type of remote outdoor temperature sensor connected to the heat pump:

0 = no outdoor temperature sensor connected


1 = 10 KOhms

2 = 5 KOhms

3 = 3 KOhms.

4.13 Configuring the solar option

Although the operating parameters of the solar system are pre-set in the factory at the optimum working values, adjustments can still be made via the relative REC10MH menu.

 To activate the solar circuit, the **SOLAR PUMP MODE** parameter must be appropriately set.

- Access the parameters as explained in paragraph “3 Accessing the technical parameters”.
- Use the “up” and “down” keys to select the SOLAR item, then confirm.

The value of the following parameters can be modified:

REMOVE SOLAR PLANT

This function disables the operation of the solar system. When the solar system is disabled, the relative configuration menu is no longer accessible.

T MAX TANK

The maximum temperature in the upper part of the water tank.

- Setting range : [10°C - 130°C]
- Factory setting : 60°C

Note: with the electric configuration, this parameter can be found in the HW TANK menu.

DELTA T ON PUMP

The temperature difference between the collector probe and the lower water tank probe for starting the water tank thermal load (solar pump activation).

- Setting range : [4°C - 30°C]
- Factory setting : 8°C

Note: DELTA T ON PUMP > DELTA T OFF PUMP

DELTA T OFF PUMP

The temperature difference between the collector probe and the lower water tank probe for stopping the water tank thermal load (solar pump deactivation).

- Setting range : [4°C - 30°C]
- Factory setting : 4°C

Note: DELTA T OFF PUMP < DELTA T ON PUMP

INTEGRATION DELAY

The solar integration delay time applied by the boiler.

- Setting range : [0min - 180min]
- Factory setting : 0min

COLLECTOR T MIN

The minimum collector temperature for activating the solar collector antifreeze function.

- Setting range: [-30°C to +5°C]
- Factory setting: - °C (solar collector antifreeze disabled)

COLLECTOR T MAX

The maximum collector temperature for stopping the solar collector pump (system protection).

The pump is enabled again as soon as the collector temperature falls below [COLLECTOR T MAX - 10°C].

- Setting range : [80°C - 180°C]
- Factory setting : 110°C

Note: COLLECTOR T MAX > COLLECTOR T PROT

COLLECTOR T PROT

The maximum collector temperature for activating the solar collector cooling function.

- Setting range : [80°C - 180°C]
- Factory setting : 110°C

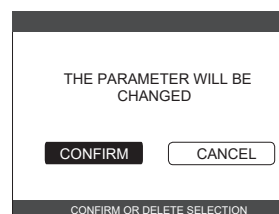
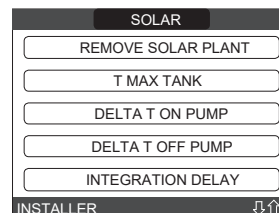
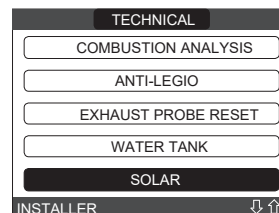
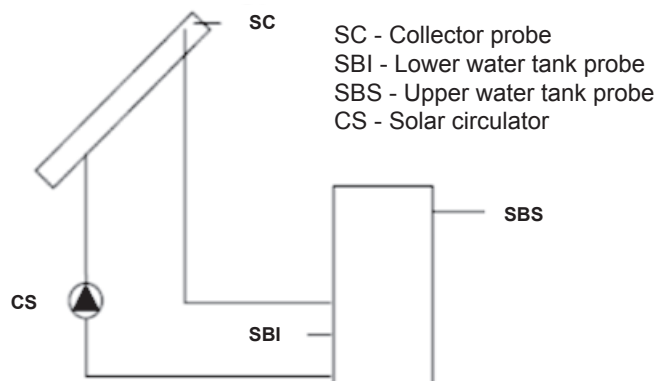
Note: COLLECTOR T PROT < COLLECTOR T MAX

COLLECTOR T AUTH.

The minimum temperature for enabling the solar collector pump.

- Setting range : [-20°C to +95°C]
- Factory setting : 40°C

Note: COLLECTOR T AUTH > COLLECTOR T LOCK



COLLECTOR T LOCK

The minimum temperature for disabling the solar collector pump.

- Setting range : [-20°C to +95°C]
- Factory setting : 35°C

Note: COLLECTOR T LOCK < COLLECTOR T AUTH

PWM COLL PUMP

Solar pump PWM time.

- Setting range : [0min - 30min]
- Factory setting: 0min (solar collector pump modulation function disabled)

TANK COOLING

Parameter for enabling/disabling the water tank cooling function. There are two possible options:

- FUNCTION NOT ACTIVE (factory setting)
- FUNCTION ACTIVE.

SOLAR PUMP MODE

Parameter for configuring the operation of the solar collector pump. There are three possible options:

- OFF (factory setting): the solar collector pump is always switched off
- ON: the solar collector pump is always switched on
- AUTO: the solar collector pump switches on and off as per the solar management rules

Solar system operation

If the following 4 conditions are all met:

- [SBS] < [T MAX TANK] - 5°C
- [SC] > [SBI] + [DELTA T ON PUMP]
- [SC] > [COLLECTOR T AUTH.]
- [SC] < [COLLECTOR T MAX]

the CS solar collector pump will be activated with a PWM level as described in the relative paragraph.

The CS solar collector pump is deactivated when one of the following 4 conditions arises:

- [SBI] > [T MAX TANK]
- [SC] < [SBI] + [DELTA T OFF PUMP]
- [SC] < [COLLECTOR T LOCK]
- [SC] > [COLLECTOR T MAX]

If there is a heat request from the upper water tank probe and the DHW timer programming allows it, the boiler is activated to heat the water tank but only [BOOSTER DELAY] minutes after the request has been received.

CS solar collector pump modulation function

If the conditions for activating the solar collector pump are met, it will be activated with a PWM level obtained from the difference (SC-SBI), as shown in the figure alongside.

This PWM has a percentage effect on the CS collector pump ON time in relation to a time value given by the [PWM COLL PUMP] parameter.

If [PWM COLL PUMP] = 0, modulation is deactivated and the collector pump remains constantly active when there is a request.

The following functions may also be active:

Water tank cooling function

If this function is active, the solar collector pump will be enabled to dispose of the heat from the water tank to the collector when all the following conditions are met:

- [SBS] > [T MAX TANK] + 5°C
- [SBI] > [SC]

The function only works in the night-time operating band [01:00 - 06:00].

Collector anti-freeze function

If this function is active, the solar collector pump will be enabled to heat the collector when all the following conditions are met:

- [SC] < [COLLECTOR T MIN]
- [SBI] > [SC]
- [SBI] > 5°C

Collector cooling function

If this function is active, the solar collector pump will be enabled to cool the collector when all the following conditions are met:

- [SBS] < [T MAX TANK + 10°C]
- [SC] < [COLLECTOR T MAX]
- [SC] > [COLLECTOR T PROT]
- [SBI] < [SC]

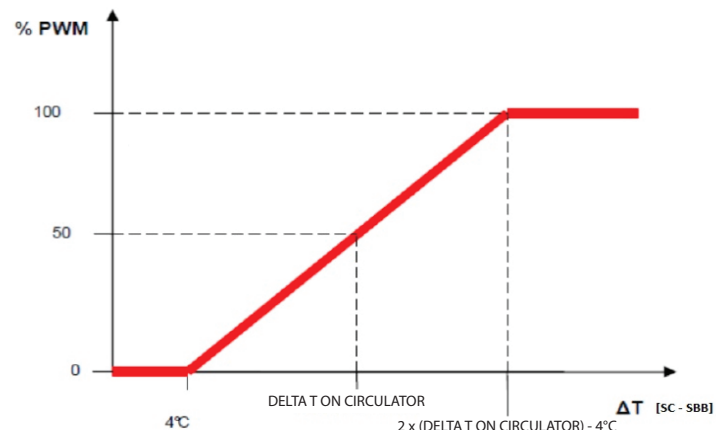
Collector anti-lockout pump function

The CS solar collector pump is activated for 30" when 24h have elapsed since its last activation.

Purge function

If the collector probe detects a temperature increase of at least 1°C in 30 minutes, the collector pump is activated for 15 seconds even if [SC] > [SBI].

If there is a fault on the SBS upper water tank probe, SBI lower water tank probe or SC collector probe, this not only triggers the normal fault management reaction but also disables solar preparation by stopping the relative CS solar pump.



4.14 Boiler configuration

In a hybrid system, the BOILER menu is used to modify the hydraulic configuration of the boiler without necessarily having to make a SYSTEM RESET.

The HYDRAULIC CONF. parameter can assume values between 0 and 4 with the following meanings:

- 0 = heating-only boiler
- 1 = instantaneous boiler with flow switch
- 2 = instantaneous boiler with flow meter
- 3 = heating-only boiler with water tank and water tank probe
- 4 = heating-only boiler with water tank and water tank thermostat

In a hybrid system with a boiler and heat pump, the REMOVE BOILER parameter in the BOILER menu can be used to **disable the boiler** and switch to the management of a fully electric system.

4.15 Time schedule function

Timer programming can be set for the heating and cooling functions and for water tank thermal loading from the boiler or from the heat pump, depending on the system configuration.

Note: if there is a zone request via the room thermostat and timer programming is required, the POR parameter must be set as explained in paragraph "4.2 Setting the zones".

To access this function:

- select MENU on the initial REC10MH screen, then press "ok"
- select TIME SCHEDULE and confirm

This menu gives access to timer programming display and adjustment for the heating/cooling of a zone or the loading of the water tank from the boiler or heat pump, depending on the system configuration.

For each day of the week it is possible to set up to 4 bands, with a starting time and an end time. A temperature can be defined and used as a setpoint for the periods that do not fall within the set time bands.

Note: for more details on the use of timer programming, refer to the REC10MH USER MANUAL.

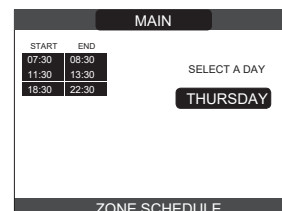
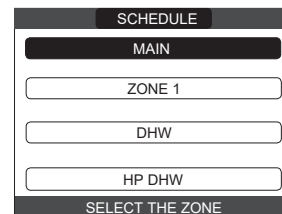
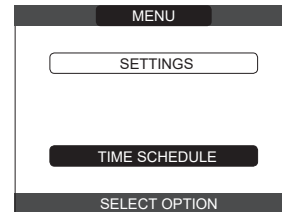
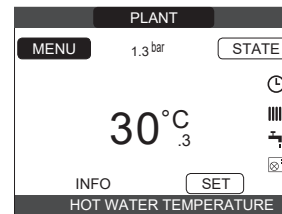
IMPORTANT

For the HP DHW parameter (available in the case of water tank pre-heating via the heat pump), there are two timer programmings: one for HEATING AND HOT WATER and the other for HOT WATER ONLY.

Select the required season (HOT WATER ONLY or HEATING AND HOT WATER) from the STATE/BOILER menu, then program the HP DHW parameter for each season.

If you want to exclude the water tank pre-heating function using the heat pump, you will have to delete all the time bands of the HP DHW parameter for the season in question.

ATTENTION: in HOT WATER ONLY, the parameter is factory set to keep timer programming active every day of the week from 05:00 to 08:00, to prevent continuous heat pump cycle reversals if the cooling function is active. If you want to alter this setting, contact After Sales Service.



4.16 REC10MH master used as an ambient regulator

In addition to its MACHINE INTERFACE functions, the REC10MH MASTER can also be used as a REGULATOR if it is installed in the room you want to control.

