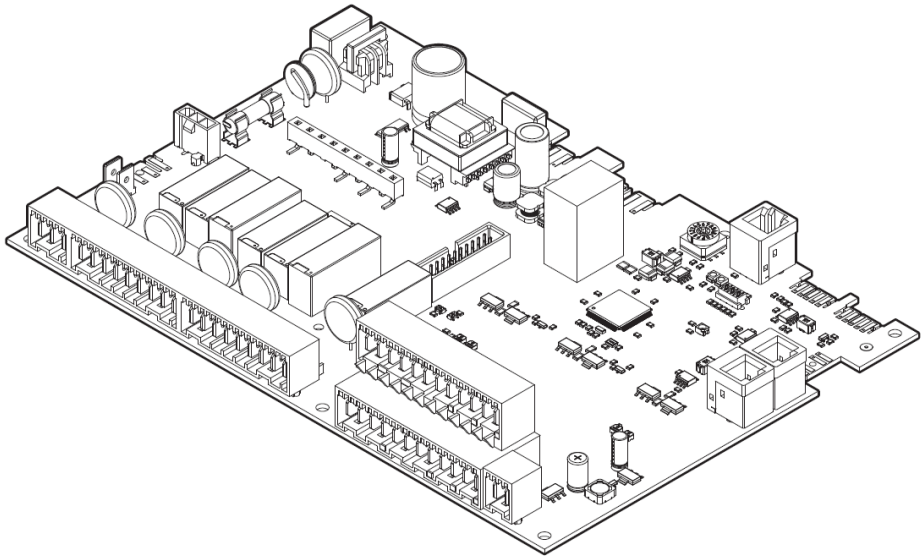
DIEMATIC Evolution – SCB-10

Installation and After Sales Guide



De Dietrich
SUSTAINABLE COMFORT®

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Introduction :

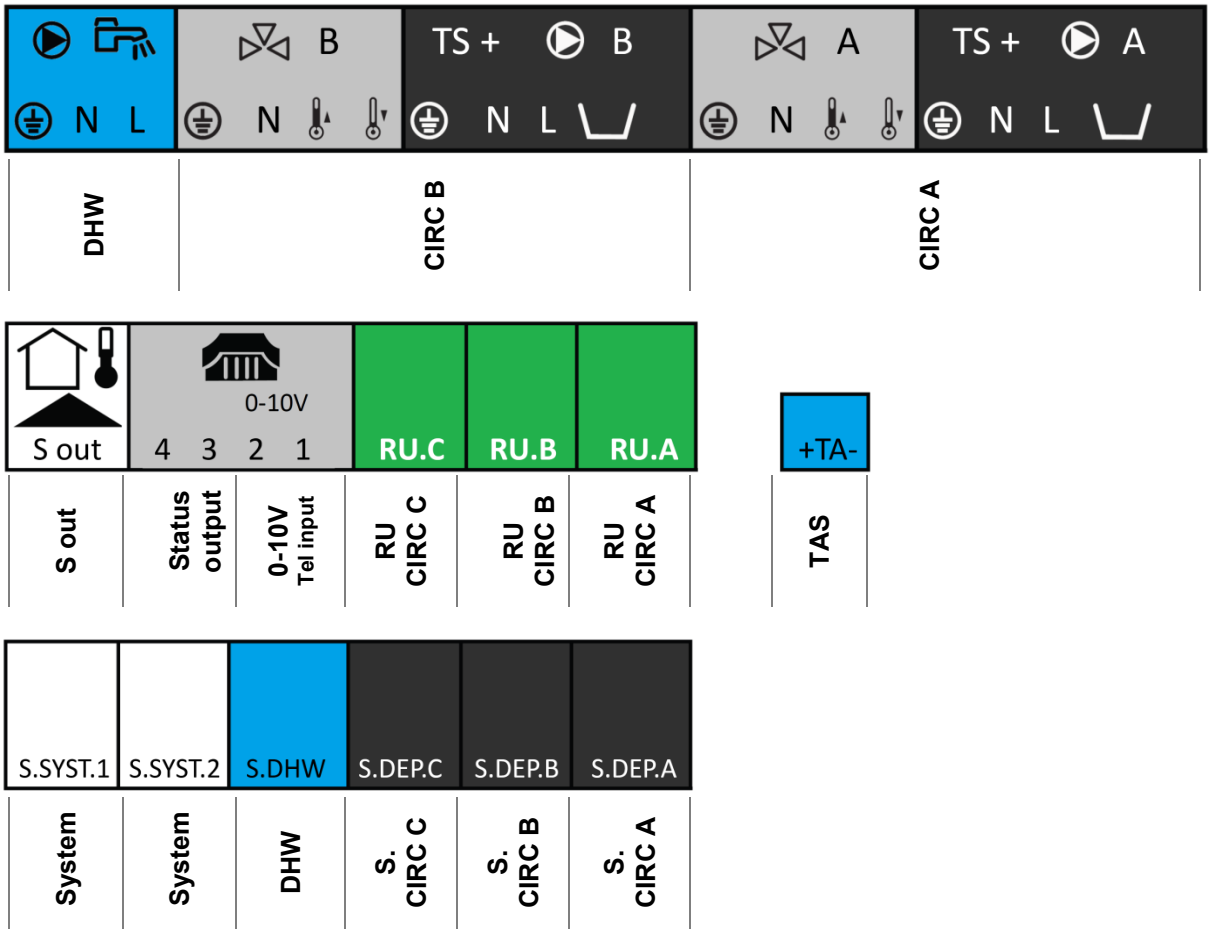
The electronic board SCB-10 which equips our appliances, boilers and heat pumps is always coupled with a mainboard which manages the generator.
The mainboard CU-GH XX for gas boilers (-06 -->MCA160, -08 -->AMC...)

CU-OH XX for oil boilers (-02 -->PFC 45-120)

EHC-XX for heat pumps (-04 --> SV 200)

These boards manage burners, compressors, primary pumps and can also manage hot water and a direct circuit.
The SCB-10 board manages the consumers (the secondary ones) and the cascade.

Description of the possible functionalities of the circuits : see appendix A.



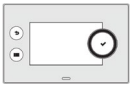
Access level :

0	Display Level
1	User Level
2	Installer Level
3	Advanced Installer Level

Configuring the installation

To access the parameters of the **SCB-10**:
Access the Installer Mode (0012) →
Press ☰ → Installation Configuration → SCB-10 Menu → Parameters, Counters and Signals → Parameters...

Main parameters



AP = Generator parameter
Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.

Level	Parameter	Description	Adjustment range	Factory setting
2	AP056	Outside sensor type: Select the outside sensor type	0 = No outside sensor 1 = De Dietrich AF60 2 = Siemens QAC34	0
2	AP073	Summer winter switch over: Outside temperature upper limit for heating **See appendix D**	15 °C - 30,5 °C	22 °C
1	AP074	Forced summer mode : The heating is off. The hot water is maintained. Forced summer mode	0 = On 1 = Off	0
2	AP075	Neutral band: Temperature range in which the heat pump is neither hot nor cold (only visible on heat pump) **See appendix D**	0 °C - 10 °C	4 °C
2	AP079	Building inertia : Characterisation of building's inertia in hours : 0 (10 hours) to 10 (50 hours) **Modification of the factory setting is only useful in exceptional cases.** **With outside sensor** **See appendix F**	0 – 10 0 : for a building with low thermal inertia 3 : for a building with normal thermal inertia 10 : for a building with high thermal inertia	3 (22 hours)
2	AP080	Outside temperature setpoint for frost protection : Outside temperature at which the installation's frost protection is activated. Below this temperature, the pumps run permanently and the minimum temperatures for each circuit are respected. **See appendix E** **If the value is equal to -30°C, the function is disabled**	-30 °C, 0 - 20 °C	3 °C
2	AP091	Outside sensor **If parameter = Auto then the control will select the most relevant value**	0 = Auto 1= Outside sensor wired 2= Outside sensor wireless 3 = Internet (via R.U) 4 = None	0

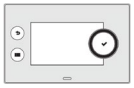
Storage tank

BP = Storage tank parameter

Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.

Level	Para-meter	Description	Adjustment range	Factory setting
2	BP001	Storage tank type See appendix T	0 = Disabled 1 = Storage tank with one sensor 2 = Storage tank with two temperature sensors	0
2	BP002	Heating storage tank control mode	0 = Fixed set point 1 = Calculated setpoint 2 = Setpoint from a dedicated gradient	0
2	BP003	Storage tank set point in heating mode (depending on BP002)	5 °C - 100 °C	70 °C
2	BP004	Storage tank setpoint in cooling mode (with fixed setpoint)	5 °C - 25 °C	18 °C
2	BP005	Storage tank gradient	0 - 4	1.5
1	BP006	Storage tank time program for MONDAY	-	
1	BP007	Storage tank time program for TUESDAY	-	
1	BP008	Storage tank time program for WEDNESDAY	-	
1	BP009	Storage tank time program for THURSDAY	-	
1	BP010	Storage tank time program for FRIDAY	-	
1	BP011	Storage tank time program for SATURDAY	-	
1	BP012	Storage tank time program for SUNDAY	-	
2	BP013	Offset to add to the calculated Setpoint of the Buffer Tank (only if BP002 = 1)	0 °C - 20 °C	5 °C
2	BP014	Temperature hysteresis which determines the buffer Tank loading start (hysteresis in minus of the setpoint)	1 °C - 20 °C	6 °C
2	BP015	Post-operation of the storage tank load pump	0 – 20 min	4 min.
2	BP019	Temperature hysteresis which determines the stop of the buffer Tank loading (hysteresis in minus of the upper sensor setpoint, with a tank with 2 sensors, the lower sensor determines the heating stop)	-30°C - 30°C	0°C

0-10V



EP = 0-10V parameter

Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.

Level.	Para-meter	Description	Adjustment range	Factory setting
2	EP014	Type of 0-10V : Activating the 0-10 V function with temperature or power setpoint. See appendix H	0 = No (OFF) 1 = Temperature control 2 = Output % (Power control)	0
2	EP030	Minimum temperature set point	0 °C - 100 °C	0 °C
2	EP031	Maximum temperature set point	0,5 °C - 100 °C	100 °C
2	EP032	Minimum output setpoint	0 % - 100 %	0%
2	EP033	Maximum power stepoint	5 % - 100 %	100%
2	EP034	Minimum voltage setpoint	0 V - 10 V	0.5 V
2	EP035	Maximum voltage setpoint	0 V - 10 V	10 V

No cooling possible in 0 - 10V

Conf. System sensor

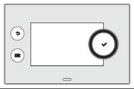
EP = System sensor parameter
Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.

Level	Para-meter	Description	Adjustment range	Factory setting
3	EP036	Sensor input configuration S.SYST.1	0 = Disabled 1 = DHW sensor 2 = upper DHW sensor 3 = Buffer tank sensor 4 = Buffer tank upper sensor 5 = Cascade	0
3	EP037	Sensor input configuration S.SYST.2	0 = Disabled 1 = DHW sensor 2 = upper DHW sensor 3 = Buffer tank sensor 4 = Buffer tank upper sensor 5 = Cascade	0

To adjusts the assignment of the sensors in case the automatic adjustment does not correspond to the physical connection of the sensors.

EM000 and EM001 allow sensor measures.

TEL Input-Output

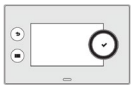


EP = TEL Input-Output connector parameter
Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.

Level	Para-meter	Description	Adjustment range	Factory setting
2	EP014*	Type of 0-10V: Activating the 0-10 V function **See appendix G**	0 = No* 1 = Temperature °C 2 = Power %	0
2	EP018	Status relay function. TEL relay output Configuration	0 = No Action 1 = Alarm 2 = Alarm Inverted (fails safe) 3 = Burning 4 = Not burning 5 = Reserved 6 = Reserved 7 = Service request 8 = Boiler on Central Heating 9 = Boiler on Domestic Hot Water 10 = Central Heating pump on 11 = Locking or Blocking	11
2	EP046	TEL relay input command : 1-2 (if EP014 set to 0 = No) **See appendix G**	0 = Heating and DHW off 1 = Heating off 2 = DHW off 3 = Forced setpoint 4 = Storage tank input	0
2	EP056	TEL contact direction	0 = Opened 1 = Closed	0
2	EP066	Temperature setpoint required if E.TEL = 3 (EP046)	7 °C - 100 °C	80 °C
2	EP076	Required output : Temperature setpoint required if E.TEL = 3 (EP046)	0 % - 100 %	100%

* **EP014** must be set to **0** (no) to display **EP046** and to be able to use the connector as **TEL Input-Output connector**

Cascade

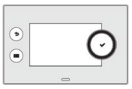


AP = Generator parameter NP = Cascade parameter

Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.