To set the REC10MH MASTER as an ambient regulator, proceed as follows:

- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- select INSTALLATION, ZONES MANAGER and MODIFY ZONE with the “up” and “down” keys, then confirm
- select the zone to be associated with the REC10MH with the “up” and “down” keys, then confirm
- use the “up” and “down” keys to select the REQUEST TYPE item, then confirm
- use the “up” and “down” keys to select the REC10MH item, then confirm

When the REC10MH is used as an AMBIENT REGULATOR, it will give you not only the main MACHINE INTERFACE screen already described but also an AMBIENT REGULATOR screen for the zone controlled.

Depending on the operating status set, the REC10MH will generate a heating request if the measured ambient temperature is lower than the required value (HEATING AND HOT WATER), or a cooling request if the measured ambient temperature is higher than the required value (HOT WATER ONLY).

The switch between this screen and the previous one is made by selecting the item at the top (the zone name or PLANT) and pressing “ok” or “back”.

In AMBIENT REGULATOR mode, the main screen shows the information associated with the zone. The top of the screen also shows the current date and time, as well as the detected external temperature.

The icons indicating the system's operating status are shown on the right hand side, and have the same meanings previously described.

The lower part of the screen displays info messages about the current system status, such as the current operating mode (intended as the zone's ambient adjustment mode).

This screen contains 4 elements that can be selected using the “up” and “down” keys, and activated by pressing “ok”.

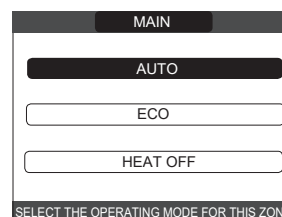
Namely:

- MODE
- AMBIENT setpoint
- INFO
- MENU

MODE

Unlike for the MACHINE INTERFACE function, in this case "mode" refers to the zone adjustment mode. The possible options are:

- AUTO: the ambient temperature is adjusted on the basis of the set weekly timer programming
- ECO: similar to AUTO mode, but with the temperature setpoint reduced by 3°C
- HEAT OFF: indicates that a heating request is never activated for that zone; a minimum ambient temperature of 8°C is guaranteed.



AMBIENT SETPOINT

By selecting the ambient setpoint, the user can activate COMFORT adjustment mode. This mode consists of setting a temperature setpoint value for a defined period. Once the temperature has been selected, you will be asked to enter the activation time of the period. Once the set time has elapsed, the mode switches back to the previous setting.

INFO

This screen displays the values of the system inputs, or other calculated values (such as the heating setpoint calculated on the basis of the set climatic curves). The values displayed are refreshed every 5 seconds.

MENU

The MENU function provides access to the SETTINGS and TIME SCHEDULE configuration.

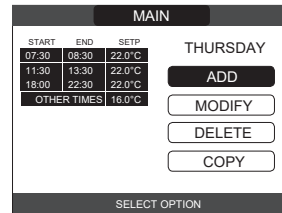
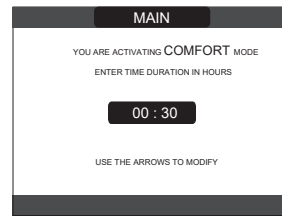
SETTINGS

From this menu, you can modify the time and date and menu language settings, along with backlighting activation activation time.

TIME SCHEDULE

This menu provides access to the display and modification of timer programming. Up to 4 time bands can be set for each day of the week, with a start and end time. In this operating mode, time schedule also allows you to define a temperature setpoint. A temperature can be defined and used as a setpoint for the periods that do not fall within the set time bands.

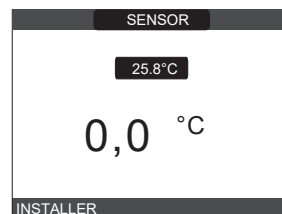
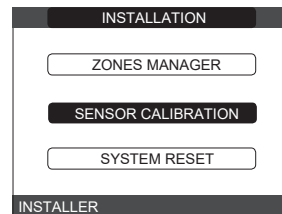
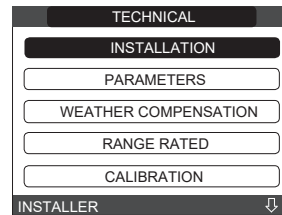
NOTE: for more details about the use of timer programming, see the REC10MH USER MANUAL.



CALIBRATING THE AMBIENT TEMPERATURE SENSOR

When the REC10MH is used as an AMBIENT REGULATOR too, it might be a good idea to calibrate its ambient temperature sensor. The calibration is made as follows:

- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- use the “up” and “down” keys to select INSTALLATION and then SENSOR CALIBRATION, then confirm
- define the required ambient temperature correction offset with the “up” and “down” keys, then confirm



NOTE: if the zone is controlled by an ambient probe, the same settings can be made via REC10MH MASTER, on the page of the zone in question.

4.17 Antilegio function on the DHW water tank

The system has an automatic antilegio function that destroys any bacterial proliferation in the water tank (if installed).

Depending on how the water tank is heated, the ANTI-LEGIO function will have the following characteristics:

- **if a heating-only boiler is connected:**

The DHW in the water tank is heated to 70°C and then kept at that temperature for 15 minutes. The function is not carried out if the temperature in the water tank remained above 70°C for at least 15min in the previous 24h (with daily programming) or in the last 7 days (with weekly programming)

- **if a heat pump is connected**


The DHW in the water tank is heated to 55°C and then kept at that temperature for 180 minutes. The function is not carried out if the temperature in the water tank remained above 55°C for at least 180min in the previous 24h (with daily programming) or in the last 7 days (with weekly programming)


- **with full electric**

The DHW in the water tank is heated to 55°C (or to a maximum of DHW MAX TEMP EH if the water tank is fitted with a supplementary electric heater) and then kept at that temperature for max. 180 minutes (see table A).

The maximum activation time of the antilegio cycle is 4 hours. If the function is interrupted because the time has been exceeded, the error message “ANTI-LEGIONELLA FUNCTION NOT COMPLETED” will appear on the display.

The system will try to implement the function again the following day.

 This function CANNOT be implemented in OFF mode.

 In the INFO menu, the NEXT ANTILEGIO parameter indicates the number of days left until the next antilegio cycle.

This function can be interrupted in advance in two different ways:

- setting the boiler to OFF
- selecting the DHW item in the STATE menu, and then ANTILEGIO CUT OFF.

If the function is interrupted, it will be repeated at the same time the next day, even if weekly programming is active.

To activate the ANTI-LEGIO function, go to the TECHNICAL menu and select the MENU item from the initial screen of the control device, then press “ok”.

- Access the parameters as explained in paragraph “3 Accessing the technical parameters”.

- Use the “up” and “down” keys to select the ANTI-LEGIO item, then confirm and personalise the following parameters:

FUNCTION NOT ACTIVE: the function is not carried out

DAILY FUNCTION: the antilegio cycle is run every day, at the time set in the TIME parameter

WEEKLY FUNCTION: the antilegio cycle is run every Wednesday, at the time set in the TIME parameter

ANTILEGIO FLOW: (only available if a heating-only boiler is connected to the water tank) allows the setting of the boiler temperature while the function is active (default 80°C)

TIME: allows you to set the time for running the cycle (default setting 3.00 a.m.)

ANTILEGIO TEMP: the antilegio temperature on the basis of the heat source used in the system: 70°C with a boiler, or 55°C with a heat pump (type 0 and 1) • 75°C (HP type 2).

The activation time of the anti-egio cycle varies according to the temperature set in the ANTILEGIO TEMP parameter, as shown in the table.

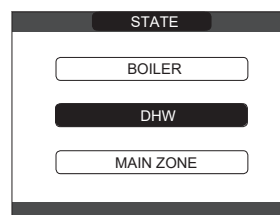
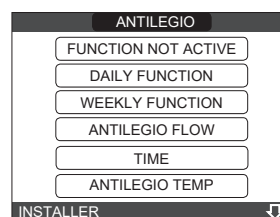
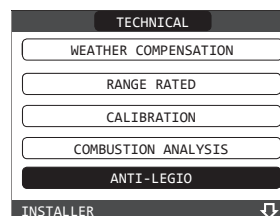
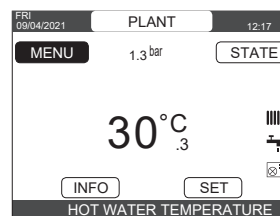



table A	
ANTILEGIO TEMP	cycle activation time
ANTILEGIO TEMP < 58°C	180min
58°C < ANTILEGIO TEMP < 62°C	60min
62°C < ANTILEGIO TEMP < 66°C	30min
66°C < ANTILEGIO TEMP < 75°C	15min
ANTILEGIO TEMP > 75°C	1 min

4.18 DHW Boost function for the *electric* system


When activated, the DHW BOOST function forces the system to heat the water in the water tank so it is ready for use as quickly as possible.

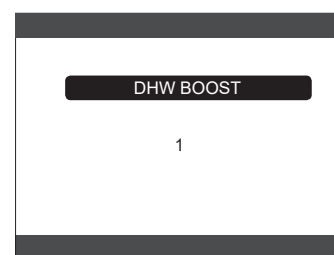
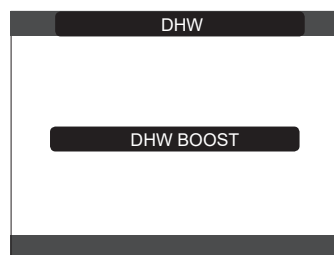
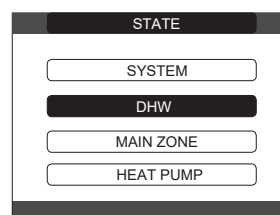
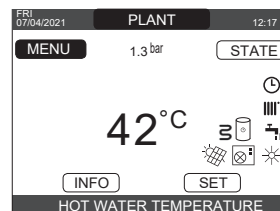
This function can be personalised on the basis of the system and the user's specific needs.

In fact the water tank setpoint temperature is equal to the value set for the BOOST SETPOINT parameter, but the BOOST ACTIVE TIME parameter can be set to define the maximum activation time of the DHW BOOST function.

 This function is only available if there is a DHW water tank in the system.

When the DHW BOOST function is enabled, the letter **B** will appear on the display; the **B** and the water tank icon will flash when the function is being used.

 The function is not active with the OFF status.



In this configuration, the STATE menu is modified as follows:

	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCESS LEVEL NOTES
STATE				
BOILER	OFF	OFF/SUMMER/WINTER		USER
DHW	AUTO	AUTO/MANUAL		USER
ANTILEGIO CUT OFF				USER, when ANTILEGIONELLA in progress
DHW BOOST	0	0	1	USER: (only full electric)
MAIN ZONE	AUTO	AUTO/MANUAL/OFF (if POR=0)		USER
HEAT PUMP	ON	ON/OFF (if POR=1)		on hybrid only if heat pump added
ACTIVATE/DEACTIVATE NIGHT REDUCTION	FUNCTION NOT ACTIVE	FUNCTION ACTIVE	FUNCTION NOT ACTIVE	USER
NIGHT MODE START TIME	20:00	00:00	23:59	USER: only if NIGHT REDUCTION active
NIGHT MODE STOP TIME	09:00	00:00	23:59	USER: only if NIGHT REDUCTION active

and the SET menu includes the items BOOST SETPOINT and BOOST ACTIVE TIME.

	DEFAULT VALUE FACTORY SET	MINIMUM VALUE	MAXIMUM VALUE	ACCESS LEVEL NOTES
SET				
HEATING	80,5 (HT) - 45°C (LT)	MIN CH SET	MAX CH SET	USER
DHW	0°C	-5°C	+5°C	USER, if EXTERNAL SENSOR connected and REQUEST TYPE TA
COOLING	60,0°C	37,5°C	60°C	USER
PREHEATING	0	-5	+5	if you work at a fixed point if you work with climatic curves
WATER TANK SETPOINT	0	0	2	USER (only instantaneous boiler)
BOOST SETPOINT	60°C	37,5°C	60°C	USER (with water tank)
BOOST ACTIVE TIME	60°C	50°C	80°C	USER (only full electric)
	15min	1min	30min	USER (only full electric)

4.19 Error history

The ERROR HISTORY function is enabled automatically only after the system has been powered for at least 2 consecutive hours, during this time any alarms that should occur would not be stored in the “alarm log”. The alarms can be displayed in chronological order, from the most recent to the oldest, up to a maximum of 5 alarms; to view the alarm history:

- carry out the procedure for accessing the parameters as indicated in paragraph “3 Accessing the technical parameters”
- select the ERROR HISTORY item with the “up” and “down” keys, confirming the choice
- scroll the alarm history with the “up” and “down” keys; for each alarm, a sequential number, anomaly code and date and time when the alarm occurred will be displayed.

Note: once enabled, the ERROR HISTORY function can no longer be disabled; there is also no procedure that provides for the resetting of the alarm history.

If an alarm occurs several times in a row, it is stored only once.

4.20 Screed heater function

For low-temperature zones, the systems has a “screed heater” function that can be activated in the following way:

- set the boiler status to OFF
- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- use the “up” and “down” keys to select the SCREED HEATING item, then confirm
(Note: the SCREED HEATINGR item is not available if the boiler is not OFF)
- select ACTIVATE FUNCTION with the “up” and “down” keys, then confirm to implement the activation
- select DEACTIVATE FUNCTION with the “up” and “down” keys, then confirm to implement the deactivation.

When the screed heater function is active, this is signalled on the main screen by a scrolling message at the bottom of the page (SCREED HEATING FUNCTION IN PROGRESS - CH TEMPERATURE) and the red and green LEDs flashing alternately on the electronic board with a frequency of 1 sec ON - 1 sec OFF.

The screed heater function lasts 168 hours (7 days) during which, in the zones configured as “low temperature”, a heating request is simulated with an initial zone delivery setpoint of 20°C, which is then increased as shown in the table alongside.

Accessing the INFO menu from the main page of the REC10MH, you can see the SCREED HEATING HOURS value regarding the number of hours since the start of the function.

Once activated, this function takes priority; if the machine is shut down by disconnecting the power supply, when it is restarted the function picks up from where it was interrupted.

The function can be interrupted before its end by putting the machine in a condition other than OFF or else by selecting DEACTIVATE FUNCTION from the relative menu.

Note: the temperature and increase values can only be set at different values by qualified personnel, and only if strictly necessary. The manufacturer declines all responsibility if the parameters are incorrectly set.

For information on the boiler and heat pump integration rules for the screed heater function in hybrid systems, refer to the chapter “8 RULES FOR BOILER AND HEAT PUMP INTEGRATION IN HYBRID SYSTEMS”.

For information on the integration rules between the system and the system electrical resistance, refer to the chapter “9 RULES FOR SYSTEM, DHW ELECTRIC HEATER INTEGRATION AND SYSTEM ELECTRIC HEATER”.

4.21 DHW parameters

Access the TECHNICAL  PARAMETERS menu and select to set the following special functions:

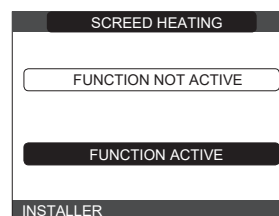
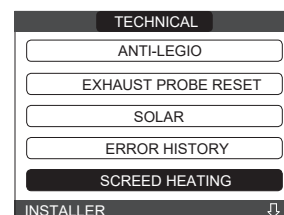
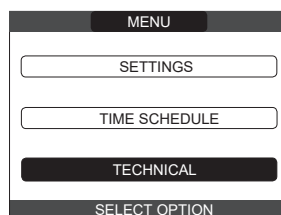
MAX SETPOINT DHW: this parameter allows you to specify the maximum DHW setpoint value that can be set (range 49°C - 60°C).

MIN SETPOINT DHW: this parameter allows you to specify the minimum settable heating setpoint value (range 34.5° - 49°C).

DHW DELAY: activating this function a delay is introduced, equal to the value set in the parameter, on the activation of the pump and fan in response to a request for domestic hot water.

SMART_FAN: by activating this function, the fan is kept at minimum (MIN) and not switched off in the event of burner off due to overtemperature in DHW mode (with request still present).

THERMOSTATS ABSOLUTE: by activating this function, the ON/OFF sanitary thermostats of the burner pass from the correlated value to the absolute one.



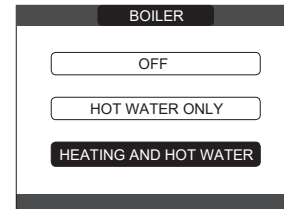
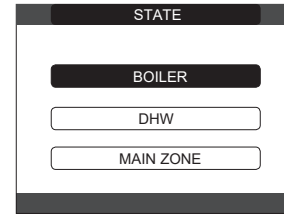
DAY	TIME	TEMPERATURE
1	0	20°C
	6	22°C
	12	24°C
2	18	26°C
	0	28°C
3	12	30°C
	0	32°C
4	0	35°C
5	0	35°C
6	0	30°C
7	0	25°C

SWING REDUCTION: by activating this function the boiler configures itself on ABSOLUTE THERMOSTATS in the event of burner off due to overtemperature in DHW (with withdrawal in progress), when the burner is off the fan is kept at minimum. The thermostats go back to being “correlated” at the end of the sampling.

5 STARTING UP THE SYSTEM

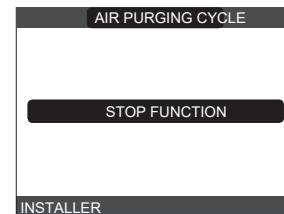
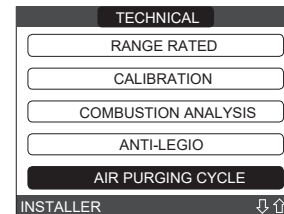
On the initial REC10MH screen, under the STATE item, select BOILER (or SYSTEM in the case of electric configuration) and set the system on HOT WATER ONLY or HEATING AND HOT WATER.

- access the parameters as explained in paragraph “3 Accessing the technical parameters”



- every time the system is started up (power on), an air purging cycle is run if a boiler is installed (hybrid system); if necessary, this cycle can be interrupted by going to the TECHNICAL menu, selecting AIR PURGING CYCLE and then STOP FUNCTION with the “up” and “down” keys, and then confirming

The REC10MH will briefly display a standby message, after which it will automatically return to the main screen.

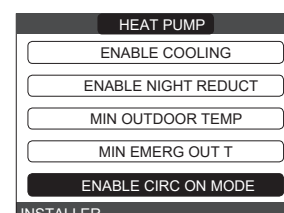
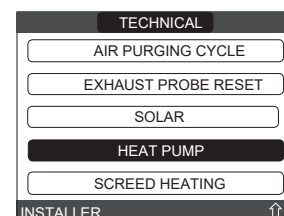
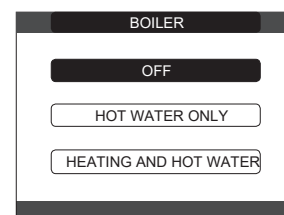


ACTIVATING THE HEAT PUMP WATER CIRCULATOR


To help the purging of the heat pump hydraulic circuit, the activation of the pump's water circulator can be manually forced (note that this function is not available when a bleed, flue cleaning or boiler anti-freeze cycle is being run):


- set the boiler status to OFF
- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- select HEAT PUMP with the “up” and “down” keys, then confirm
- select ENABLE CIRC ON MODE with the “up” and “down” keys, then confirm.

The heat pump circulator will carry on working until AUTO status is set again, or until the HEATING AND HOT WATER or HOT WATER ONLY status is set for the boiler. The activation of the function is indicated by a scrolling message at the bottom of the main REC-10MH screen.



5.1 Setting the operating mode

HOT WATER ONLY : selecting HOT WATER ONLY operating mode in the STATE menu, the traditional DHW-only function will be activated (plus the cooling function if the heat pump is enabled). The REC10MH normally shows the temperature of the water in the water tank (if installed) unless there is a heating or cooling request in progress, in which case the delivery temperature of the generator active in that moment is displayed.


HEATING AND HOT WATER : selecting HEATING AND HOT WATER operating mode in the STATE menu, the heating and DHW functions are activated. The REC10MH normally shows the temperature of the water in the water tank (if installed) unless there is a heating request in progress, in which case the delivery temperature of the boiler or heat pump (depending on which heat generator is active in that moment) is displayed.


ADJUSTING THE HEATING WATER TEMPERATURE WITH AN OUTDOOR TEMPERATURE SENSOR CONNECTED

When an outdoor temperature sensor is installed, the delivery temperature is automatically selected by the system, which quickly adjusts the ambient temperature according to the variations in the outdoor temperature.

If you want to change the temperature value from that automatically calculated by the electronic board, the HEATING setpoint can be modified by selecting SET on the main REC10MH screen and defining the required comfort level within the range (-5 to +5) (see the "Setting temperature adjustment" paragraph as well).

Note: when there is an outdoor temperature sensor connected, the zones can still be made to work with a fixed point by setting the MIN CH SET and MAX CH SET values at the required HEATING setpoint (see the ZONE CONFIGURATION paragraph as well).

 If a boiler is installed, the heat pump is disabled if the delivery temperature is higher than 55°C.

 In the event of an outdoor temperature sensor fault, system operation is still guaranteed. The outdoor temperature sensor value is no longer shown at the top right of the main screen. The choice of the best heat source is made by the outdoor temperature sensor of the heat pump, and the zones work with a fixed point.

In this case, the heating setpoint can be set by selecting SET on the main REC10MH screen and then defining the required value within the range [40°C - 80.5°C] for high-temperature systems, or [20°C - 45°C] for low-temperature systems.

ADJUSTING THE COOLING WATER TEMPERATURE

The COOLING setpoint can be set by selecting SET on the main REC10MH screen, selecting the parameter, defining the required value within the range available, and then confirming:

- **Temperature adjustment not active (fixed point)**

Setting range [4°C - 20°C]

Factory setting [18°C]

- **Temperature adjustment active**

Setting range [-5°C to +5°C]

Note: for more details, refer to paragraph "4.5 Setting the delivery temperature for zones in cooling mode (with heat pump activated in cooling mode)".

ADJUSTING THE DHW TEMPERATURE

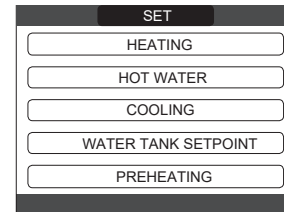
Of the water tank

- **Configuration with water tank connected to solar system and/or combined heat pump+boiler**

The HW TANK setpoint (i.e. the temperature of the water in the water tank) can be defined by selecting SET on the main REC10MH screen, selecting the parameter, defining and confirming the required value within the range available [37.5°C - 60°C] (type 0 and 1) • 75°C (type 2). Factory setting 50°C.

- **Configuration with water tank connected to a heating-only boiler**

The DHW setpoint (i.e. the temperature of the water in the water tank) can be defined by selecting SET on the main REC10MH screen and defining the required value within the range available [37.5°C ÷ 60°C] (type 0 and 1) • 75°C (type 2).