Level	Para-meter	Description	Adjustment range	Factory setting
2	AP083	Cascade activation: Cascade system	0 = No 1 = Yes	0
3	AP103	BUS length	0 = < 3m 1 = < 80m 2 = < 500m	
3	NP001	Hysteresis high for cascade (neutral band) : Positive reading	0,5 °C - 5 °C	3 °C
3	NP002	Hysteresis low for cascade (neutral band) : Negative reading	0,5 °C - 5 °C	3 °C
3	NP003	Maximum gap between the setpoint and the cascade measure	0 °C - 10 °C	10 °C
3	NP004	Proportional Factor for cascade Temperature increasing	0 - 10	1
2	NP005	Choice of leading generator Auto: The master boiler switches automatically every seven days	0 - 127	0 = Auto
2	NP006	Cascade type **See appendix I** **Classic :** Successive activation of the different cascade boilers according to the needs. **Parallel :** If the outdoor temperature is below the value (NP007), all boilers are started at the same time.	0 = classic 1 = Parallel	0
2	NP007	Outside temperature tripping all stages in parallel mode (heating)	-10 °C - 20 °C	10 °C
2	NP008	Minimum post-operation time of the generator pump	0 Min - 30 Min	4 Min
2	NP009	Switch on and switch off timing for the producers of the cascade	1 Min - 60 Min	4 Min
2	NP010	Outside temperature tripping all stages in parallel mode (cooling)	10 °C - 40 °C	30 °C
2	NP011	Selection of the cascade algorithm type	0 = Temperature 1 = Output	0
2	NP012	Time x5 to reach Temperature Septoint (only if NP011 = 1)	1 – 10 Min	1
2	NP013	Force Primary Pump to Stop on cascade (master boiler)	0 = No 1 = Yes	0
2	NP014	Cascade operating mode	0 = Auto 1 = Heating 2 = Cooling	0

CIRC.A



CP = Circuit parameter
Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.
CIRCA : CPXX0
CIRCB : CPXX1
CIRCC : CPXX3
ECS : CPXX2
AUX : CPXX4

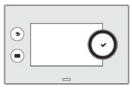
Level	Para-meter	Description	Adjustment range	Factory setting
2	CP000	Max setpoint of the circuit	7 °C - 100 °C	90 °C
1	CP010	Max setpoint of the circuit without outside sensor	7 °C - 100 °C	75 °C
2	CP020	Circuit functionality (10 not used) **See appendix A** **Parameters linked to layered domestic hot water do not appear**	0 = Disabled 1 = Direct 2 = Mixing circuit 3 = Swimming pool 4 = High temperature 5 = Fan convector 6 = Domestic Hot water 7 = Electric domestic hot water 8 = Time Program 9 = Process heat 10=Layered DHW 11 = Domestic hot water by BIC	1
2	CP030	Control bandwidth for the mixing valve circuit Option of increasing the bandwidth if the valves are rapid or of reducing it if they are slow. **See appendix J**	4 K - 16 K	12 K
2	CP040	Post-operation time of the circuit pump **See appendix K**	0 Min - 20 Min	4 Min
2	CP050	Minimum temperature difference between the boiler and the valves **See appendix L**	0 K - 16 K	4 K
2	CP060	Room antifreeze **See appendix E**	5 °C - 20 °C	6 °C
2	CP070	Max Room Temperature limit of the circuit in reduced mode, that allows switching to comfort mode (room temperature setpoint)	5 °C - 50 °C	16 °C
1	CP080	User room temperature setpoint of the zone activity NIGHT **See appendix U**	5 °C - 50 °C	16 °C
1	CP081	User room temperature setpoint of the zone activity HOME	5 °C - 50 °C	20 °C
1	CP082	User room temperature setpoint of the zone activity ABSENT	5 °C - 50 °C	6 °C
1	CP083	User room temperature setpoint of the zone activity MORNING	5 °C - 50 °C	21 °C
1	CP084	User room temperature setpoint of the zone activity EVENING	5 °C - 50 °C	22 °C
1	CP085	User room temperature setpoint of the zone activity customized	5 °C - 50 °C	23 °C
1	CP140	Setpoint of the room cooling temperature of the zone - NIGHT	20 °C - 30 °C	30 °C
1	CP141	Setpoint of the room cooling temperature of the zone - HOME	20 °C - 30 °C	25 °C
1	CP142	Setpoint of the room cooling temperature of the zone - ABSENT	20 °C - 30 °C	25 °C
1	CP143	Setpoint of the room cooling temperature of the zone - MORNING	20 °C - 30 °C	25 °C

1	CP144	Setpoint of the zone room cooling temperature - EVENING	20 °C - 30 °C	25 °C
1	CP145	Setpoint of the zone room cooling temperature :customized	20 °C - 30 °C	25 °C
1	CP200	Manually setting the room temperature setpoint of the zone	5 °C - 30 °C	20 °C
2	CP210	Circuit curve bottom temperature in comfort mode (HCZP D) **If set to 15 °C then the function is disabled** **See appendix M**	15 °C - 90 °C	15 °C
2	CP220	Circuit curve bottom temperature in reduced mode (HCZP N) **If set to 15 °C then the function is disabled** **See appendix M**	15 °C - 90 °C	15 °C
2	CP230	Heating curve of the circuit **See appendix N**	0 - 4	1.5
2	CP240	Influence of the circuit room temperature sensor **See appendix O** 0 : No influence 1 : Slight influence 3 : Average influence (recommended) 10 : Operates like a room thermostat	0 - 10	3
2	CP270	Cooling set point for the flow temperature on the mixing valve circuit	11 °C - 23 °C	18 °C
2	CP280	Circuit flow temperature cooling setpoint (fan convector mode)	7 °C - 23 °C	10 °C
3	CP290	Functionality of the pump output (0 by default, if different than 0 = status transfer)	0 = Functionality of the zone 1 = Heating 2 = Domestic hot water 3 = Cooling 4 = Error report 5 = Burner 6 = Maintenance message 7 = System error 8 = DHW loop 9 = Primary pump 10 = Buffer tank load pump	0
1	CP320	Operating mode of the heating circuit	0 = Time program 1 = Manual 2 = Frost protection	0
2	CP330	The time needed by the valve to be fully opened, before allowing the burner start.	0 – 240 seconds	60 seconds
2	CP340	Type of reduced night mode, stop or maintain heating of circuit (if circuit setpoint < to CP070 = heating stop**. If there is an room sensor the parameter automatically switches to 1**	0 = Switching off the heating 1 = Heating reduced	0
1	CP350	Domestic hot water temperature set point in comfort mode	40 °C - 80 °C	55 °C
1	CP360	Domestic hot water temperature set point in reduced mode	10 °C - 60 °C	10 °C
2	CP370	Domestic Hot Water temperature setpoint in antifreeze mode **See appendix E**	10 °C - 40 °C	10 °C
2	CP380	Domestic Hot Water Temperature set point in anti legionella mode	40 °C - 80 °C	70 °C
2	CP390	Anti legionella function start time	0 – 24H	3 H

2	CP400	Duration of the anti legionella function	1 Min - 600 Min	60 Min
2	CP420	Hysteresis for starting the production of domestic hot water	1 °C - 60 °C	6 °C
2	CP430	Optimisation of DHW loading depending on the primary temperature **See appendix P**	0 = OFF 1 = ON	0
2	CP440	Prevents the cooling of the Tank at the start according to primary temperature	0 = OFF 1 = ON	0
2	CP460	Selection of the DHW priority **See appendix Q**	0 = Total 1 = Relative 2 = Not priority	0
2	CP470	Number of days on which the screed drying function is activated **See appendix R**	0 - 30 Days	0 Days
2	CP480	Setting of the start temperature of the screed drying program	20 °C - 50 °C	20 °C
2	CP490	Setting of the stop temperature of the screed drying program	20 °C - 50 °C	20 °C
2	CP500	Activate/Deactivate Flow temperature sensor of the zone (if connection of a sensor then automatic activation)	0 = Deactivate 1 = Activate	0
1	CP510	Temporary room temperature setpoint for the circuit (override)	5 °C - 50 °C	20°C
3	CP520	Power limit per zone	0 % - 100 %	100%
3	CP530	Pulse Width Modulation pump speed per zone (For external hydraulic kit)	20 % - 100 %	100%
1	CP540	Swimming pool circuit temperature Setpoint	0 °C - 39 °C	20 °C
1	CP550	Activation of chimney mode (no longer takes into account the room temperture in OTC-RTC, it keeps the last setpoint calculated in RTC)	0 = OFF 1 = ON	0
2	CP560	Configuration of the Domestic Hot Water circuit anti legionnella Protection	0 = Deactivate 1 = Weekly anti legionella 2 = Daily anti legionella	0
1	CP570	Time program of the circuit selected by the user	0 = Program 1 1 = Program 2 2 = Program 3 3 = Cooling	0
2	CP600	Heating setpoint during a heating demand (if CP020 = 9 Process heat)	20 °C - 100 °C	60 °C
2	CP610	Hysteresis switched on for Process heat circuit (CP020 = 9)	1 °C - 15 °C	6 °C
2	CP620	Hysteresis disabled for the Process heat circuit (CP020 = 9)	1 °C - 15 °C	6 °C
2	CP630	Anti legionella function start day	1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday 7 = Sunday	6
2	CP640	Logic level of the circuit Rbus (Opentherm) contact	0 = Opened 1 = Closed	1
2	CP650	Desired reduced room temperature setpoint in cooling mode	20 °C - 30 °C	29 °C
1	CP660	Choice of icon to display this zone (see controller display)	0…13	0

1	CP670	Info from the circuit room sensor (R.U serial number)	-	00 00 00 00
2	CP690	Reverse Rbus (Opentherm) contact in cooling	0 = No 1 = Yes	0
2	CP700	DHW Calorifier temperature setpoint offset	0 °C - 30 °C	0 °C
2	CP710	Increases the primary temperature setpoint compared to the DHW calorifier setpoint (Exemple : DHW setpoint 50°C then : 50°C + CP710 = primary temperature in DHW production)	0 °C - 40 °C	20 °C
2	CP720	Increases the primary temperature setpoint in Process heat operating (CP020 = 9)	0 °C - 40 °C	20°C
3	CP730	Temperature increasing speed (Can only be changed if RTC (CP780))	0 = Extra slow 1 = Slowest 2 = Slower 3 = Normal 4 = Faster 5 = Fastest	2
3	CP740	Temperature decrasing speed (Can only be changed if RTC (CP780)	0 = Mini 1 = Slow 2 = Normal 3 = Faster 4 = Maxi	2
2	CP750	Anticipation (at 0°C outside) **See appendix S**	0 Min - 240 Min	0 Min
2	CP760	The DHW calorifier is equipped with a Titane Active System anode	0 = No 1 = Yes	0
3	CP770	Zone after Buffer tank (only available if a buffer tank is present) **Indicates if the zone is conncted before or after the buffer tank**	0 = No (before buffer tank) 1 = Yes (after the buffer tank)	1
2	CP780	Control strategy **See appendix B**	0 = Auto 1 = RTC 2 = OTC 3 = OTC + RTC	0

CIRC B



CPXX1 = Circuit B parameter
Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors
CIRCB : CPXX1

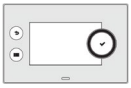
Level	Para-meter	Description	Adjustment range	Factory setting
2	CP001	Max setpoint of the circuit	7 °C - 100 °C	50 °C
1	CP011	Max setpoint of the circuit without outside sensor	7 °C - 100 °C	40 °C
2	CP021	Circuit functionality (10 not used) **See appendix A** **Parameters linked to layered domestic hot water do not appear**	0 = Disabled 1 = Direct 2 = Mixing circuit 3 = Swimming pool 4 = High temperature 5 = Fan convector 6 = Domestic hot water 7 = Electric domestic hot water 8 = Time program 9 = Process heat 11 = BIC Domestic Hot Water	2
2	CP031	Control bandwidth for the mixing valve circuit Option of increasing the bandwidth if the valves are rapid or of reducing it if they are slow **See appendix J**	4 K - 16 K	12 K
2	CP041	Post-operation time of the circuit pump **See appendix K**	0 Min - 20 Min	4 Min
2	CP051	Minimum temperature difference between the boiler and the valves **See appendix L**	0 K - 16 K	4 K
2	CP061	Room antifreeze **See appendix E**	5 °C - 20 °C	6 °C
2	CP071	Max Room Temperature limit of the circuit in reduced mode, that allows switching to comfort mode	5 °C - 30 °C	15 °C
1	CP086	User room temperature setpoint of the zone activity NIGHT	5 °C - 30 °C	20 °C
1	CP087	User room temperature setpoint of the zone activity HOME	5 °C - 30 °C	20 °C
1	CP088	User room temperature setpoint of the zone activity ABSENT	5 °C - 30 °C	6 °C
1	CP089	User room temperature setpoint of the zone activity MORNING	5 °C - 50 °C	21 °C
1	CP090	User room temperature setpoint of the zone activity EVENING	5 °C - 50 °C	22 °C
1	CP091	User room temperature setpoint of the zone activity customized	5 °C - 50 °C	23 °C
1	CP146	Setpoint of the room cooling temperature of the zone - NIGHT	20 °C - 30 °C	30 °C
1	CP147	Setpoint of the room cooling temperature of the zone - HOME	20 °C - 30 °C	25 °C
1	CP148	Setpoint of the room cooling temperature of the zone - ABSENT	20 °C - 30 °C	25 °C
1	CP149	Setpoint of the room cooling temperature of the zone - MORNING	20 °C - 30 °C	25 °C
1	CP150	Setpoint of the room cooling temperature of the zone - EVENING	20 °C - 30 °C	25 °C
1	CP151	Setpoint of the room cooling temperature of the zone - customization	20 °C - 30 °C	25 °C
1	CP201	Manually setting the room temperature setpoint of the zone	5 °C - 50 °C	20 °C
2	CP211	Circuit curve bottom temperature in comfort mode (HCZP D).	15 °C - 90 °C	15 °C

		If set to 15 °C then the function is disabled **See appendix M**		
2	CP221	Circuit curve bottom temperature in reduced mode (HCZP N) **If set to 15 °C then the function is disabled** **See appendix M**	15 °C - 90 °C	15 °C
2	CP231	Heating curve of the circuit **See appendix N**	0 - 4	0.7
2	CP241	Influence of the circuit room temperature sensor 0 : No influence 1 : Slight influence 3 : Average influence (recommended) 10 : Operates like a room thermostat **See appendix O**	0 - 10	3
2	CP271	Cooling set point for the flow temperature on the mixing valve circuit	11 °C - 23 °C	18 °C
2	CP281	Circuit flow temperature cooling setpoint (fan convector mode)	7 °C - 23 °C	10 °C
3	CP291	Configuration of Zone Pump Output (0 by default, if different than 0 = status transfer)	0 = Functionality of the zone 1 = Heating 2 = Domestic hot water 3 = Cooling 4 = Error report 5 = Burner 6 = Maintenance message 7 = System error 8 = DHW loop 9 = Primary pump 10 = Buffer tank load pump	0
1	CP321	Operating mode of the heating circuit	0 = Time programming 1 = Manual 2 = Frost protection	0
2	CP330	The time needed by the 3 way valve to be fully opened, before allowing burner start	0 – 240 seconds	60 seconds
2	CP341	Type of reduced night mode, stop or maintain heating of circuit (if setpoint < to CP071 = heating stop**. If there is an room sensor the parameter automatically switches to 1**	0 = Switching off the heating 1 = Heating reduced	0
1	CP351	Domestic hot water temperature set point in comfort mode	40 °C - 80 °C	55 °C
1	CP361	Domestic hot water temperature set point in reduced mode	10 °C - 60 °C	10 °C
2	CP371	Domestic Hot Water Temperature Setpoint in Antifreeze mode **See appendix E**	10 °C - 40 °C	10 °C
2	CP381	Domestic Hot Water Temperature set point in anti legionella function mode	40 °C - 80 °C	70 °C
2	CP391	Anti legionella function start time	0 – 24H	3H
2	CP401	Duration of the anti legionella function	1 Min - 600 Min	60 Min
2	CP421	Trip differential for DHW production	1 °C - 60 °C	6 °C
2	CP431	Optimisation of DHW loading depending on the primary temperature **See appendix P**	0 = OFF 1 = ON	0