Of the boiler (in combined version)

Under the item DHW, the setpoint for the temperature of the water leaving the boiler can be defined by selecting SET on the main REC10MH screen, selecting the parameter, choosing and confirming the desired value within the range set in the MIN SETPOINT DHW and MAX SETPOINT DHW parameters (see paragraph "4.21 DHW parameters").

To the circuit

If the system is fitted with a DHW mixer valve, this can be adjusted to set the required delivery temperature to the circuit.

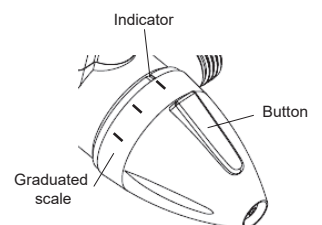
PREHEATING (with a combined boiler)

The PREHEATING function can be accessed by selecting SET on the main REC10MH screen.

Setting PREHEATING = 1 the boiler's domestic hot water function activates. This function keeps the water in the DHW exchanger hot, to reduce standby times when a request is made. When the pre-heating function is enabled, the letter P comes on with a steady light above the DHW icon. During burner ignition following a pre-heating request, the letter P will begin to flash. To deactivate the pre-heating function, set the parameter to PREHEATING = 0; the symbol P switches off.

This function is not active when the boiler is OFF.

Factory setting 0.



5.2 Starting up the appliance

If a room thermostat or timed thermostat is installed, or the REC10MH MASTER is set as an ambient regulator, one of these devices must be set at a temperature higher than the ambient value, and the time band (if enabled) must be set on "request active" to generate a heating request in HEATING AND HOT WATER; vice versa, the same device will generate a cooling request in HOT WATER ONLY if it is set at a temperature lower than the ambient value, and the time band (if enabled) is set on "request active". The system will remain in standby until, following a request, the most suitable generator (for the type of request, the selected temperatures and the measured outdoor temperature) is activated. If the boiler is working, the REC10MH screen will show the flame icon, whereas if the heat pump is working the relative icon will be flashing.

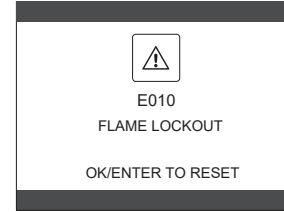
If there are any firing or operating faults on the boiler or heat pump, the appliance will make a "SAFETY STOP"; the fault signalling triangle will flash on the REC10MH. To identify the fault codes and reset the appliance, refer to the "Signals and faults" paragraph.

5.3 Reset function

In the event of a lockout, you can try to reset normal appliance operation by pressing "ok" on the REC10MH when the fault message is displayed to reset the alarm in progress.

If the reset attempts are not successful, contact your local After Sales Service.

For more details about faults and the reset procedure, refer to chapter "13 Signals and faults".



6 INFO

Press the INFO key on the REC10MH display to see a list of information items relating to system operation. Switch from the visualisation of one parameter to the next or previous one using the "up" and "down" keys respectively.



Some info might not be available, depending on the system configuration

- SCREED HEATING HOURS
- CH SENSOR
- RETURN SENSOR
- DHW SENSOR
- HW TANK HIGH
- HW TANK LOW
- COLLECTOR TEMP
- EXHAUST SENSOR
- OUTDOOR TEMP PROBE
- FILTERED OUTDOOR TEMP
- FLOWMETER/DHW SETPOINT
- FAN SPEED
- ZONE 1 OUTLET
- ZONE 2 OUTLET
- EXHAUST SENSOR HOURS
- SET MAIN ZONE
- SET ZONE 1
- SET ZONE 2
- WATER PRESSURE
- CURVE (combustion - only with AKM boiler card)
- HP OUTLET
- HP RETURN
- HP OUTDOOR TEMP
- LOW PRESS TUBE REFR
- HIGH PRESS TUBE REFR
- CONDENSER REFR
- EXCHANGER REFR
- HP OPERATIVE MODE (HP control panel: MENU > OPERATION PARAMETER > OPERATION MODE)
- HP FREQUENCY
- HP COMPRESSOR TIME
- HP PUMP TIME
- HP FLOW SWITCH
- HP CAPACITY
- DHW BOOST
- EXCHANGE SERVICE
- DHW HOURS
- CH HOURS
- DHW MODULATION
- CH MODULATION
- CH SUPPLY SENSOR AVG
- DHW SUPPLY SENSOR AVG
- CH RETURN SENSOR AVG
- DHW RETURN SENSOR AVG
- GAS VALVE ON CYCLE
- IONO
- SYPHON FILL(HIGH EFFICIENCY)
- HP SETPOINT (type 0)
- INSTANTANEOUS HP CAPACITY (type 1)
- ENERGY CONSUMPTION INFO (type 1)

Description		Heat pump type
Type 0	→	Hydronic Unit B HE Hydronic Unit LE B - Vega B
Type 1	→	HYDRO UNIT M - Vega M
Type 2	→	HYDRO UNIT P

7 INFO COMBUSTION (for AKM boiler card)

The INFO button on the REC10MH displays a list of information related to the combustion operation. Switching from one parameter to the next is done by pressing the corresponding “up” and “down” buttons.

INFO page 1

1	Number of calibrations at minimum power (correct combustion test identified with code 18)
2	Number of calibrations at the speed of 3500 RPM (correct combustion test identified with code 18)
3	Number of calibrations at default power RANGE RATED (correct combustion test identified with code 18)
4	Number of calibrations at maximum boiler output (correct combustion test identified with code 18)
5	Last calibration [1] PowMin - [2] 3500rpm - [4] Range Rated - [8] PowMax
6	Peak Iono of the last calibration
7	Reference value of PWM effort fan control
8	PWM fan control
9	Number of DataFlash AB writes
10	Number of DataFlash CD writes

INFO page 2.A

11.A	Iono curve correction at minimum power (defined with correct combustion test 18)
12.A	Iono curve correction at the speed of 3500 RPM (defined with correct combustion test 18)
13.A	Iono curve correction at default power RANGE RATED (defined with correct combustion test 18)
14.A	Iono curve correction at maximum boiler output (defined with correct combustion test 18)
15.A	Calibration test check performed [1] PowMin - [2] 3500rpm - [4] Range Rated - [8] PowMax
16.A	Time counter [min] from last calibration to minimum power
17.A	Time counter [min] from last speed calibration of 3500 RPM
18.A	Time counter [min] from last calibration to default power RANGE RATED
19.A	Time counter [min] from last calibration to boiler maximum
20.A	Time counter [min] restart timing of calibration (maximum timeout to make the 4 calibrations)

INFO page 2.B (Identified with the value 12345 on line 11 - It changes status automatically every 10 seconds)

11.B	12345
12.B	Iono Curve Auto-Correction Number at minimum power (auto correction for alarm)
13.B	Iono Curve Auto-Correction Number at the speed of 3500 RPM (auto correction for alarm)
14.B	Iono Curve Auto-Correction Number at default power RANGE RATED (auto correction for alarm)
15.B	Iono Curve Auto-Correction Number at maximum output (auto correction for alarm)
16.B	Maximum power calibration coefficient
17.B	Range Rated power calibration coefficient
18.B	Minimum power calibration coefficient
19.B	FIX CO2 ALL PLUS value
20.B	DEC CO2 ALL PLUS value

INFO page 3 (Chronological order of the last 5 alarms/tests and related FAN speeds)

21	Identification code (17-18) of a test performed to verify correct combustion # 1
22	RPM/100 where alarm and/or test # 1 occurred
23	Alarm code and/or identification code (17-18) of a test performed to verify correct combustion # 2
24	RPM/100 where alarm and/or test # 2 occurred
25	Alarm code and/or identification code (17-18) of a test performed to verify correct combustion # 3
26	RPM/100 where alarm and/or test # 3 occurred
27	Alarm code and/or identification code (17-18) of a test performed to verify correct combustion # 4
28	RPM/100 where alarm and/or test # 4 occurred
29	Alarm code and/or identification code (17-18) of a test performed to verify correct combustion # 5
30	RPM/100 where alarm and/or test # 5 occurred

8 RULES FOR BOILER AND HEAT PUMP INTEGRATION IN HYBRID SYSTEMS

DHW request

DHW requests can be met with the system in either HEATING AND HOT WATER or HOT WATER ONLY mode; they cannot be met when the system is OFF.



In normal conditions, with the appliance OFF, the boiler or heat pump may switch on to activate the anti-freeze function or the combustion analysis function. In both cases, the presence of the flame and the activation of the heat pump are indicated by the relative icon and the type of function in progress is shown in the scrolling message at the bottom of the REC10MH screen.

Configuration with DHW water tank (solar and/or heat pump) + combined boiler

The water tank DHW is integrated by the solar circuit (if installed) and/or the heat pump (if the necessary conditions are met).

If the water leaving the water tank is not hot enough ($<48^{\circ}\text{C}$ if the solar diverter mixing valve kit is present), the boiler will increase the heat on the basis of the setpoint defined. In any case, it is the mixer valve in the system (installed downstream of the DHW circuit) that defines the final temperature of the DHW sent to the circuits. The use of the heat pump for DHW is not enabled if the outdoor temperature is lower than the value of the MIN DHW OUT TEMP parameter. In the event of simultaneous requests, the boiler can meet the DHW request while the heat pump is dealing with the heating or cooling request.

Configuration with DHW water tank (heating-only boiler and heat pump)

The domestic hot water integration of the tank is carried out by the boiler and by the solar if the required conditions are met. For the boiler a DHW request always takes priority over a heating request; the system can meet a DHW request with the boiler and the heat pump. The boiler will fill the upper part of the water tank so as to keep the temperature above the DHW setpoint value defined by the user. On the other hand, the heat pump will fill the lower part of the water tank to keep the temperature above the DHW setpoint value defined by the user minus a programmable offset value from the DHW OFFSET parameter (the factory setting is 10°C).

The use of the heat pump for DHW is not possible if the outdoor temperature is lower than the value of the MIN DHW OUT TEMP parameter. Only if there is a boiler fault must the measured outdoor temperature be higher than the value of the MIN EMERG OUT T parameter. In the event of simultaneous requests (DHW and heating or cooling), the boiler can meet the DHW request while the heat pump manages the heating or cooling request which, for the heat pump, has priority.

Configuration with DHW water tank (heating-only boiler and solar circuit)

The domestic hot water integration of the tank is carried out by the boiler and by the solar if the required conditions are met. For the boiler, a DHW request always takes priority over a heating or cooling request; the system can meet a DHW request with the boiler ONLY. In the event of simultaneous requests, the boiler can meet the DHW request while the heat pump is dealing with the heating or cooling request.

Heating request

Heating requests can be met with the system in HEATING AND HOT WATER mode; they cannot be met when the system is in HOT WATER ONLY mode or OFF. Generally speaking, when the system receives a heating request it favours the use of the heat pump once the outdoor temperature and required water temperature (setpoint) values have been verified. If (FILTERED OUTDOOR TEMP $>$ MIN OUTDOOR TEMP) and (SETPOINT + SP INCR HIGH TEMP $\leq 60^{\circ}\text{C}$ (HP type 0 and 1) $\bullet \leq 75^{\circ}\text{C}$ (HP type 2)), the heat pump is activated; if within a certain time (set in the parameter BOILER INTEGR DELAY) the heat pump delivery probe cannot reach a temperature value $>$ the setpoint - INTEGRATION OFFSET, the heat pump is switched off and the boiler is activated.

To avoid switching the heat pump and boiler on and off continuously, the boiler is kept activated for a minimum time (set in the parameter BOILER INTEGR DELAY) after which, if the boiler delivery probe detects a temperature $>$ the setpoint (setpoint + parameter SP INCR HIGH TEMP, if the request is made from a zone set as HIGH TEMPERATURE), the boiler will be deactivated and the heat pump will be switched back on.

In the switch from one heat generator to the other, there is a standby time (BOILER WAITING and HEAT PUMP WAITING parameters, factory setting 2 min) during which both generators are switched off to allow any active post-circulation to be completed.

The main REC10MH screen shows the delivery temperature of the generator which is working in that moment.

If (FILTERED OUTDOOR TEMP $<$ MIN OUTDOOR TEMP), or (SETPOINT + SP INCR HIGH TEMP $>$ 60°C (HP type 0 and 1) $\bullet > 75^{\circ}\text{C}$ (HP type 2)), or there is a heat pump definitive fault, the system switches the boiler on after the time set in WARNING VALIDATION + BOILER WAITING.

If there is a boiler fault, the heat pump can be switched on after the time set in BOILER WAITING (factory setting 2 min) if (FILTERED OUTDOOR TEMP $>$ MIN EMERG OUT T) and (SETPOINT + SP INCR HIGH TEMP $\leq 60^{\circ}\text{C}$ (HP type 0 and 1) $\bullet \leq 75^{\circ}\text{C}$ (HP type 2)).

Cooling request

Cooling requests can be met with the system in HOT WATER ONLY mode, if the heat pump is enabled for cooling; they cannot be met when the system is in HEATING AND HOT WATER mode or OFF. Cooling requests can only be met with the heat pump.

Heat pump defrost

During heating operation, the heat pump might activate a COOLING cycle to free the external coil of any possible ice that may form in particularly low outdoor temperatures.

In these conditions, the heat pump cannot guarantee maintenance of the required water temperature, which will be sent to the boiler (if present). The COOLING cycle is signalled by a scrolling message at the bottom of the REC10MH master screen.

Zones with an active heat request are kept open to ensure the circulation of the minimum water flow rate required by the heat pump in order for the defrost function to be carried out correctly.

Heat pump anti-freeze

This function is active in cooling mode, to protect the pump heat exchanger from the risk of freezing. If the protection intervenes, the REC10MH signals it with a scrolling message at the foot of the page.

In this condition, the heat pump cannot guarantee maintenance of the required water temperature, which will be sent to the boiler (if present).

Photovoltaic system

The photovoltaic input is considered closed if it is detected in that state for a time longer than PV ON VALIDATION (1min, programmable), or open if it is detected in that state for a time longer than PV OFF VALIDATION (30min, programmable).

If the contact is considered closed:

- the icon on the main screen flashes (the icon is also shown - not flashing - on the standby screen);
- the MIN OUTDOOR TEMP value is reduced by the ELECTRIC CONVENIENCE value, but checking that it doesn't fall below the MIN EMERG OUT T limit;
- the MIN DHW OUT TEMP value is reduced by the ELECTRIC CONVENIENCE value, but checking that it doesn't fall below the MIN EMERG OUT T limit.

If the photovoltaic input is considered open:

- the PHOTOVOLTAIC icon stops flashing;
- the original cost effectiveness points are reset.

9 RULES FOR SYSTEM, DHW ELECTRIC HEATER INTEGRATION AND SYSTEM ELECTRIC HEATER

DHW REQUEST

DHW requests can be met with the system in either HEATING AND HOT WATER or HOT WATER ONLY mode; they cannot be met when the system is OFF.



In normal conditions, with the appliance OFF, the heat pump may switch on to activate the anti-freeze function or the combustion analysis function. In both cases, this fact is signalled by the relative icon and the type of function in progress is indicated in the scrolling message at the bottom of the REC10MH screen.

DHW integration works as per the settings in MENU/ TECHNICAL/HW TANK/DHW INTEGRATION TYPE

DHW INTEGRATION TYPE = 0

There is no DHW electric heater in the system. Water tank filling, the DHW BOOST function and the ANTILEGIONELLA function are carried out by the heat pump alone.

The maximum temperature value set in the WATER TANK SETPOINT parameter will be lower (<) than the value set in the DHW MAX TEMP HP parameter.

DHW INTEGRATION TYPE = 1

There is a DHW electric heater in the system. The water tank is filled by the heat pump ALONE. The maximum temperature value set in the WATER TANK SETPOINT parameter will be lower (<) than the value set in the DHW MAX TEMP HP parameter.

The DHW BOOST and ANTILEGIONELLA functions are carried out with the heat pump if the setpoints are lower (<) than the DHW MAX TEMP HP value, or with the electric heater if the setpoints are higher (>) than the value set in the > DHW MAX TEMP HP parameter.

DHW INTEGRATION TYPE = 2

There is a DHW electric heater in the system. The water tank is filled by the heat pump until the DHW MAX TEMP HP is reached, after which the heat pump is switched off and the electric heater is used until (WATER TANK SETPOINT + DHW TANK OFF HYST) is reached. Otherwise, the electric heater is used from the start.

The DHW BOOST and ANTILEGIONELLA functions follow the rule described above.

DHW INTEGRATION TYPE = 3

There is a DHW electric heater in the system. The water tank is filled by the heat pump and electric heater simultaneously. When DHW MAX TEMP HP is reached, the heat pump is switched off and the electric heater continues by itself.

The DHW BOOST and ANTILEGIONELLA functions follow the rule described above.

DHW INTEGRATION TYPE = 4

There is a DHW electric heater in the system. The water tank is filled by the electric heater alone.

The maximum temperature value set in the WATER TANK SETPOINT parameter will be lower (<) than the value set in the DHW MAX TEMP EH parameter.

The DHW BOOST and ANTILEGIONELLA functions follow the rule described above.

DHW request with heat pump in stand-by

The heat pump is kept active in DHW mode until the DHW MAX TEMP HP is reached in the water tank, after which it goes into standby and the DHW supplementary heater is activated until the DHW MAX TEMP EH value is reached.

DHW request with heat pump in heating mode

The heat pump is activated in DHW mode until the DHW MAX TEMP HP is reached in the water tank, after which it returns to the system and the DHW supplementary heater is activated until the DHW MAX TEMP EH value is reached.

DHW request with heat pump in cooling mode

The heat pump carries on working on the system in cooling mode while the DHW supplementary heater is activated until the DHW MAX TEMP EH value is reached.

ELECTRIC RESISTANCE INTEGRATION RULES

Type 0 and 2: the integration of the electric resistance can be configured via the REC10MH.

For the operating logics, refer to the parameters described below:

BACKUP TYPE (type 0 and 2)

This parameter defines the type of electric integration for the heat pump:

0 = no integration

1 = supplementary heating element

BOOSTER OAT THRESHOLD (type 0 and 2)

This parameter sets the external temperature threshold below which both the heat pump and the supplementary electric heater are activated, unless the external temperature is higher than the MIN OUTDOOR TEMP or MIN DHW OUT TEMP.

BOOSTER DELAY (type 0 and 2)

This parameter sets the delay time for activating the supplementary heater. The delay time countdown begins when HP OUTLET TEMPERATURE < SETPOINT VALUE - BOOSTER DELTA TEMP.

BOOSTER DELTA TEMP (type 0 and 2)

This parameter sets the temperature hysteresis for activating the supplementary external heater.

Type 1: the integration of the electrical resistance can be configured via remote control of the heat pump itself.

Refer to the heat pump manual for the integration logic between HP and system electrical resistance.

CONFIGURING THE PHOTOVOLTAIC SYSTEM

The closure of the photovoltaic contact indicates a condition where the energy production is not being exploited by the system so the use of the resistor R is allowed, to transform the electricity into a store of high-temperature DHW.

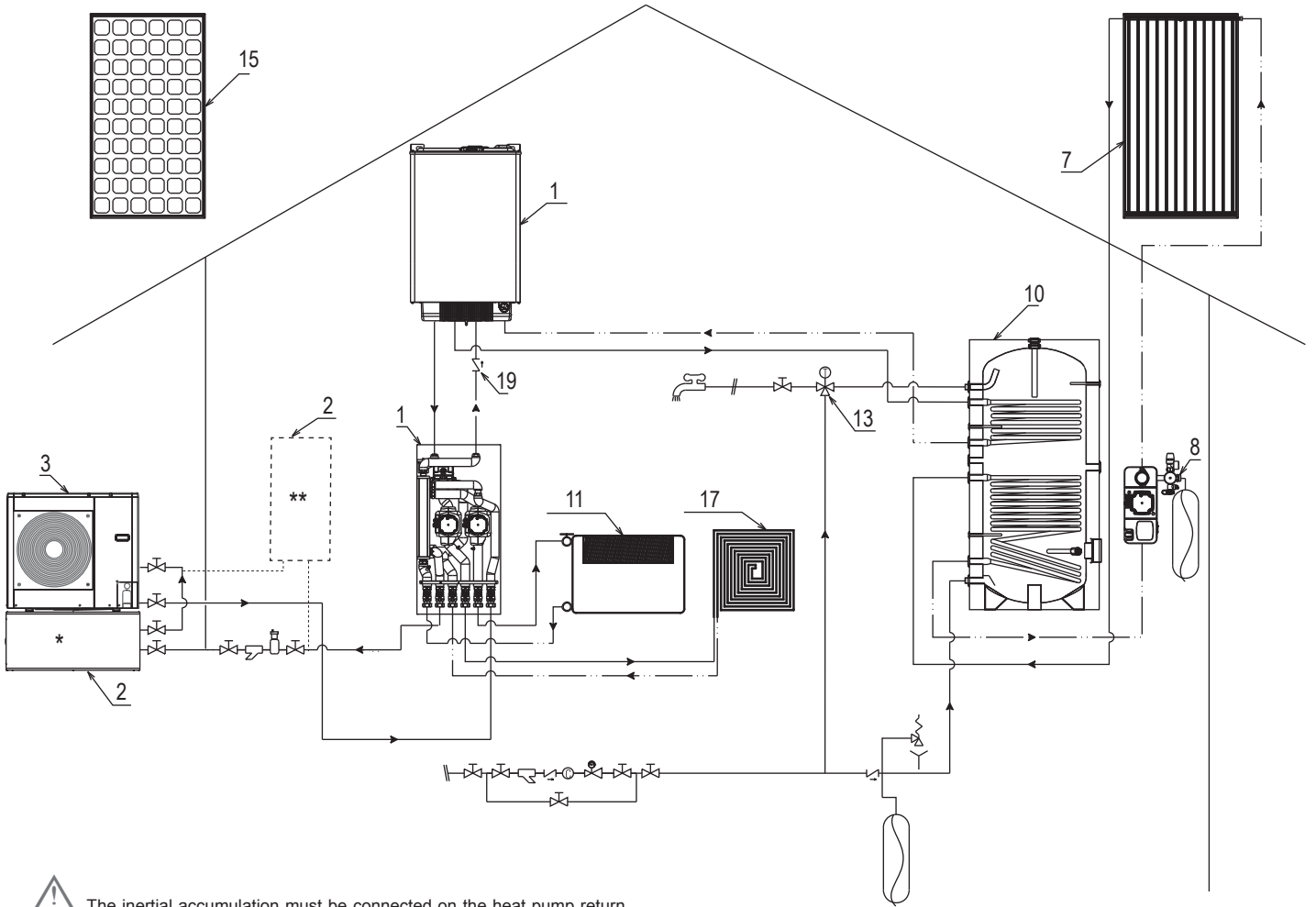
In this situation, the system uses electric integration in the DHW water tank on the basis of the functional rules described above.