2	CP441	Prevents the cooling of the Tank at the start according to primary temp	0 = OFF 1 = ON	0
2	CP461	Selection of the DHW priority **See appendix Q**	0 = Total 1 =Relative 2 = Not priority	0
2	CP471	Number of days on which the screed drying function is activated **See appendix R**	0 - 30 Days	0 Days
2	CP481	Setting of the start temperature of the screed drying program	20 °C - 50 °C	20 °C
2	CP491	Setting of the stop temperature of the screed drying program	20 °C - 50 °C	20 °C
2	CP501	Activate/Deactivate the Flow temperature sensor of the zone (if connection of a sensor then automatic activation)	0 = Disabled 1 = Activate	0
1	CP511	Temporary room setpoint for the circuit (override)	5 °C - 50 °C	20°C
3	CP521	Power limit per zone	0 % - 100 %	100%
3	CP531	Modulating pump pulse width per zone (for external hydraulic kit)	20 % - 100 %	100%
1	CP541	Swimming pool Temperature Setpoint	0 °C - 39 °C	20 °C
1	CP551	Activation of chimney mode (no longer takes into account the atmosphere in OTC-RTC, it keeps the last setpoint calculated in RTC)	0 = OFF 1 = ON	0
2	CP561	Configuration of the Domestic Hot Water circuit anti legionella protection	0 = Disabled 1 =Weekly anti legionella 2 = Daily anti legionella	0
1	CP571	Time Program of the zone selected by the user	0 = Program 1 1 = Program 2 2 = Program 3 3 = Cooling	0
2	CP601	Heating setpoint during a heating demand (if CP021 = 9 Process heat)	20 °C - 100 °C	60 °C
2	CP611	Hysteresis activated for Process heat circuit (CP021 = 9)	1 °C - 15 °C	6 °C
2	CP621	Hysteresis disabled for Process heat circuit (CP021 = 9)	1 °C - 15 °C	6 °C
2	CP631	Anti legionella function start day	1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday 7 = Sunday	6
2	CP641	Logic level of the circuit Rbus (Opentherm) contact	0 = Opened 1 = Closed	1
2	CP651	Desired reduced room temperature set point in cooling mode	20 °C - 30 °C	29 °C
1	CP661	Choice of icon to display this zone (see controller display)	0…13	0
1	CP671	Info from the circuit room sensor (R.U serial number)	-	00 00 00 00
2	CP691	Reverse Rbus (Opentherm) contact in cooling	0 = No 1 = Yes	0
2	CP701	DHW Calorifier temperature setpoint	0 °C - 30 °C	0 °C

		offset		
2	CP711	Increases the primary temperature setpoint compared to the DHW calorifier setpoint (Example : DHW setpoint 50°C then : 50°C + CP711 = primary temperature in DHW production)	0 °C - 40 °C	20 °C
2	CP721	Increases the primary temperature setpoint in Process heat operating (CP021 = 9)	0 °C - 40 °C	20°C
3	CP731	Temperature increasing speed (Can only be changed if RTC (CP781)	0 = Extra slow 1 = Slowest 2 = Slower 3 = Normal 4 = Faster 5 = Fastest	0
3	CP741	Temperature decrasing speed (Can only be changed if RTC (CP781)	0 = Slowest 1 = Slow 2 = Normal 3 = Faster 4 = Fastest	0
2	CP751	Anticipation (at 0°C outside) **See appendix S**	0 Min - 240 Min	0 Min
2	CP761	The DHW tank is equipped with a Titane Active System anode	0 = No 1 = Yes	0
3	CP771	The zone after Buffer tank (only available if a buffer tank is present) **Indicates if the zone is conncted before or after the buffer tank**	0 = No (before buffer tank) 1 = Yes (after the buffer tank)	1
2	CP781	Control strategy **See appendix B**	0 = Auto 1 = RTC 2 = OTC 3 = OTC + RTC	0

DHW

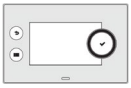


CPXX2 = DHW circuit parameter
Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.

Level	Parameter	Description	Adjustment range	Factory setting
2	CP002	Max setpoint of the circuit	7 °C - 100 °C	90 °C
2	CP022	Circuit functionality **See appendix A**	0 = Disabled 6 = Domestic hot water 7 = Electric domestic hot water 8 = Time program 9 = Process heat 10 = DHW layered tank 11 = BIC Domestic Hot Water	
2	CP042	Post-operation time of the circuit pump **See appendix K**	0 Min - 20 Min	4 Min
1	CP352	Domestic hot water temperature set point in comfort mode	40 °C - 80 °C	55 °C
1	CP362	Domestic hot water temperature set point in reduced mode	10 °C - 60 °C	10 °C
2	CP372	Domestic Hot Water Temperature Setpoint in antifreeze mode **See appendix E**	10 °C - 40 °C	10 °C
2	CP382	Domestic Hot Water Temperature set point in anti legionella mode	40 °C - 80 °C	70 °C
2	CP392	Anti legionella function start time	0 – 24H	3 H
2	CP402	Duration of the anti legionella function	1 Min - 600 Min	60 Min
2	CP422	Hysteresis (trip differential) for starting the domestic hot water heating	1 °C - 60 °C	6 °C
2	CP432	Optimisation of DHW loading depending on the primary temperature **See appendix P**	0 = OFF 1 = ON	0
2	CP462	Selection of the DHW priority **See appendix Q**	0 = Total 1 = Relative 2 = Not priority	0
2	CP502	Activate/Deactivate the Flow temperature sensor of the circuit (if connection of a sensor then automatic activation)	0 = Deactivate 1 = Activate	0
3	CP522	Power limit per zone	0 % - 100 %	100%
3	CP532	Pulse Width Modulation pump speed per zone (For external hydraulic kit)	20 % - 100 %	100%
2	CP562	Configuration of the Domestic Hot Water circuit anti legionella protection	0 = Deactivate 1 = Weekly anti legionella 2 = Daily anti legionella	0
1	CP572	Time Program of the zone selected by the user	0 = Program 1 1 = Program 2 2 = Program 3	0
2	CP602	Heating setpoint during a heating demand (if CP022 = 9 Process heat)	20 °C - 100 °C	60 °C
2	CP612	Hysteresis activated for Process heat circuit (CP022 = 9)	1 °C - 15 °C	6 °C
2	CP622	Hysteresis disabled for Process heat circuit (CP022 = 9)	1 °C - 15 °C	6 °C
2	CP632	Anti legionella function start day	1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday	6

			5 = Friday 6 = Saturday 7 = Sunday	
1	CP662	Choice of icon to display this zone (see controller display)	0…13	0
2	CP702	DHW Calorifier temperature setpoint offset	0 °C - 30 °C	0 °C
2	CP712	Increases the primary temperature setpoint compared to the DHW calorifier setpoint (Example : DHW setpoint 50°C then : 50°C + CP712 = primary temperature in DHW production)	0 °C - 40 °C	20 °C
2	CP722	Increases the primary temperature setpoint in Process heat operating (CP020 = 9)	0 °C - 40 °C	20 °C
2	CP762	The DHW tank is equipped with a Titane Active System anode	0 = No 1 = Yes	0
3	CP772	The zone after Buffer tank (only available if a buffer tank is present) Indicates whether the buffer tank is connected before or after the circuit	0 = No (before buffer tank) 1 = Yes (after the buffer tank)	1

CIRC C



CP = Circuit parmeter
Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors.
The parameters are identical to CIRC B
CIRCC : CPXX3

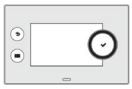
Level	Para-meter	Description	Adjustment range	Factory setting
2	CP003	Max setpoint of the circuit	7 °C - 100 °C	50 °C
1	CP013	Max setpoint of the circuit without outside sensor	7 °C - 100 °C	40 °C
2	CP023	Circuit C functionnality (10 not used) **See appendix A** **Parameters linked to layered domestic hot water do not appear**	0 = Disabled 1 = Direct 2 = Mixing circuit 3 = Swimming pool 4 = High temperature 5 = Fan convector 6 = Domestic hot water 7 = Electric domestic hot water 8 = Time program 9 = Process heat 10 = ~~Layered domestic hot water~~ 11 = BIC Domestic Hot Water	0
2	CP033	Control bandwidth for the mixing valve circuit Option of increasing the bandwidth if the valves are rapid or of reducing it if they are slow **See appendix J**	4 K - 16 K	12 K
2	CP043	Post-operation time of the circuit pump **See appendix J**	0 Min - 20 Min	4 Min
2	CP053	Minimum temperature difference between the boiler and the valves **See appendix L**	0 K - 16 K	4 K
2	CP063	Room antifreeze **See appendix E**	5 °C - 20 °C	6 °C
2	CP073	Max Room Temperature limit of the circuit in reduced mode, that allows switching to comfort mode (room setpoint)	5 °C - 50 °C	15 °C
1	CP098	User room temperature setpoint of the zone activity NIGHT	5 °C - 50 °C	20 °C
1	CP099	User room temperature setpoint of the zone activity HOME	5 °C - 50 °C	20 °C
1	CP100	User room temperature setpoint of the zone activity ABSENT	5 °C - 50 °C	6 °C
1	CP101	User room temperature setpoint of the zone activity MORNING	5 °C - 50 °C	21 °C
1	CP102	User room temperature setpoint of the zone activity EVENING	5 °C - 50 °C	22 °C
1	CP103	User room temperature setpoint of the zone activity customized	5 °C - 50 °C	23 °C
1	CP158	Setpoint of the room cooling temperature of the zone - NIGHT	20 °C - 30 °C	30 °C
1	CP159	Setpoint of the room cooling temperature of the zone - HOME	20 °C - 30 °C	25 °C
1	CP160	Setpoint of the room cooling temperature of the zone - ABSENT	20 °C - 30 °C	25 °C
1	CP161	Setpoint of the room cooling temperature of the zone - MORNING	20 °C - 30 °C	25 °C
1	CP162	Setpoint of the room cooling temperature of the zone - EVENING	20 °C - 30 °C	25 °C
1	CP163	Setpoint of the room cooling temperature of the zone - customized	20 °C - 30 °C	25 °C
1	CP203	Manually setting the room temperature	5 °C - 50 °C	20 °C

		setpoint of the zone		
2	CP213	Circuit curve bottom temperature in comfort mode (HCZP D). **If set to 15 °C then the function is disabled** **See appendix M**	15 °C - 90 °C	15 °C
2	CP223	Circuit curve bottom temperature in reduced mode (HCZP N) **If set to 15 °C then the function is disabled** **See appendix M**	15 °C - 90 °C	15 °C
2	CP233	Heating curve of the circuit **See appendix N**	0 - 4	0.7
2	CP243	Influence of the circuit room temperature sensor 0 : No influence 1 : Slight influence 3 : Average influence (recommended) 10 : Operates like a room thermostat **See appendix O**	0 - 10	3
2	CP273	Cooling set point for the flow temperature on the mixing valve circuit	11 °C - 23 °C	18 °C
2	CP283	Circuit flow temperature cooling setpoint (fan convector mode)	7 °C - 23 °C	10 °C
3	CP293	Functionality of the pump output (0 by default, if different than 0 = status transfer)	0 = Functionality of the pump ou 1 = Heating 2 = Domestic Hot Water 3 = Cooling 4 = Error report 5 = Burner 6 = Maintenance message 7 = System error 8 = DHW loop 9 = Primary pump 10 = Buffer tank load pump	0
1	CP323	Operating mode of the heating circuit	0 = Time programming 1 = Manual 2 = Frost protection	0
2	CP330	The time needed by the 3 way valve of the circuit, to be fully opened, before allowing the burner start.	0 – 240 seconds	60 seconds
2	CP343	Type of reduced night mode, stop or maintain heating of circuit (if setpoint < to CP073 = heating stop**. If there is a room sensor the parameter automatically switches to 1**	0 = Switching off the heating 1 = Heating reduced	0
1	CP353	Domestic hot water temperature set point in comfort mode	40 °C - 80 °C	55 °C
1	CP363	Domestic hot water temperature set point in reduced mode	10 °C - 60 °C	10 °C
2	CP373	Domestic Hot Water Temperature Setpoint in Antifreeze mode **See appendix E**	10 °C - 40 °C	10 °C
2	CP383	Domestic Hot Water Temperature set point in anti legionella mode	40 °C - 80 °C	70 °C
2	CP393	Anti legionella function start time	0 – 24H	3 H
2	CP403	Duration of the anti legionella function	1 Min - 600 Min	60 Min