HYDRAULIC DIAGRAMS KEY

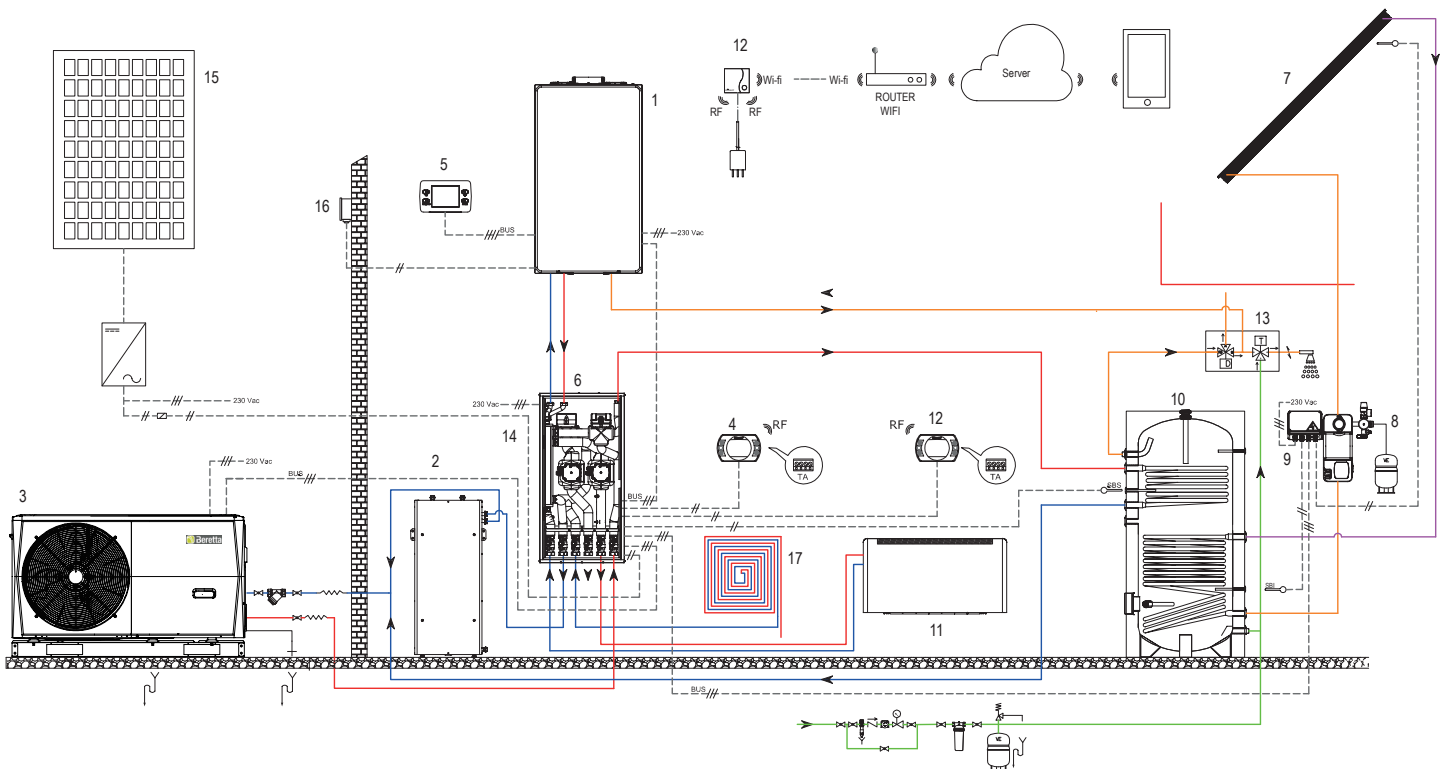
- 1 Boiler
- 2 Inertial storage (install on return) - * position for Heat Pump TYPE 0 - ** position for Heat Pump TYPE 1
- 3 Heat pump with RS485 BUS
- 4 Hi, Comfort T100 control
- 5 REC10MH
- 6 Hybrid distributor (available in 1 direct, 2 direct and 1 direct +1 mixed versions)
- 7 Solar panel
- 8 Return only solar module assembly; consisting of solar hydraulic module kit + Solar interface kit + Solar expansion tank kit
- 9 Solar management card
- 10 Bi-coil DHW tank
- 11 Fancoil (Main zone)
- 12 WiFi module
- 13 Mixing diverter valve
- 14 Photovoltaic input board
- 15 Photovoltaic with inverter
- 16 External sensor
- 17 Additional zone
- 18 Electrical resistance
- 19 Non-return valve (available with the hybrid distributor - to be inserted in the boiler return connection as reported in paragraph 3.5)

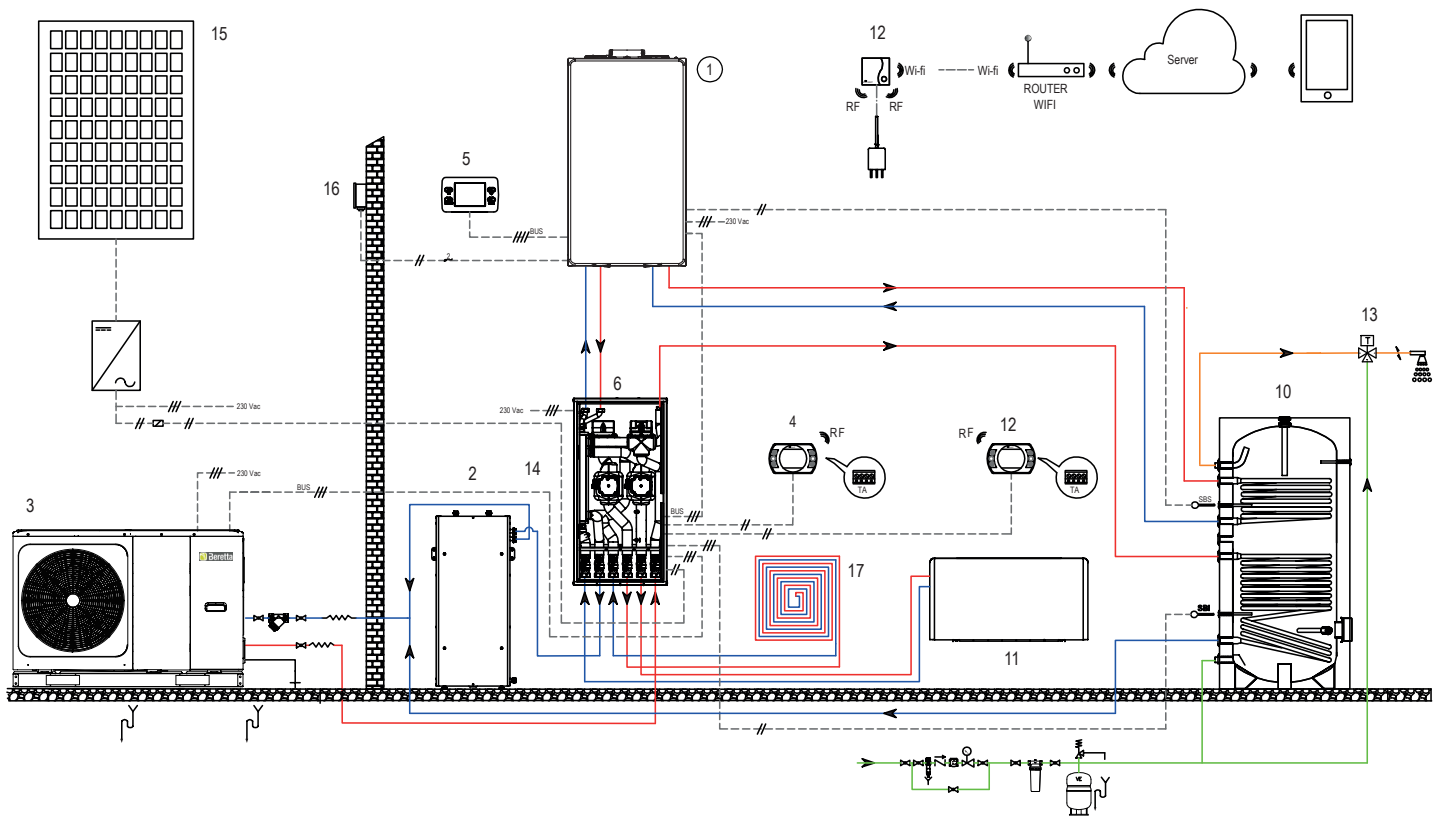
10 HYDRAULIC SYSTEM DIAGRAMS

example of hybrid system scheme

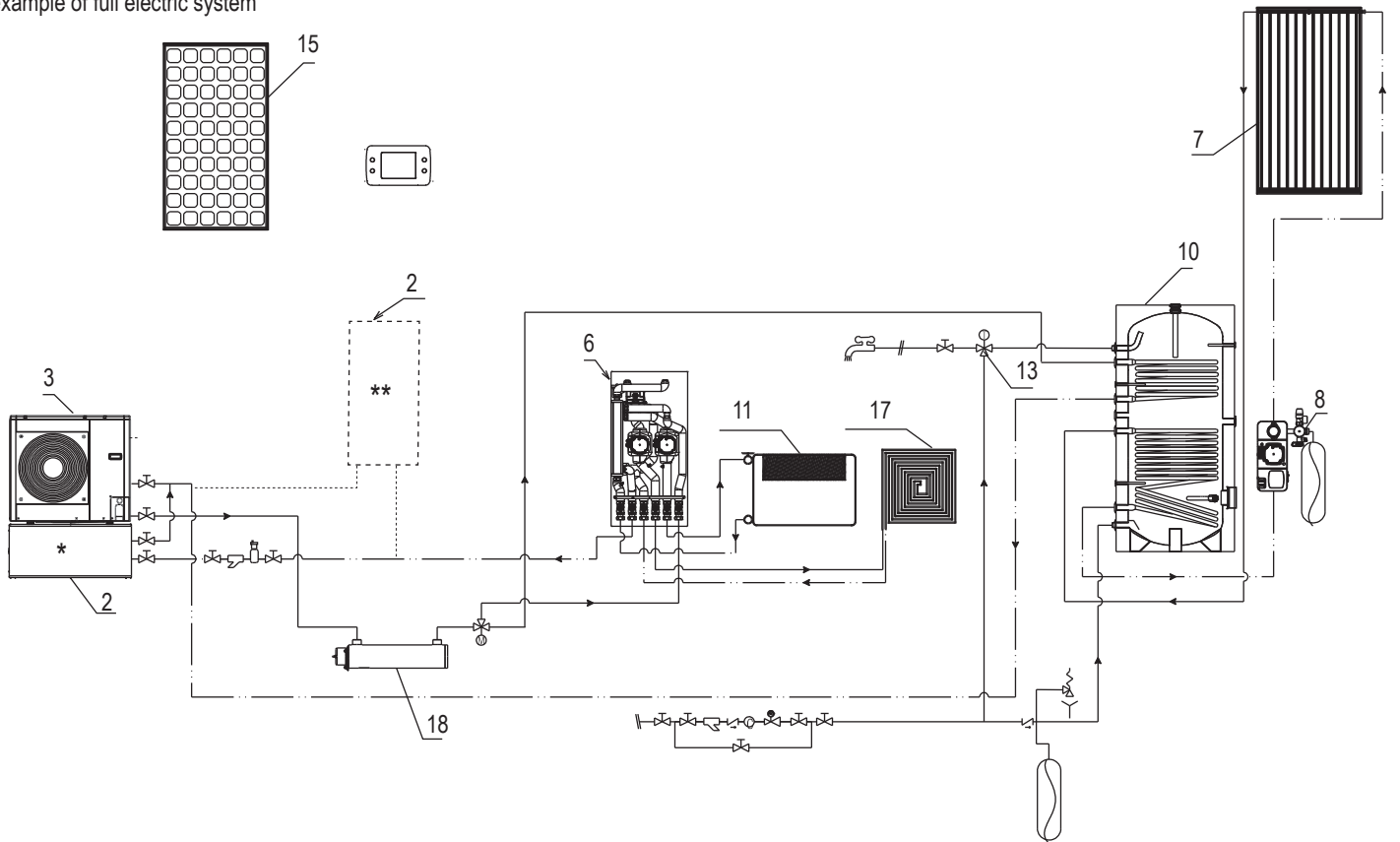


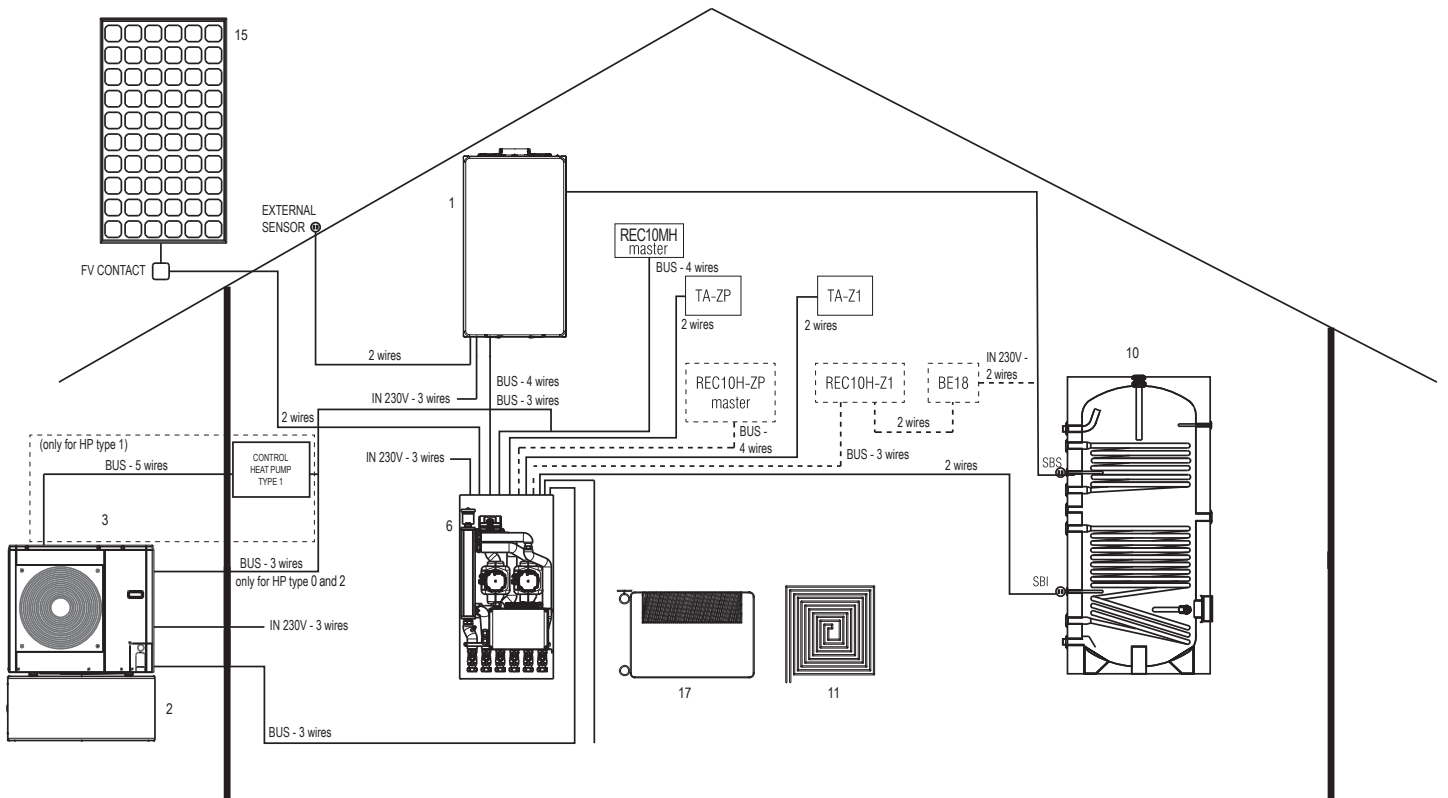
The inertial accumulation must be connected on the heat pump return (on the heat pump heating and return branch).
If the inertial accumulation is installed outdoors and there is a risk of freezing (Test 0°C), add anti-freeze liquid to the system.



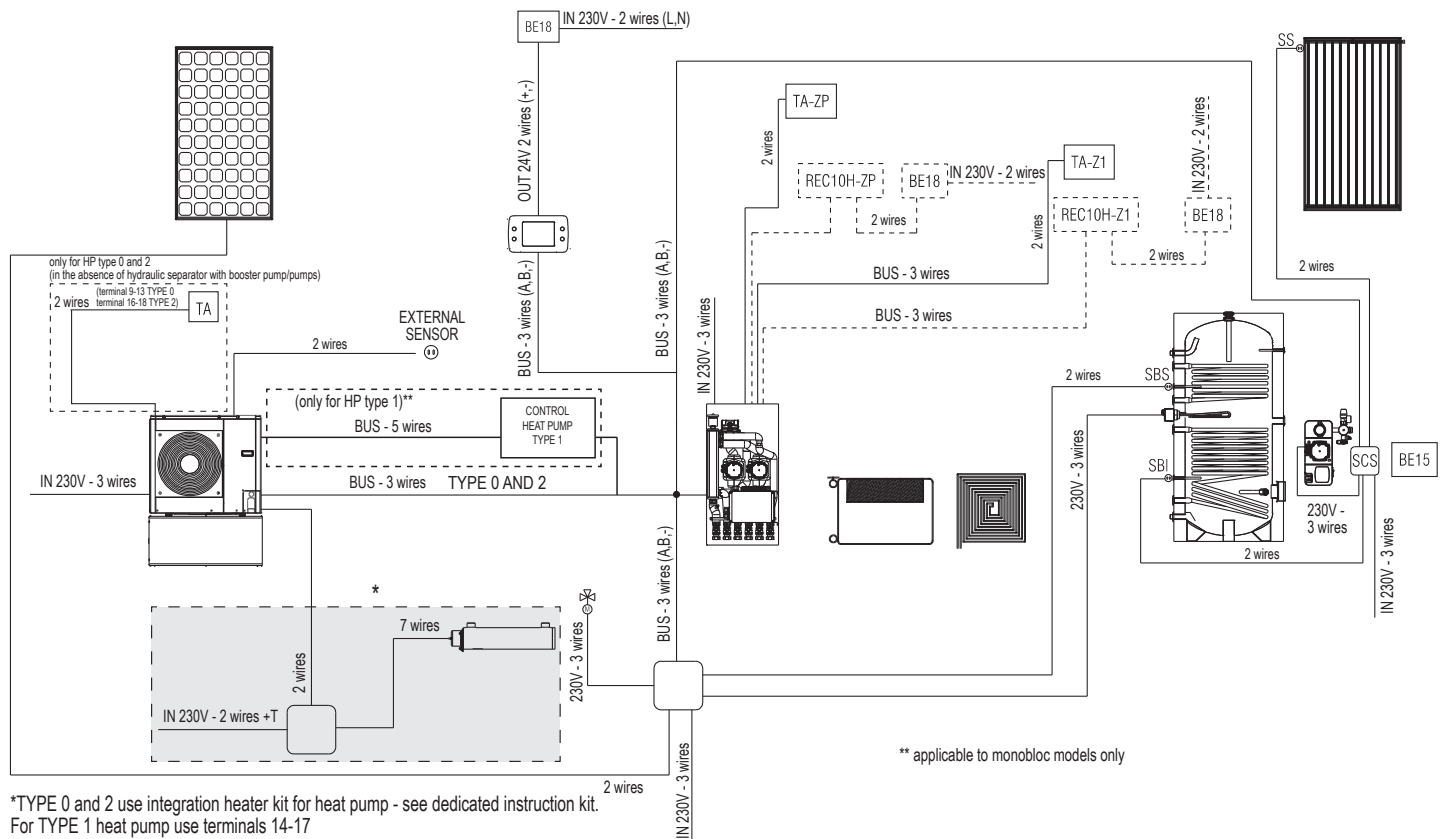


example of full electric system





example diagram for full electric systems



12 SWITCHING OFF

In the event of a temporary absence (weekend, short trips, etc.), set the system status to OFF by going to the main menu and selecting STATE and then BOILER in the case of hybrid systems, or SYSTEM in the case of full electric systems, and then OFF.

While the electrical supply and the fuel supply remain active, the boiler is protected by the systems:

- **boiler anti-freeze:** this function is activated if the temperature measured by the delivery probe drops below 5°C. A heat request is generated in this phase, with burner ignition at minimum output and maintained until the delivery water temperature reaches 35°C;
- **zone anti-freeze:** this function is activated if the temperature measured by the delivery probe drops below 6°C. A heat request (to the most suitable source) is generated in this phase and maintained until the delivery water temperature has increased by a value equal to the FREEZE PROT OFFSET ZONE;
- **anti-freeze for a DHW water tank connected to a heating-only boiler:** this function is activated if the temperature measured by the water tank probe drops below 5°C. A heat request is generated in this phase, with burner ignition at minimum output and maintained until the delivery water temperature reaches 55°C;
- **anti-freeze for a DHW water tank connected to a solar circuit and/or heat pump:** this function is activated if the temperature measured by the water tank probe drops below 7°C. A heat request (to the HEAT PUMP) is generated in this phase and maintained until the water temperature has reached 12°C;
- **heat pump anti-freeze:** the function starts if the temperature detected by the external or delivery probes is lower than the intervention threshold. There are two intervention thresholds for this function, a first threshold which provides for the activation of the circulator only while a second threshold which also activates the compressor. A heating request would take priority and would cancel any antifreeze function in progress; the antifreeze function is signaled by the REC10MH with a scrolling message at the foot of the page.

⚠ The activation of the FREEZE PROT function is indicated by a scrolling message at the bottom of the REC10MH screen.

- **anti-locking on boiler circulator and zones:** the circulator is activated for 30 seconds after every 24 hours of stoppage.

Switching off for long periods

If the system is to be left unused for a long time, carry out the following operations:

- set the system status to OFF by going to the main menu and selecting STATE, BOILER or SYSTEM, OFF;
- set the main system main switch to OFF;
- shut off the fuel and water taps of the heating and DHW system.

In this case, the anti-freeze and anti-locking systems are deactivated. Drain the heating and DHW system if there is any risk of freezing temperatures.