2	CP423	Hysteresis (trip differential) for starting the domestic hot water heating	1 °C - 60 °C	6 °C
2	CP433	Optimisation of DHW loading depending on the primary temperature **See appendix P**	0 = OFF 1 = ON	0
2	CP443	Prevents the cooling of the Tank at the beginning of DHW production, according to the primary temperature	0 = OFF 1 = ON	0
2	CP463	Selection of the DHW priority **See appendix Q**	0 = Total 1 = Relative 2 = not priority	0
2	CP473	Number of days on which the screed drying function is activated. **See appendix R**	0 - 30 days	0 Days
2	CP483	Setting of the start temperature of the screed drying program	20 °C - 50 °C	20 °C
2	CP493	Setting of the stop temperature of the screed drying program	20 °C - 50 °C	20 °C
2	CP503	Activate/Deactivate the Flow temperature sensor of the circuit (if connection of a sensor then automatic activation)	0 = Deactivate 1 = Activate	0
1	CP513	Temporary room setpoint for the circuit (override)	5 °C - 50 °C	20°C
3	CP523	Power setpoint per zone	0 % - 100 %	100%
3	CP533	Pulse Width Modulation pump speed per zone (For external hydraulic kit)	20 % - 100 %	100%
1	CP543	Swimming pool circuit Temperature Setpoint	0 °C - 39 °C	20 °C
1	CP553	Activation of chimney mode (no longer takes into account the atmosphere in OTC-RTC, it keeps the last setpoint calculated in RTC)	0 = OFF 1 = ON	0
2	CP563	Configuration of the Domestic Hot Water circuit anti legionnella Protection	0 = Deactivate 1 = Weekly anti legionella 2 = Daily anti legionella	0
1	CP573	Time Program of the zone selected by the user	0 = Program 1 1 = Program 2 2 = Program 3 3 = Cooling	0
2	CP603	Heating setpoint during a heating demand (if CP023 = 9 Process heat)	20 °C - 100 °C	60 °C
2	CP613	Hysteresis activated for Process heat circuit (CP023 = 9)	1 °C - 15 °C	6 °C
2	CP623	Hysteresis disabled for Process heat circuit (CP023 = 9)	1 °C - 15 °C	6 °C
2	CP633	Anti legionella function start day	1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday 7 = Sunday	6
2	CP643	Logic level of the circuit Rbus (Opentherm) contact	0 = Opened 1 = Closed	1
2	CP653	Desired reduced room temperature setpoint in cooling mode	20 °C - 30 °C	29 °C
1	CP663	Choice of the symbol representing the circuit (see controller display)	0…13	0

1	CP673	Info from the circuit room sensor (R.U serial number)	-	00 00 00 00
2	CP693	Reverse Rbus (Opentherm) contact in cooling	0 = No 1 = Yes	0
2	CP703	DHW Calorifier temperature setpoint offset	0 °C - 30 °C	0 °C
2	CP713	Increases the primary temperature setpoint compared to the DHW calorifier setpoint (Example : DHW setpoint 50°C then : 50°C + CP713 = primary temperature in DHW production)	0 °C - 40 °C	20 °C
2	CP723	Increases the primary temperature setpoint in Process heat operating (CP023 = 9)	0 °C - 40 °C	20°C
3	CP733	Temperature increasing speed (Can only be changed if RTC (CP783)	0 = Extra slow 1 = Slowest 2 = Slower 3 = Normal 4 = Faster 5 = Fastest	0
3	CP743	Temperature decrasing speed (can only be changed if RTC (CP783)	0 = Slowest 1 = Slower 2 = Normal 3 = Faster 4 = Fastest	0
2	CP753	Anticipation (at 0°C outside) **See appendix S**	0 Min - 240 Min	0 Min
2	CP763	The DHW tank is equipped with a Titane Active System anode	0 = No 1 = Yes	0
3	CP773	The zone after Buffer tank (only available if a buffer tank is present) **Indicates if the zone is conncted before or after the buffer tank**	0 = No (before buffer tank) 1 = Yes (after the buffer tank)	1
2	CP783	Control strategy **See appendix B**	0 = Auto 1 = RTC 2 = OTC 3 = OTC + RTC	0

AUX



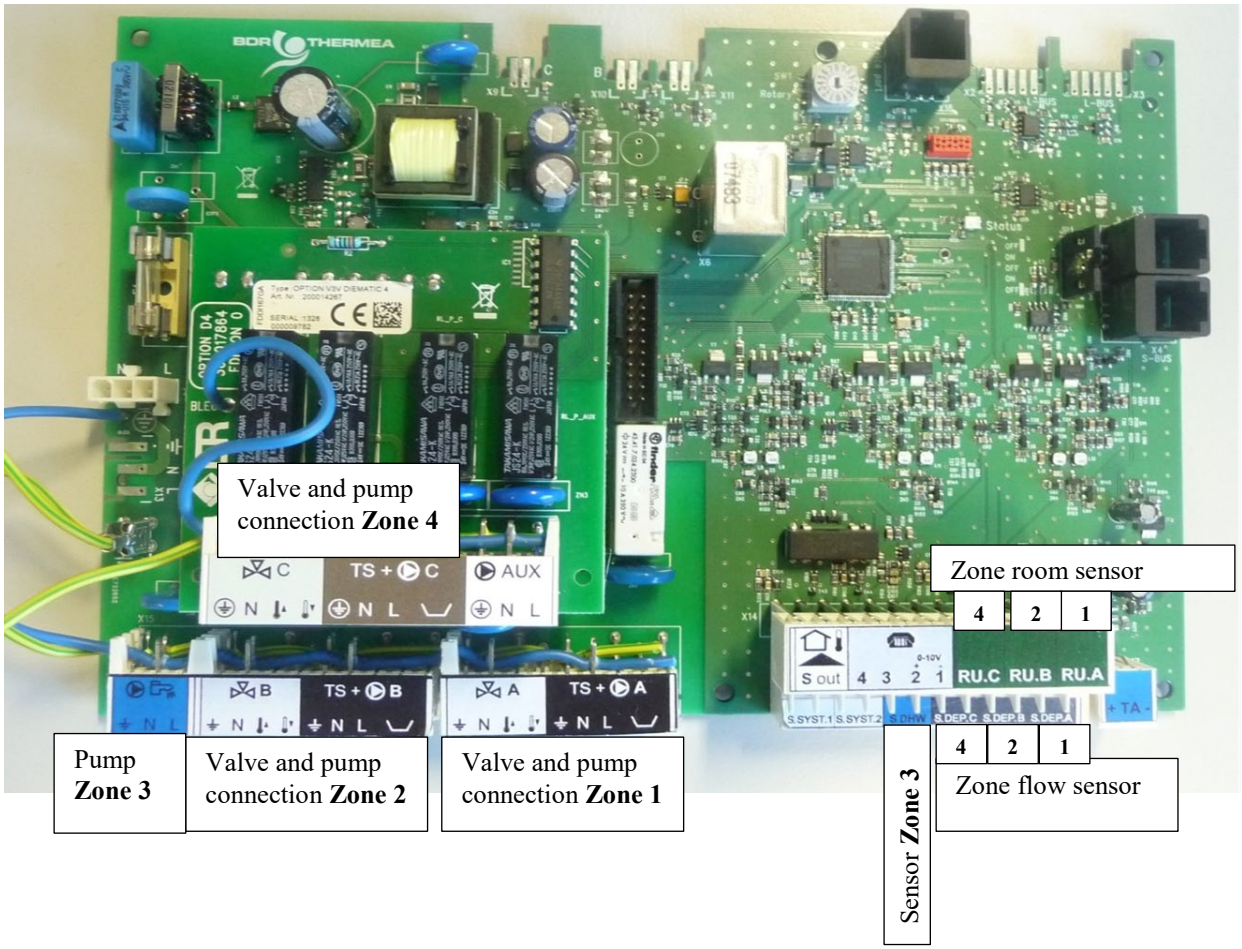
CPXX4 = Auxiliary circuit parameter
Some parameters can be displayed or not, depending on the connected appliances, electronic cards and/or sensors..
Not used for AUX circuit: ~~CPXXX~~

Level	Para-meter	Description	Adjustment range	Factory setting
2	CP004	Max setpoint of the circuit	7 °C - 100 °C	90 °C
2	CP024	AUX circuit functionality (1, 2, 3, 4, 5, 7, 10 not used) **See appendix A** **The parameters related to the direct circuit, the mixed circuit, swimming pool, high temperature, fan convector, electric domestic hot water, stratified hot water, do not appear.**	0 = Disabled 6 = Domestic hot water 8 = Time program 9 = Process heat	0
2	CP044	Post-operation time of the circuit pump **See appendix K**	0 Min - 20 Min	4 Min
2	CP064	Room antifreeze **See appendix E**	5 °C - 20 °C	6 °C
1	CP324	Operating mode of the auxiliary circuit	0 = Time programming 1 = Manual 2 = Frost protection	0
1	CP354	Domestic hot water temperature set point in comfort mode	40 °C - 80 °C	55 °C
1	CP364	Domestic hot water temperature set point in reduced mode	10 °C - 60 °C	10 °C
2	CP374	Domestic hot water temperature setpoint in antifreeze mode **See appendix E**	10 °C - 40 °C	10 °C
2	CP384	Domestic Hot Water Temperature set point in anti legionella mode	40 °C - 80 °C	65 °C
2	CP394	Anti legionella function start time	0 – 24H	3 H
2	CP404	Duration of the anti legionella function	1 Min - 600 Min	60 Min
2	CP424	Hysteresis (trip differential) for starting the domestic hot water heating	1 °C - 60 °C	6 °C
2	CP434	Optimisation of DHW loading depending on the primary temperature **See appendix P**	0 = OFF 1 = ON	0
2	CP444	Prevents the cooling of the Tank at the start according to primary temp	0 = OFF 1 = ON	0
2	CP464	Selection of the DHW priority **See appendix Q**	0 = Total 1 = Relative 2 = Not priority	0
3	CP524	Power setpoint per zone	0 % - 100 %	100%
3	CP534	Pulse Width Modulation pump speed per zone (For external hydraulic kit)	20 % - 100 %	100%
2	CP564	Configuration of the Domestic Hot Water circuit anti legionella Protection	0 = Deactivate 1 = Weekly anti legionella 2 = Daily anti legionella	0
1	CP574	Time program of the circuit selected by the user	0 = Program 1 1 = Program 2 2 = Program 3	0
2	CP604	Heating setpoint during heating demand (if CP024 = 9 Process heat)	20 °C - 100 °C	60 °C

2	CP614	Hysteresis activated for process heat circuit (CP024 = 9)	1 °C - 15 °C	6 °C
2	CP624	Hysteresis disabled for Process heat circuit (CP024 = 9)	1 °C - 15 °C	6 °C
2	CP634	Anti legionella function start day	1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday 7 = Sunday	6
1	CP664	Choice of icon to display this zone (see controller display)	0…13	0
2	CP704	DHW Calorifier temperature setpoint offset	0 °C - 30 °C	0 °C
2	CP714	Increases the primary temperature setpoint compared to the DHW calorifier setpoint (Example : DHW setpoint 50°C then : 50°C + CP713 = primary temperature in DHW production)	0 °C - 40 °C	20 °C
2	CP724	Increases the primary temperature setpoint in Process heat operating (CP024 = 9)	0 °C - 40 °C	20 °C

Appendix A

Circuit functionality and connections on SCB-10 PCB
CP020 > CP024



Depending on the connectors available, areas can be configured in different ways.
If you create a mixing circuit for Zone 1 - circuit A, use the valve, the pump and the sensor of Zone 1.

Circuit functionality

CP02x (CP020 to CP024)

	Zone 1	Zone 2	Zone 4	Zone 3	Zone 5
Hydraulics :	CIRC.A	CIRC.B	CIRC.C	DHW	AUX
0=Disable	X	X	X	X	X
1=Direct	X	X	X		
2=Mixing circuit	X	X	X		
3=Swimming pool	X	X	X		
4=High temperature	X	X	X		
5=Fan Convector	X	X	X		
6=Domestic hot water	X	X	X	X	X
7=Electric domestic hot water	X	X	X		
8=Time programming	X	X	X	X	X
9=Process heat	X	X	X	X	X
10=Layered domestic hot water calorifier				X	
11=DHW BIC	X	X	X	X	X

Hydraulics

Disabled : allows the display of the circuit to be removed, the circuit is not used, but its pump output can be used as a status output.
Direct : allows to manage a pump in heating on the selected zone, the refreshing is not possible.
Mixing Circuit : can be used to manage a valve and a pump with the flow sensor, for heating or cooling (eg underfloor heating).
Swimming pool : allows the pump of the swimming pool heat exchanger to be controlled according to the flow sensor (if the sensor is present) and also the swimming pool filter pump.
High temperature : allows to manage a pump, heating 365 days with time program, no summer stop
Fan convector : allows you to manage a pump, to make heating and refreshing
Domestic Hot Water : allows to manage a pump and a sensor for DHW production
Electric domestic hot water : allows to manage a pump, a sensor and to use the valve connector to control a relay for the calorifier electric heating resistance. When switching to summer mode the calorifier automatically switches to electric.
Time programming : allows to make a time program on the pump connectors.
Process heat : allows to manage a pump, heats 365 days 24h/24, no summer stop, has priority on all circuits. The boiler will remove all protections to produce maximum power in a minimum time.
Layered domestic hot water calorifier : allows to make domestic hot water with 2 sensors, calorifier top sensor (System sensor 1 or 2) allows the triggering of the loading and the low calorifier sensor (SDHW) allows to stop the loading.

Appendix B

Circuit control strategy
CP780 to CP784

Auto : Depending on the detected configuration :
If no outside sensor or room sensor is connected : operation with a fixed setpoint
If a room sensor is connected : operation in RTC. If an outside sensor is connected operation in OTC.
If both are connected : operation in RTC + OTC.

RTC : The controller measures the temperature in the room where the thermostat is installed (reference room) and calculates the flow temperature for the boiler. The modulating boiler controls the output on the basis of the flow temperature and return temperature of the water. This optimises the boiler efficiency, keeping the water temperature as constant as possible.