13 SIGNALS AND FAULTS

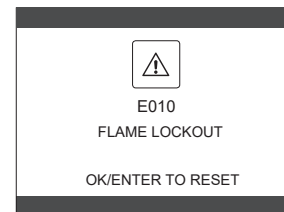
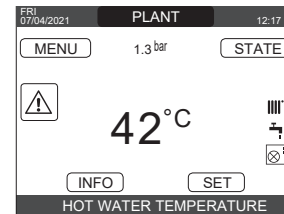
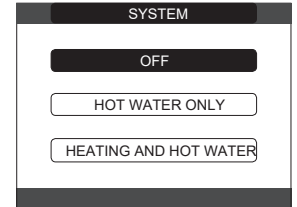
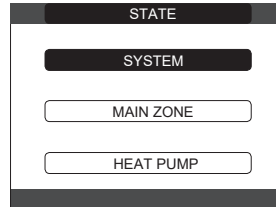
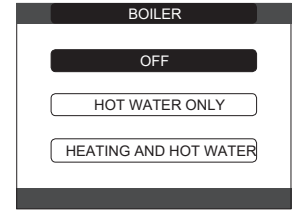
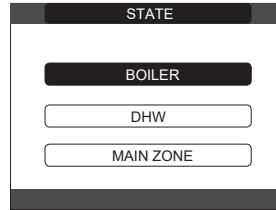
If any faults should occur, a screen will appear indicating the relative error code and a brief alphanumeric description of the fault. Press “back” to return to the main screen, where the fault is signalled by a new flashing icon:

You can return to the fault description screen by using the “up” and “down” keys to highlight the icon, and then pressing “ok”.

The fault description screen is automatically displayed when the display illumination time has elapsed without any button being pressed.

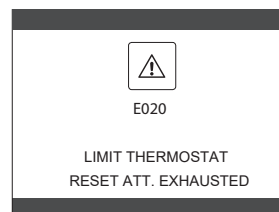
Press “up” and “down” to see the description of any other faults.

⚠ For the list of boiler faults, refer to the boiler or heat pump user manual.



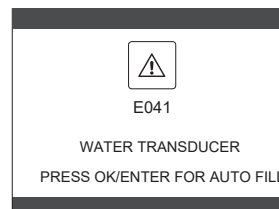
List of zone faults

ERROR CODE	DESCRIPTION OF TYPE OF ALARM
E077	WATER THERMOSTAT - MAIN ZONE or ZONE1
E081	AMBIENT PROBE FAULT - ZONE1
E082	AMBIENT PROBE FAULT - MAIN ZONE
E084	DELIVERY PROBE FAULT - ZONE1
E086	DELIVERY PROBE FAULT - MAIN ZONE
--	COMMUNICATION LOST MAIN/ZONE1



List of heat pump faults

ERROR CODE	DESCRIPTION OF TYPE OF ALARM
.....	SEE THE SPECIFIC HEAT PUMP ALARMS
--	HEAT PUMP COMMUNICATION LOST
--	BE17 COMMUNICATION LOST



List of water tank and solar system faults

ERROR CODE	DESCRIPTION OF TYPE OF ALARM
E060	HIGH Water tank PROBE FAULT
E061	LOW Water tank PROBE FAULT
E062	SOLAR SYSTEM Collector PROBE
--	Water tank CONFIGURATION INCOMPLETE
--	SOLAR SYSTEM COMMUNICATION LOST

NOTE

- Refer to the heat pump manual for the meaning of the specific faults.

If the fault is related to the heat pump, bear in mind that some of the heat pump alarms are automatically reset whereas others require the manual intervention of the After Sales Service (refer to the heat pump "Installation, use and maintenance" manual for more details).

For lost heat pump communication, check the three connection wires between the heat pump and the boiler are in good condition.

- Refer to the boiler manual for the meaning of the specific faults.

Reset function

To reset boiler operation in the event of a fault, go to the fault description screen. If the lockout is of a non-volatile type that requires a reset procedure, this will be indicated and you can do it by pressing the "ok" key on the REC10MH.

At this point, if the correct operating conditions have been restored, the boiler will restart automatically.

Up to 5 consecutive reset attempts can be made from the REC-10MH, after which the number can be zero-set again via the reset button on the boiler (refer to the boiler manual), or you can disconnect and then reconnect the electricity supply.



If the reset attempts are not successful, contact your local After Sales Service. When the transitional time has finished, if the fault persists the fault code E040 is displayed. When fault E040 arises on the boiler, load it manually via the filler tap until the pressure is between 1 and 1.5 bar.



If the pressure drop happens very frequently, contact the Technical Assistance Centre.

14 SPECIFIC OPERATIONS ON THE BOILER


Combustion analysis and adjustment of the boiler gas

To carry out these tasks, the COMBUSTION ANALYSIS function must be activated (see the boiler manual for the activation/deactivation procedure).

This function remains active for 15 minutes. The burner shuts down if a delivery temperature of 95°C is reached; it will ignite again when the temperature falls below 75°C.

During the COMBUSTION ANALYSIS procedure, the main circuit is enabled (circulator activation); if that zone is used for low-temperature systems, you are advised to dispose of the heat on the DHW system.

15 SYSTEM RESET

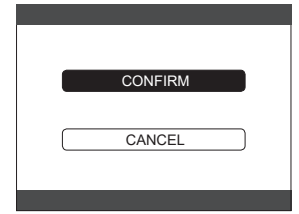
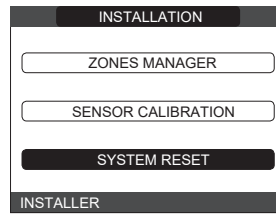
 The system configuration operations need to be carried out by professionally qualified personnel of the Technical Assistance Centre.

Whenever necessary, the factory settings can be reset by making a SYSTEM RESET:


- access the parameters as explained in paragraph “3 Accessing the technical parameters”
- use the “up” and “down” keys to select the INSTALLATION item, then confirm
- use the “up” and “down” keys to select the SYSTEM RESET item, then confirm.

Press “ok” to confirm the system reset, or “back” to CANCEL the operation.

Note: after a SYSTEM RESET, a new system configuration has to be made. For the details of this procedure, refer to the next paragraph.



16 SYSTEM CONFIGURATION

 The system configuration operations need to be carried out by professionally qualified personnel of the Technical Assistance Centre.

At the first switch-on after replacing the REC10MH or making a SYSTEM RESET, the remote control displays an initial screen with the firmware revision. Press “ok” to launch a guided system configuration procedure. Use the “up” and “down” keys to select the required options, and press “ok” to implement your choices:

- LANGUAGE selection:
ENGLISH
- setting the TIME & DATE.

Notes

- The TIME & DATE, DAYLIGHT SAVINGS TIME, LANGUAGE and back-lighting activation time settings can be changed later, by accessing MENU from the main screen and then selecting SETTINGS.
- The device manages the change from Standard Time to Daylight Saving Time (and vice versa) automatically.

Select the MASTER or SLAVE option

MASTER: the REC10MH works as a MACHINE INTERFACE

SLAVE: the REC10MH works as an AMBIENT REGULATOR

Note: do not select the SLAVE option if the REC10MH is also a MACHINE INTERFACE. If SLAVE is accidentally selected, the reset operation will have to be repeated!

Wait a few seconds for the REC10MH to run a communication test:


- if the test is passed, the panel is configured to manage a HYBRID system and will ask you to set the hydraulic configuration of the boiler. Move on to HYBRID configuration - see below.

Note: the heat pump is optional and can be added at any moment.

- if the test fails, the panel asks you to specify the type of system you want to configure - HYBRID or FULL ELECTRIC. If you choose hybrid, you will return to the previous point; if you choose FULL ELECTRIC, the configuration procedure ends here and **the system is automatically configured with a heat pump.**

HYBRID configuration

MAIN PCB: to reset the current system configuration on REC-10MH MASTER and end the operation.

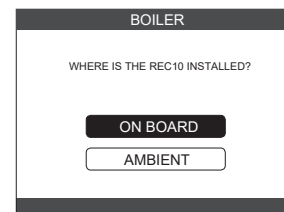
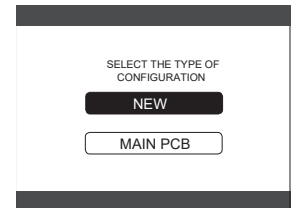
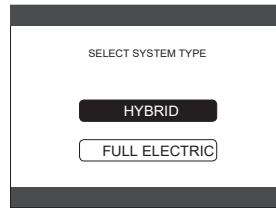
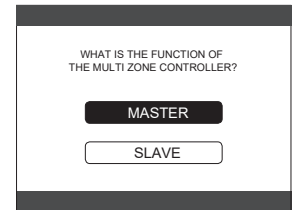
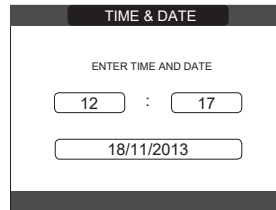
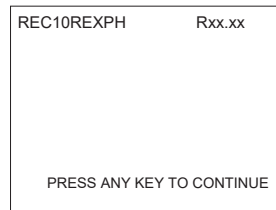
 The MAIN PCB configuration allows the download of all the programming settings previously made, apart from those relating to the HW TANK and HEAT PUMP, which **must therefore be configured again.**

NEW: to set a new system configuration, restoring the factory values for the parameters.

If NEW configuration is selected, proceed as follows:


- select the REC10MH function:
ON BOARD if the REC10MH is used only as a system interface and not as an ambient regulator
AMBIENT if the REC10MH is used as a system interface and also as an ambient regulator of the zone where it is installed

You can now reprogram and set all the boiler parameters. Refer to



the instructions given in the boiler manual, in the “System configuration” paragraph.
Reconfigure the system, following the steps explained in the “System programming” paragraph of this manual.
ITALIANO
etc.....


17 REPLACING THE REC10MH MASTER

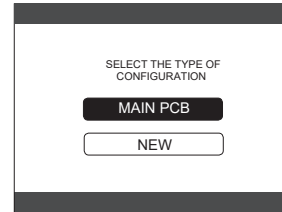
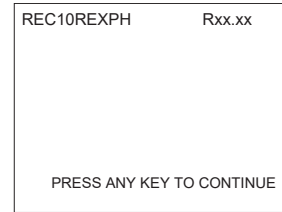
 The system configuration operations need to be carried out by professionally qualified personnel of the Technical Assistance Centre.

If the REC10MH is replaced, at the subsequent restart it will display an initial screen with the firmware revision.


Press “ok” to launch a guided system configuration procedure - see “16 SYSTEM CONFIGURATION”.

Follow the procedure and select the MAIN PCB type of configuration.

 The MAIN PCB configuration allows the download of all the programming settings previously made, apart from those relating to the HW TANK and HEAT PUMP, which must therefore be configured again.



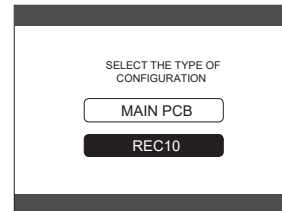
18 REPLACING THE BOARD (WITH BOILER INSTALLED AND AKL/AKM BOARDS)

 The system configuration operations need to be carried out by professionally qualified personnel of the Technical Assistance Centre.

The system continuously checks that the configuration data stored on the AKL/AKM electronic board are coherent with those stored in the REC10MH. This means that if the AKL/AKM electronic board is replaced, the system might detect an inconsistency between the data on the board and those in the REC10MH.

If this happens, the system will ask the user which of the two configurations is to be considered valid. By choosing to retrieve the configuration from the REC10MH, you can avoid the need to re-configure the machine:

- select REC10MH using the “up” and “down” keys, then confirm



19 HEAT PUMP MAINTENANCE

For the routine and extraordinary maintenance on the heat pump, refer to the "INSTRUCTIONS FOR INSTALLATION, USE AND MAINTENANCE".

Note: if the relative control panel needs to be connected to the heat pump for maintenance purposes, set the system to OFF and disconnect the REC10MH machine interface to avoid any risk of conflict between the two devices.