OTC : The control system measures the outside temperature using an outside temperature sensor. Based on the outside temperature, the flow temperature is determined with the help of the heating curve of the controller.
The heating curve must be chosen so that the least favourable room can be heated efficiently, even when the outside temperature is very low.
The measured inside temperature does not affect the control of the boiler.
The desired inside temperature can only be achieved with a correctly programmed heating curve and a correctly designed system.
The normal outdoor conditions are also important. Direct sunlight or a strong northerly wind mean lower and higher heating requirements respectively. However, this has no influence on the supply of heat from the boiler. That is why the variable setpoint setting is not enough in itself. Adjustments must be made in each room using thermostatic valves.

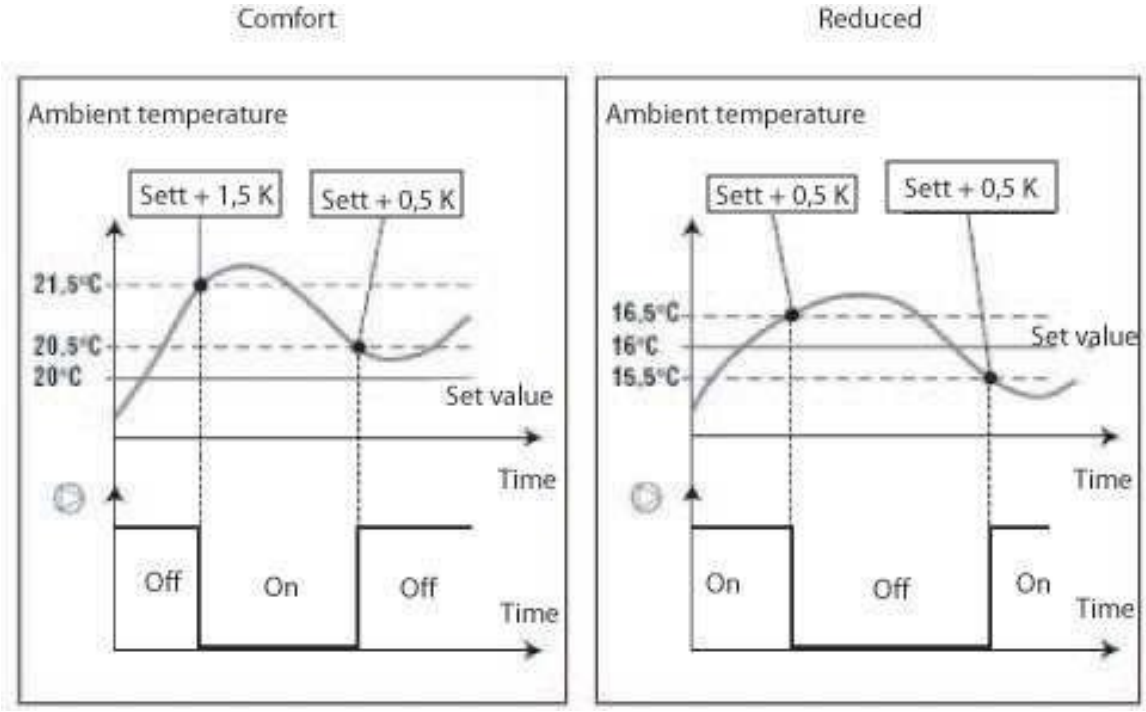
OTC + RTC : This type of control is similar to the setting with variable setpoint.
It is therefore important that the heating curve of the controller is correctly programmed. The heating curve is shifted when the measured room temperature deviates from the desired room temperature. The advantage of this control strategy is that desired changes to the room temperature can be anticipated quickly. For a lower desired room temperature, the boiler will remain off for longer and this benefits your energy consumption.
Adjustments are not needed in the room where the controller is positioned.
Any radiator valves present in the reference room must be fully opened.

Appendix C

Logical sequence of the pumps

Operating with room sensor :

Example comfort setpoint 20 °C and reduced 16 °C



Operating without room sensor:

There can be no room temperature correction or frost protection of the room.

COMFORT = Pump operates constantly

REDUCED = 1) If CP340 = 1 : reduced then the pumps are running constantly.
2) If CP340 = 0 : stop then the pumps are stopped excepted if the frost protection is active.

Appendix D

Summer/winter switch + neutral band (only for heat pumps)
AP073

There are two scenarios:

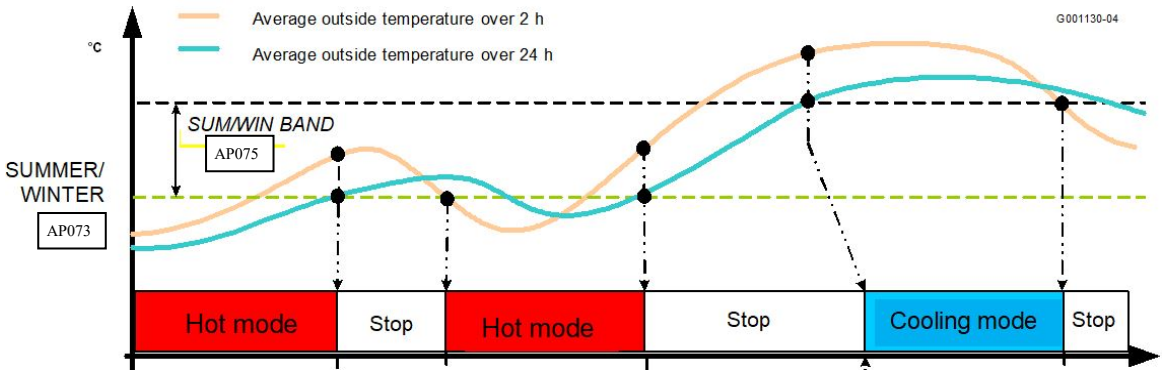
A- Without room sensor

Switching from SUMMER to WINTER mode : Average 24 hours outside T° **and** over the last two hours below the switching temperature setpoint

Switching from WINTER to SUMMER mode : Average 24 hours outside T° **or** over the last two hours above the switching temperature setpoint

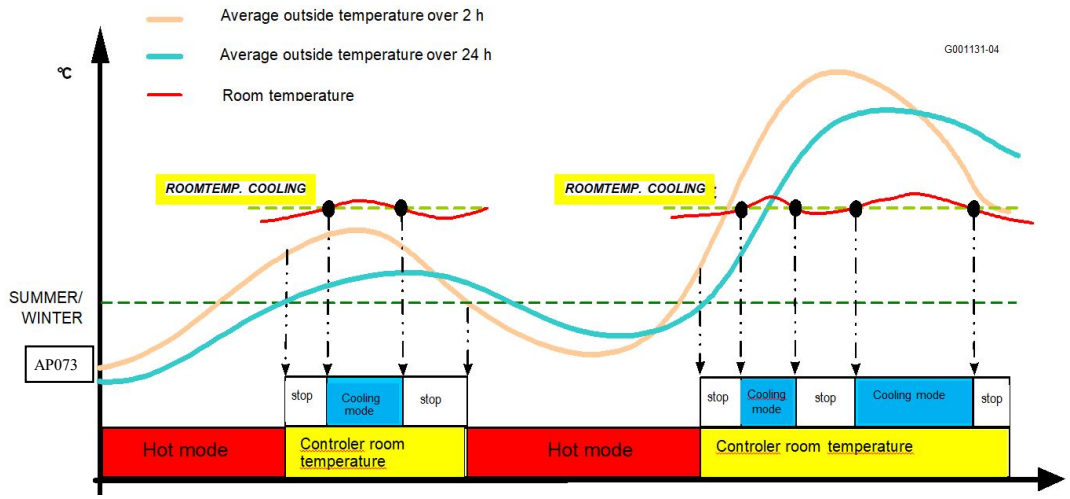
In the neutral band the heat pump is shut-down.

T°outside > SUMMER/WINTER + SUMMER/WINTER BAND



B- With room sensor

If there are 3 distribution circuits it is necessary to have 3 room sensors.
With room sensors the room temperature is regulated with the room sensor(s). The hot/cold mode depends on the outdoor temperature averaged over 2 and 24 hours (SUMMER/WINTER temperature) in order to stabilize the passage from hot to cold, that is to say (2 hours = rapid rise of the outside temperature above 22 °C)



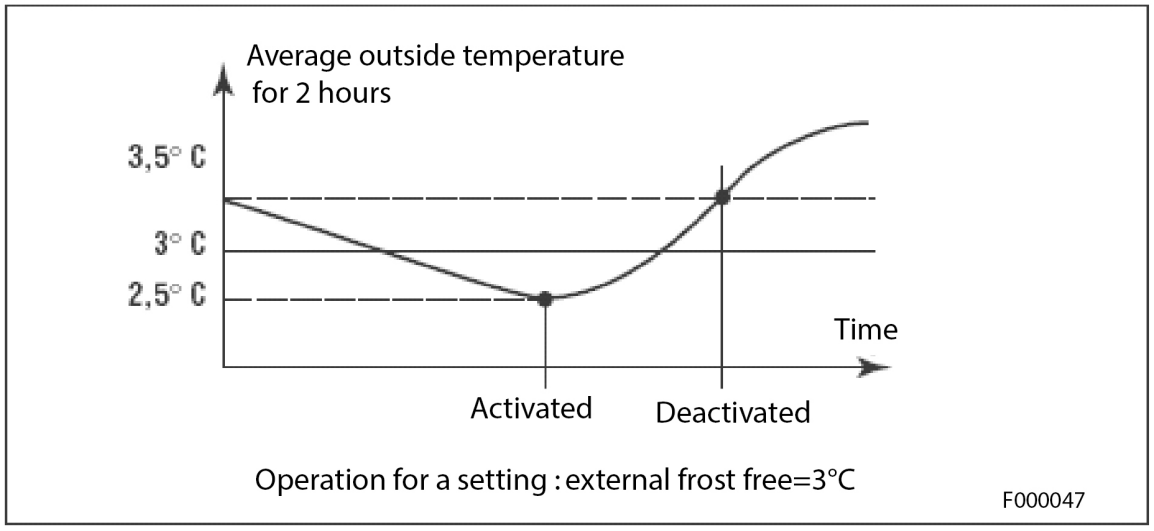
The room sensor is used to regulate the room temperature when in cooling operating. The outdoor temperture must be above the SUMMER/WINTER set point (AP073)
The neutral SUMMER/WINTER gap has not influence, cooling is only managed by the room temperature sensor.

Appendix E

Frost protection

- **Outdoor temp antifreeze AP080**

The frost protection function on the installation is active in all operating modes.



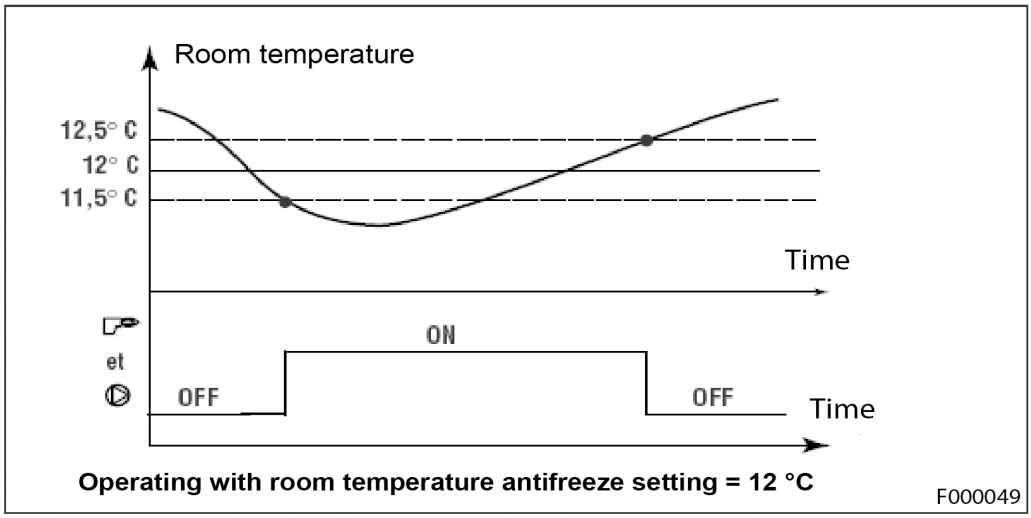
Activating:
The antifreeze protection of the installation is activated if the outside temperature averaged over 2 hours falls below the temperature setting OUT.ANTIFREEZE, adjustable between - 30 and + 20 °C.
In case of activation, the burner and the circulator are restarted to meet the minimum requirements for each circuit.

- **Room antifreeze (outside sensor not used)**

CP060 > CP064

As long as the room temperature is above the ROOM ANTIFR. setpoint, the boiler and pumps are stopped and the valves are closed. When it is reached, the pumps are turned on, the generator is restarted and the valves are set to heat the water to the required temperature to maintain the programmed anti-freeze room temperature.
Note: When the room temperature gets 0.5 K above the setpoint, everything is stopped again and the cycle starts again).

Example: Room antifreeze 12°C

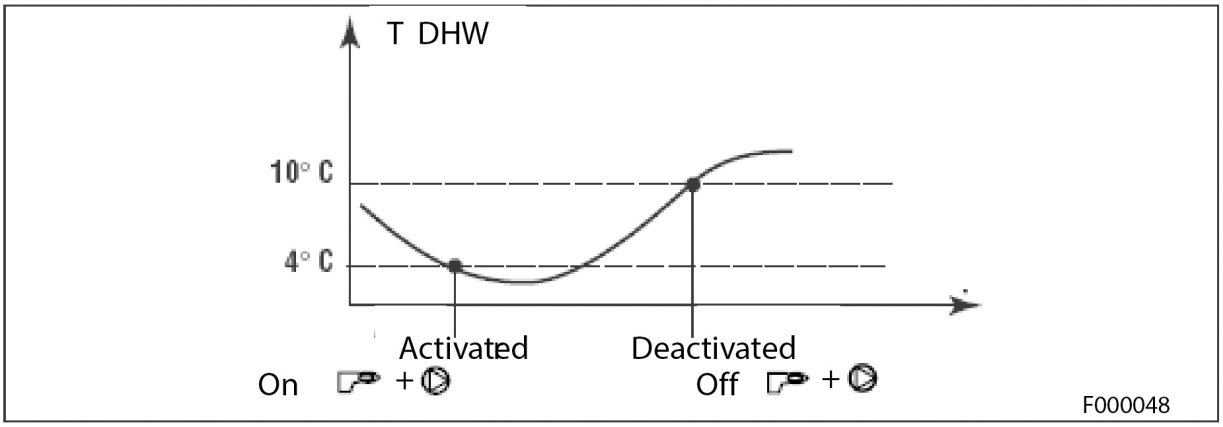


Appendix E (continued)

- **Domestic hot water temperature setpoint in antifreeze mode**

CP370 > CP374

If the calorifier temperature is below + 4°C then the tank is loaded to the setpoint CP370 (10 °C factory setting)

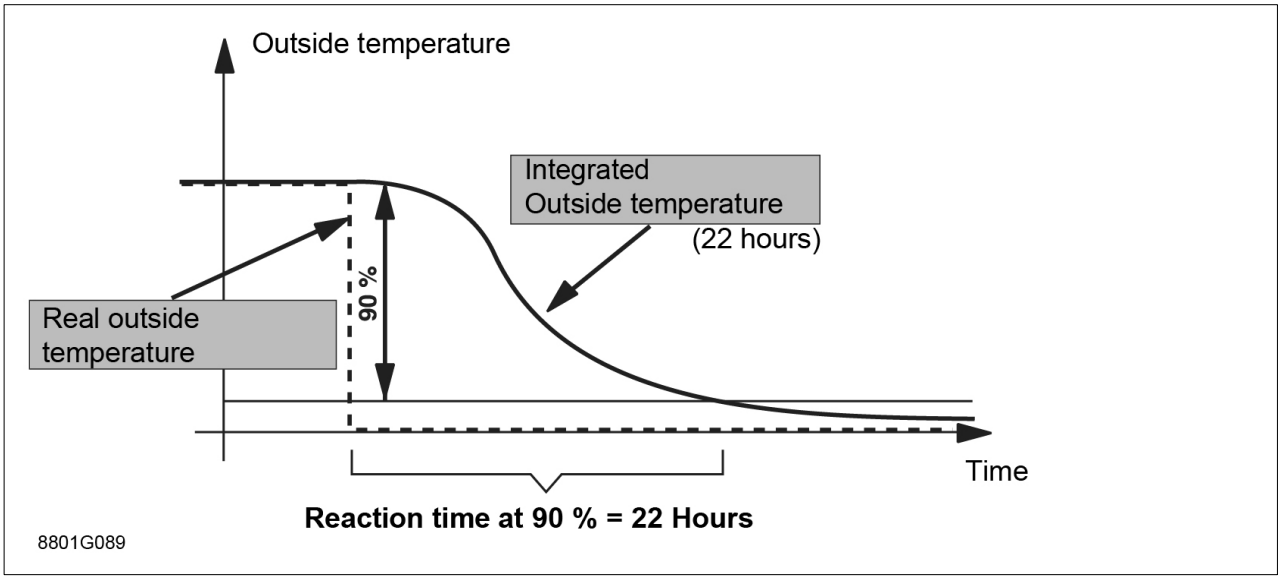


Appendix F

Building inertia
AP079

The average outdoor temperature is calculated over a variable time depending on the inertia factor I (setting at the installer level).
Reaction time to take into account 90% of the external temperature variation:
10 + (4 x I)

Example: Inertia factor I = 3 (factory setting)
RT = 10 + (4 x 3) = 22 hours
RT = Reaction Time



Evolution of the integrated outdoor temperature for an "idealized" disturbance, with an inertia factor of 3.

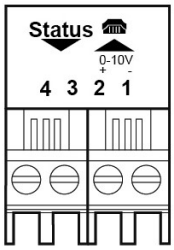
The regulator will therefore take 22 hours to compensate 90% of the variation of the outside temperature. La température d'eau départ chaudière évoluera selon une température extérieure intégrée sur 22 heures, tenant ainsi compte de la vitesse de réaction du bâtiment.

Appendix G

TEL Configuration
EP046

Concerns the telephone connector : 0-10 V input on terminal 1 and 2 if EP014 is set to 1 (temperature) or 2 (power).
If the 0-10V EP014 input is set to 0 = No, then the 1-2 phone input is configurable to EP046.
The outputs 3-4 can be configured in EP018 from 0 to 11.

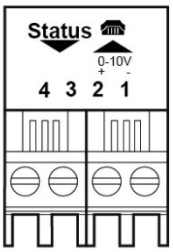
The telephone connector can be used to connect a 0-10 V analogue input.
The 0-10 V signal controls the boiler flow temperature in a linear way. This control modulates on the basis of flow temperature.
Connect the telephone connector as follows:



AD-4000004-02

1-2 0-10V entry or dry contact (if EP014 = No)
3-4 status output

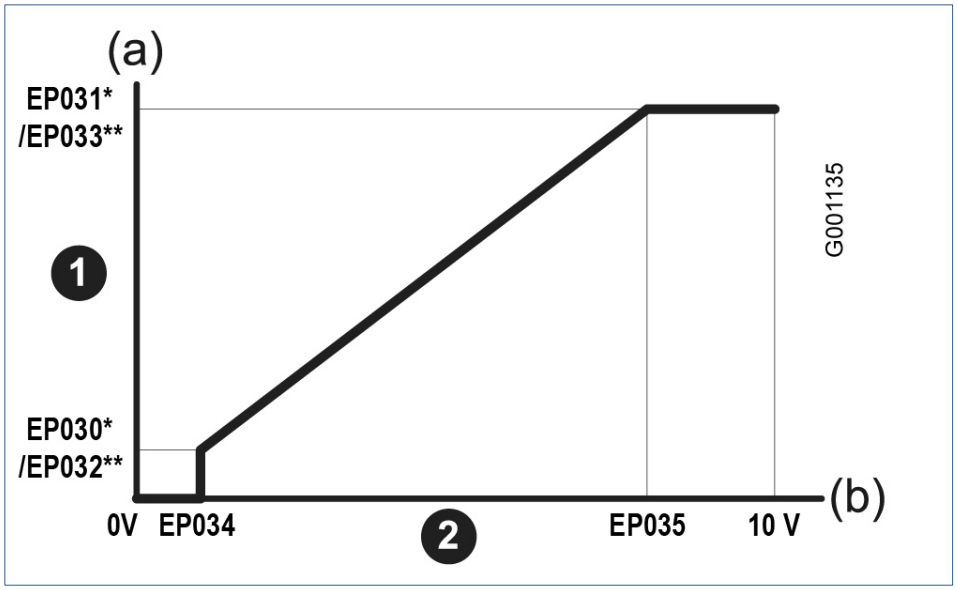
Appendix H



AD-4000004-02

0-10V (Volt) Function
EP014

This function enables control of the boiler by an external system comprising a 0-10 V output connected to the 0-10 V input. This control imposes a temperature or output set point on the boiler.



1. Flow temperature setpoint (°C)
2. Input voltage (V) – DC

(a) Boiler temperature

(b) Input voltage (V)

* with **EP014** = **1**
If **EP014** = **1** the temperature varies between **EP030** and **EP031** and the power is fixed (= **EP033**)

** if **EP014** = **2**
If **EP014** = **2** the power varies between **EP032** and **EP033** and the temperature is fixed (=**EP031**)

The boiler temperature set point corresponds strictly to the 0-10 V input.

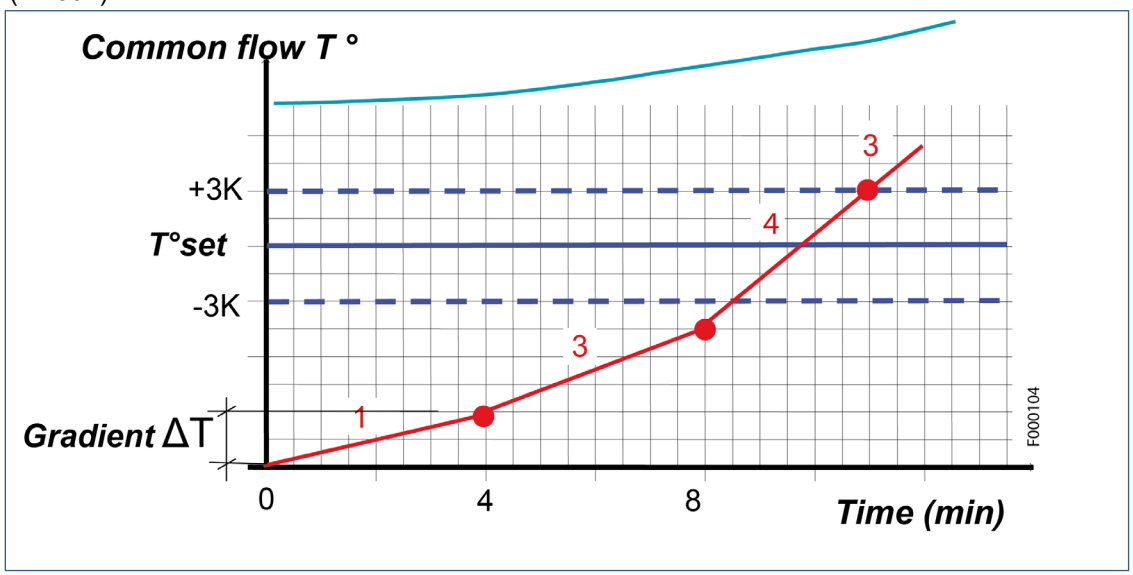
The secondary boiler circuits continue to operate but have no impact on the water temperature in the boiler if the outside sensor is connected.

When using the 0-10 V input and a secondary circuit on the boiler, the external control unit supplying this 0-10 V voltage must always request a temperature equal at least to the needs of the secondary circuit.

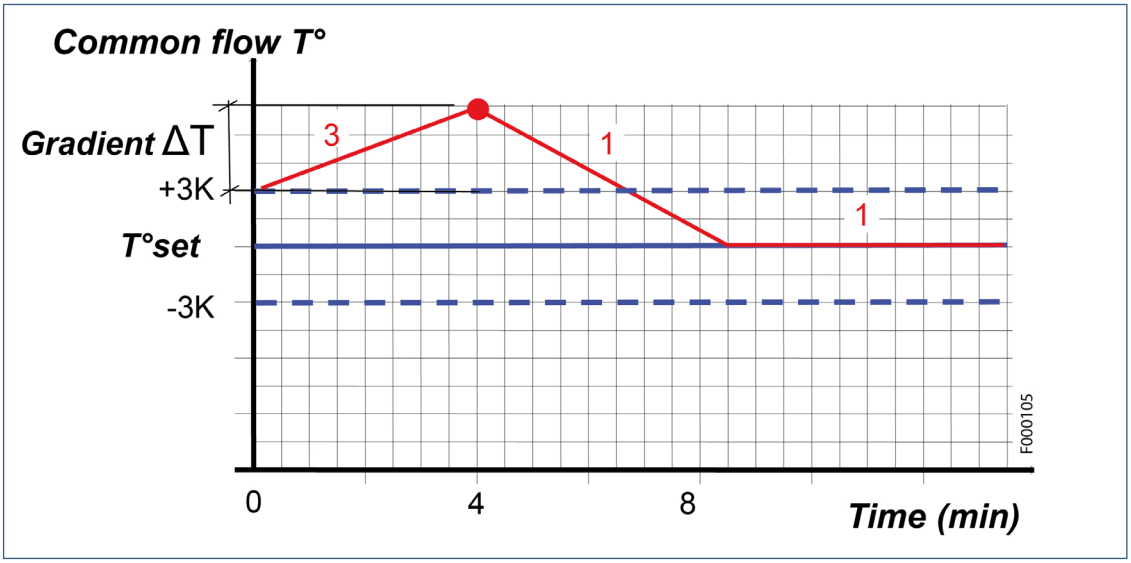
Appendix I

Classic cascade management
NP006

If NP006 is set to 0, a boiler is added or removed from the cascade every 4 minutes (4 minutes = NP009 divided by 2). If gradient ΔT < 6K in 4 min and actual T ° <T ° setpoint -3K (NP002) = A boiler is added
The withdrawal of a boiler occurs when the common flow temperature goes above the set point +3 °C (NP001).



Real T° - **1, 3, 4** Operating boilers number 1, 3, 4... : The boiler number 2 doesn't exist (reserved).
1 boiler added or removed every 4 minutes.
First boiler triggered at setpoint –3 K
If gradient **ΔT < 6 K** in **4** minutes and **Real T° < T°set – 3K** : one boiler is added.

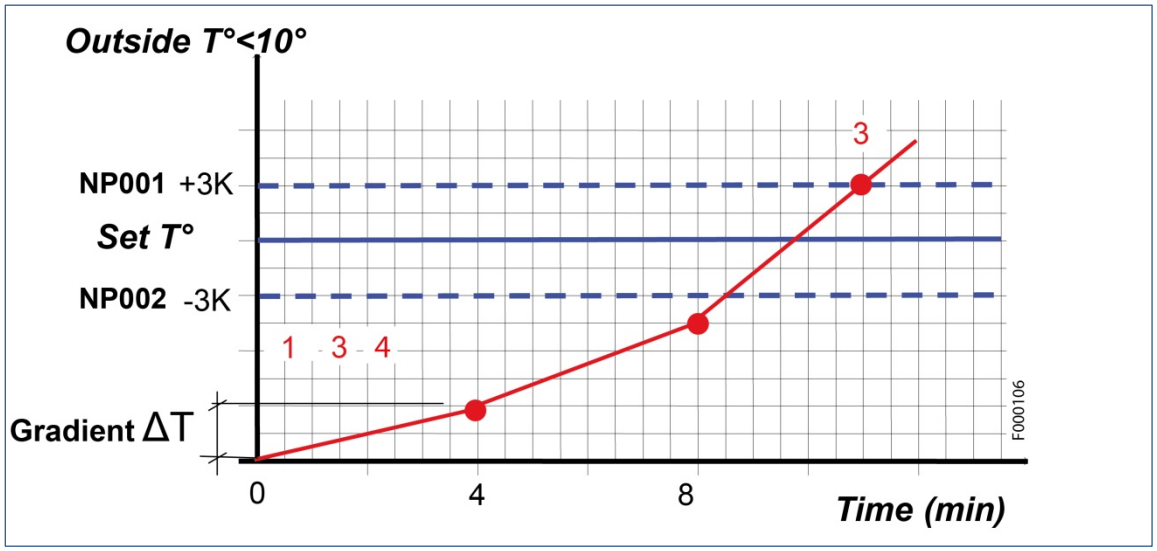


Real T° - **3, 1** : Operating boilers number 1, 3 : The boiler number 2 doesn't exist (reserved).
1 boiler added or removed every 4 minutes.
First boiler triggered at setpoint –3 K
If gradient ΔT < 6 K in 4 minutes and real T° < T°set – 3K : one boiler is added.

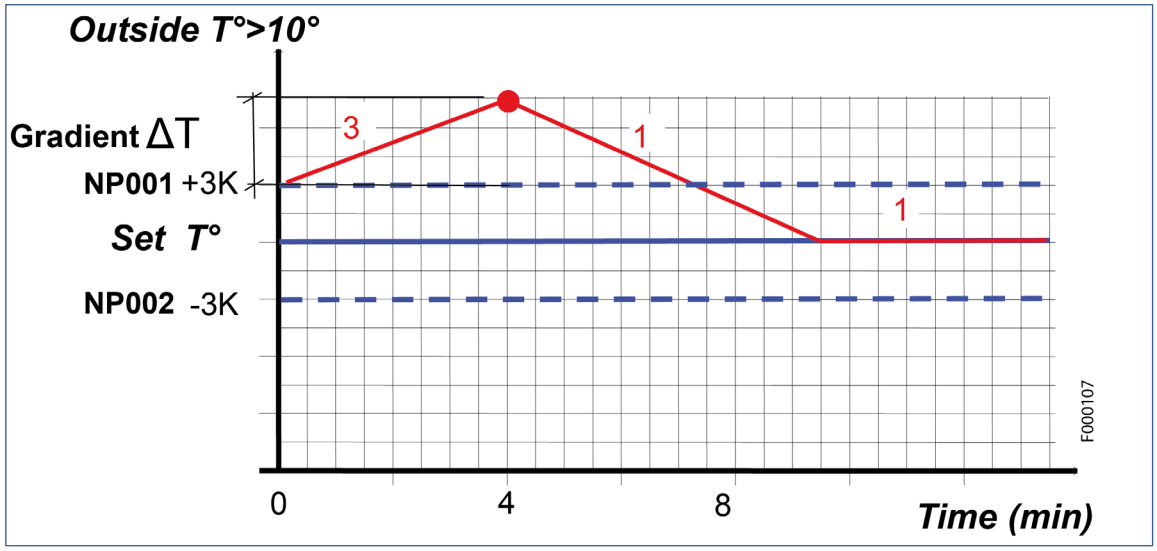
Appendix I continued

Logic of the parallel cascade
NP006

If NP006 is set to 1 and if the T°OUTSIDE <CascTOutsideHeatParl (Factory setting = 10 ° NP007) all boilers are started simultaneously.
The withdrawal of a boiler occurs when the common flow temperature rises above the set point +3 °C (NP001). Every 4 minutes (NP009 divided by 2), if this common flow temperature has not fallen by more than 6 °C and if the common flow temperature is still 3°C higher than the setpoint, one boiler is removed from the cascade.



Real T° - **1, 3, 4** Operating boilers number 1, 3, 4... : The boiler number 2 doesn't exist (reserved).
All 3 boilers are started simultaneaously.

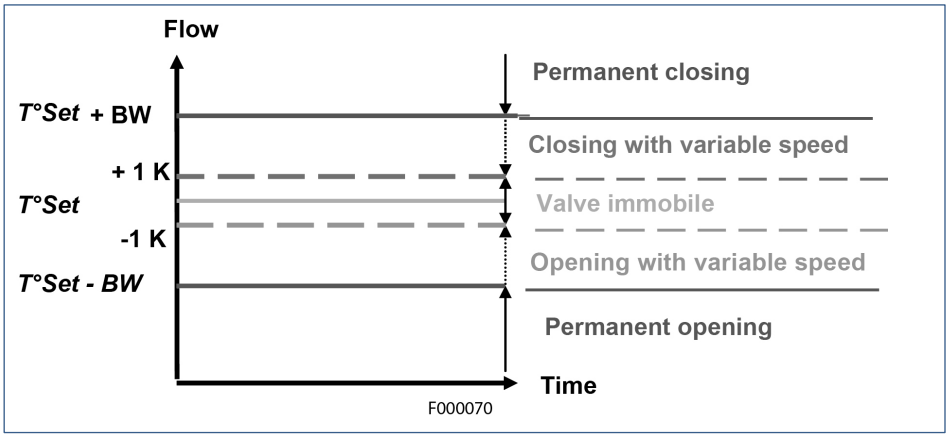


Real T° - **1, 3** Operating boilers number 1, 3... : The boiler number 2 doesn't exist (reserved).

Appendix J

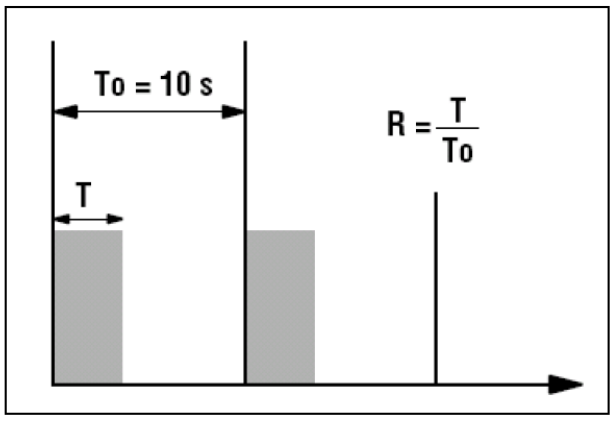
V3V bandwidth
CP030 > CP034

The value set can be increased if a fast valve is used and reduced if a very slow valve is used (electromechanical valve: 2 to 4 mn ; electrothermal valve 16 mn).
The 3-way valve control is carried out thanks to a "3 points" logic that allows; opening, closing or immobility of the valve (in a range of ± 1 K from the setpoint).



Tset = temperature setpoint (calculated by the control system)
BW = bandwidth (programed for the installation)
Tmeas = water temperature measured after the valve.

The speed variation of the motor is obtained by chopping the supply voltage of the latter, the hash being proportional to the gap. The motor is powered by a rectangular signal with 10 second periods and a variable cyclic ratio (R).



The sign of the difference Tmeas -Tset gives the operating direction of the valve:
Tmeas - Tset > 0 valve closing
Tmeas - Tset < 0 valve opening

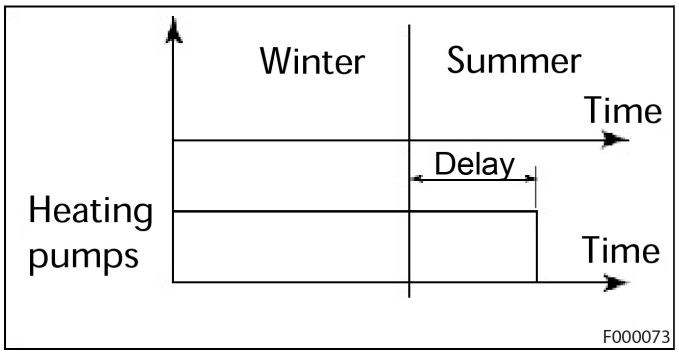
Remarks: The operating time of the valve motor can not be less than 1 second, therefore:
R < 0,1 (10 %) : motor off.

The operating time of the valve motor can not be less than 1 second, therefore:
R > 0,9 (90 %) : motor running all the time

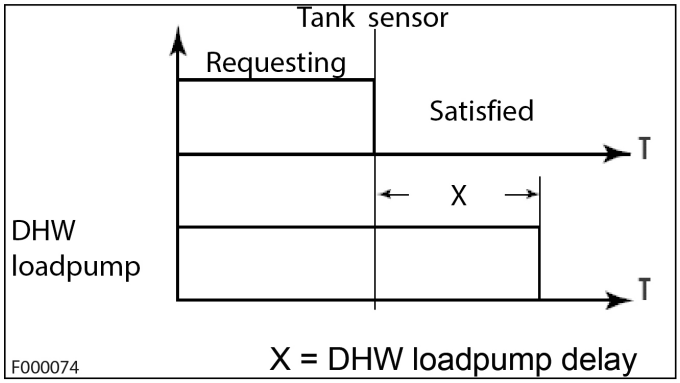
Appendix K

Post-operation time of the circuit pump (according to the circuit operating mode)
CP040 > CP044

Heating pump time delay :
The time delay for the heating pump(s) cut off prevents the boiler from overheating, which may cause the untimely triggering of the safety thermostat.



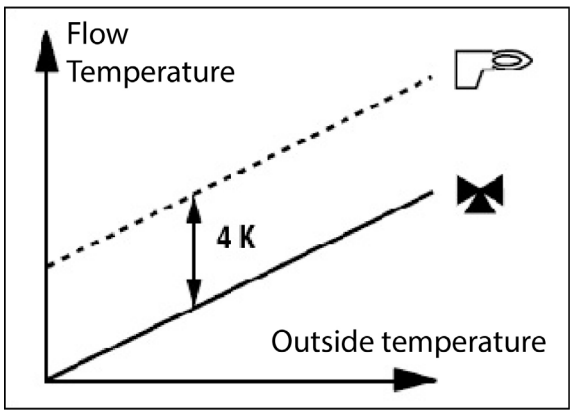
DHW pump time delay :
The time delay for the domestic hot water load pump cut off prevents, after the tank loading, to put too hot water being sent to the heating circuit after the tank is filled It also prevents the boiler from overheating, which may cause the untimely triggering of the safety thermostat.



Appendix L

Minimum temperature difference between the boiler and the valves (Offset boiler /V3V)
CP050 > CP054

This is the difference between the boiler temperature and the V3V circuit setpoint
Example: Circuit setpoint 40 °C then Boiler Setpoint = Circuit setpoint + CP050...4 = 44 °C



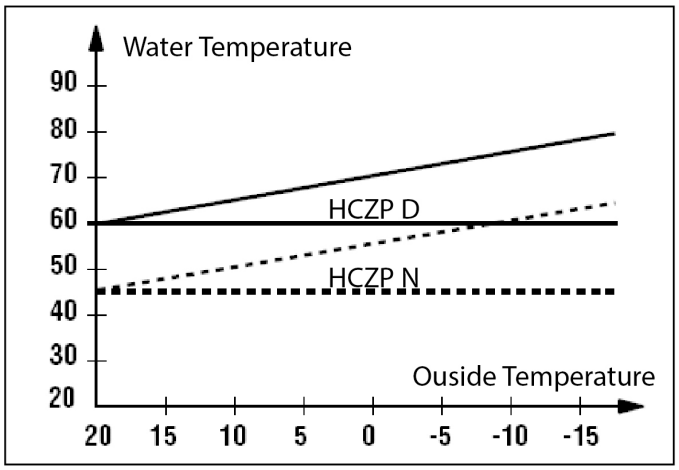
Appendix M

BCT (Bottom curve temperature) per circuit A, B and C
CP210 > CP214
CP220 > CP224

The BCT makes it possible to impose on the circuit a minimum operating temperature (this temperature can be made constant if the slope of the circuit concerned is set to 0) to control a circuit of the air heater type, for example.
A different value can be programmed for day and night.
This function allows you to move the heating curve base. 15°C = NO

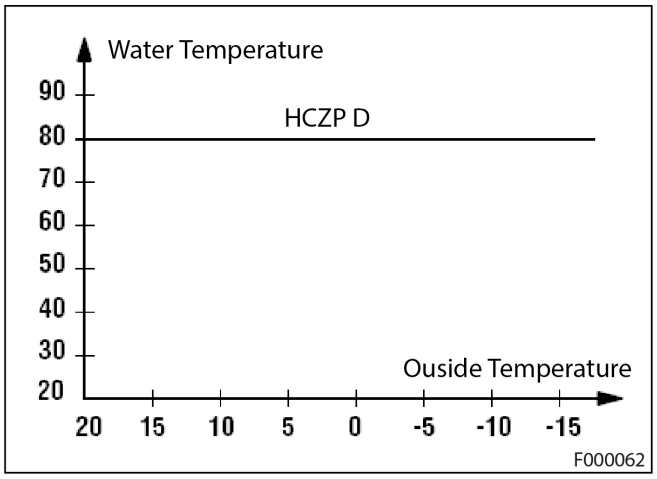
Example 1 :

Circuit A B and C = HCZP D (CP210 > CP214) = 60° C HCZP N (CP220 > CP224) = 45° C P = 0,5



In this example, the curve in comfort period will be at 60 ° C water temperature.
In reduced period, this temperature will be at 45 °C

Example 2 : HCZP D (CP210 > CP214) = 80° C HCZP N (CP220 > CP224) = NO (15°C) P = 0

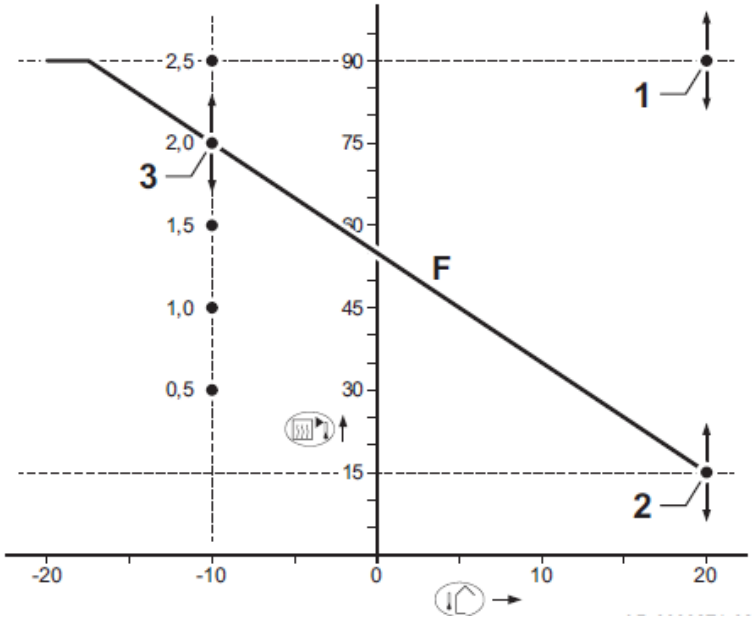


To obtain a constant temperature loop, adjust the parameters as indicated above.
In this example, the temperature in the boiler circuit will be constantly 80 ° C during the day mode.

Appendix N

Heating curve of the circuit
CP230 > CP234

This type of control establishes a correspondence between the water temperature of the installation and the outside temperature. This correspondence is called heating curve.



1 Max circuit setpoint adjustment (CP001>CP004)
2 Base point of the comfort temperature (CP210>CP214 or CP220>CP224)
3 (CP230>CP234)
F Heating curve

Outdoor temperature

Flow temperature

Appendix O

Influence of the circuit room temperature sensor
CP240 > CP244

Adjusts the correction scope of the room sensor to the boiler water temperature and the valve circuits flow temperatures.
The variation of the heating circuit water flow temperature, caused by a difference between the measured room temperature and the set point, will be proportional to the influence given to the room sensor.

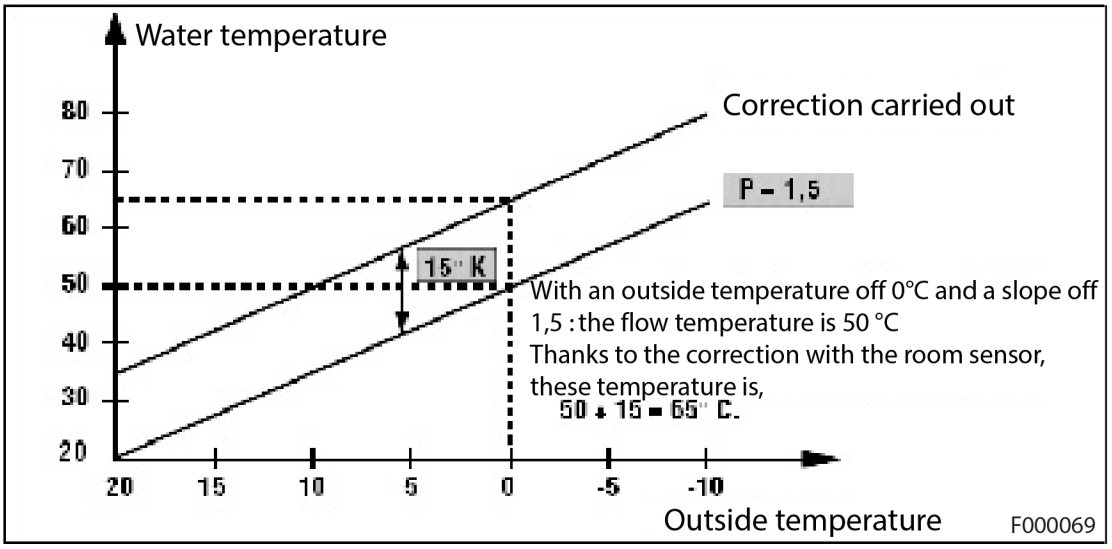
This correction, causing a parallel offset of the heating curve, is given by the following formula:

Correction on water C: $C = \Delta\theta \times (1 + P) \times Inf$ $\Delta\theta = Ts - Troom$

Δθ = Difference between the measured temperature and the given temperature setpoint.
P = Slope of the heating curve.
Inf = Influence of the room temperature sensor.
Ts = Temperature setpoint.
Troom = Room temperature
Note: The correction on water is limited upwards to 20 K, but is without limitation to the bottom

Example :
Gradient = 1,5
Influence of the room temperature sensor = 3 (Factory setting)
Temperature set point = 20°C
Room temperature = 18 °C

Correction on water E:



Correction made: Water gap = 2 x (1 + 1,5) x 3 = 5 x 3 = 15° K

Appendix P

Optimisation of the domestic hot water calorifier loading
CP430 > CP434

This function optimises the operating times of the generator, especially of the heat pump. It is possible only with the use of a sanitary load pump.

Optimisation start : If the DHW calorifier T° is 1 °C below the setpoint and the boiler temperature > the calorifier setpoint + 20°C (CP710…CP714 + 3°C).

Optimisation stop : If the boiler temperature is < DHW setpoint + CP710 ... CP714 - 3 ° C. Or if the DHW tank setpoint is reached.

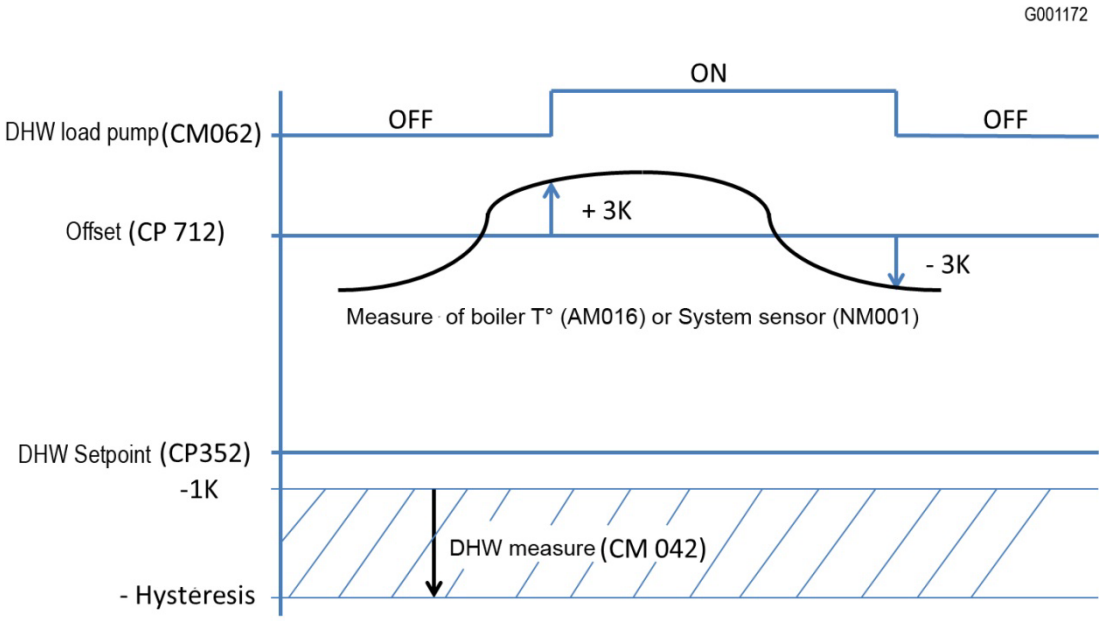
Example no. 1 :
T° calorifier setpoint = 55 °C
T° measured in the calorifier = 53°C
T° boiler = 78 °C

T° Boiler is 20 ° C higher (CP710 ... CP714) than the calorifier temperature setpoint + 3 °C. Conditions are met for optimisation, the DHW load pump is activated.

Example no 2 :
T° calorifier setpoint = 55 °C
T° measured in the calorifier = 55 °C
T° boiler = 78 °C

Boiler T° is 20 °C (CP710 ... CP714) higher than the calorifier temperature setpoint but the calorifier setpoint has been reached. Optimisation stop.

DHW optimisation : CP432 = 1 (ON)

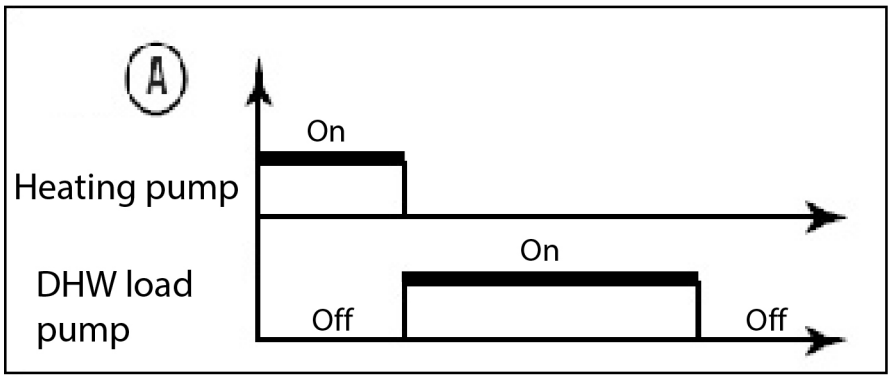


Appendix Q

Selection of the domestic hot water priority
CP460 > CP464

Total DHW (CP460 > CP464 = 0) :

Absolute priority to domestic hot water production: shutdown of the heating pumps, closing of the valves.



F000075

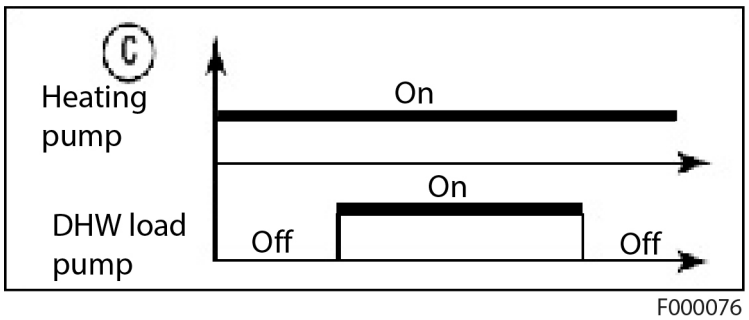
Relative DHW (1) (CP460 > CP464 = 1) :

The controller checks whether the boiler is able to both heat the heating system and the tank. If applicable, the pump(s) of the valve circuit(s) operate(s) at the same time as the calorifier load pump. As long as the boiler is not able to heat the heating system and the calorifier, the valve closes, and when the power is sufficient, the valve regulates. In relative DHW operation when the boiler temperature meets the desired DHW tank setpoint CP710 (... CP714) - 5 °C, only the heating of the valve circuits is allowed, and not the A circuit (if configured in direct), when the boiler temperature gets reaches the max -11 °C, the heating is switched off.

(1): In this configuration, the heating system must be equipped with a mixing valve.

DHW not priority (CP460 > CP464 = 2) :

The heating is not cut off during dhw production

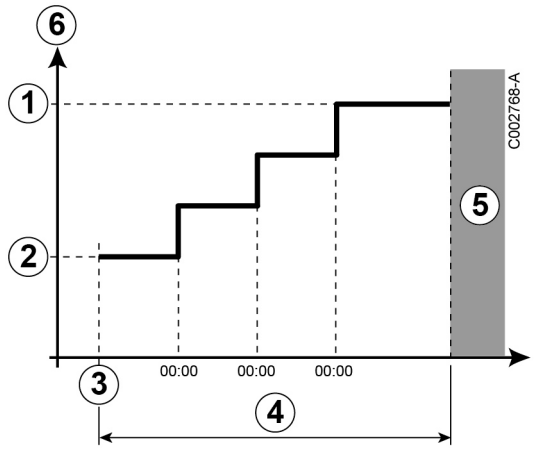


F000076

Appendix R

Screed drying setting
CP470 > CP474

Used to force a constant flow temperature or a series of successive temperature levels to accelerate screed drying on underfloor heating. The settings for these temperatures must follow the screed layer's recommendations. Activating this parameter (setting different from 0 days) deacftivates all other functions of the controller.
When floor drying is active on a circuit, all other circuits (e.g. DHW) are shut down: DHW) are stopped.



① STOP DRYING TEMP **CP49X**

② START DRYING TEMP **CP48X**

③ Today

④ NB DAYS DRYING **CP47X**

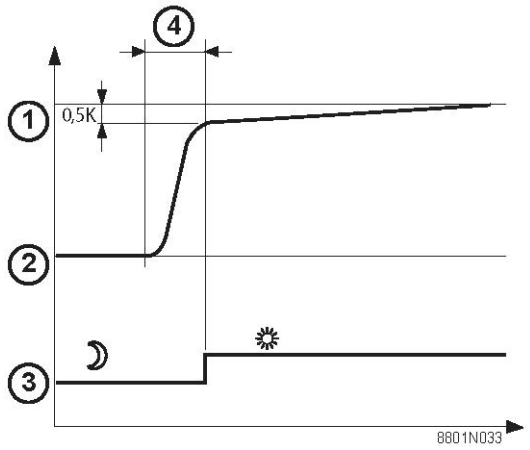
⑤ Normal regulation (drying completed)

⑥ Heating temperature setpoint (°C)

Appendix S

Anticipation
CP750 > CP754

The anticipation function for circuit A, B C calculates the heating restart time to reach the desired room temperature minus 0.5K at the programmed time of transition to comfort mode. The start time of the program corresponds to the end of the accelerated reheat phase.
The set value corresponds to the time it is considered necessary for the system to return the installation to the correct temperature (outside temperature at 0 °C) starting from a residual room temperature corresponding to the reduced night setpoint.
Anticipation becomes an optimisation if a room sensor is connected. In this case the regulator automatically refines the anticipation time.
This function is dependent on the surplus power available in the installation.



① Room comfort temperature setpoint
② Room reduced temperature setpoint
③ Time program
④ Anticipation time = accelerated reheat phase

Without room sensor : ANTICIPATION

The estimated anticipation time (for temperature = 0 ° C) will be corrected according to:
Corrected anticipation time = anticipation time estimated to 0° C x 20° Tsd - real Touts / 20° Tsd - 0° Touts

With room sensor : OPTIMISATION

Optimised time = corrected anticipation time x Tsd - real Troom / Tsd- Tsn

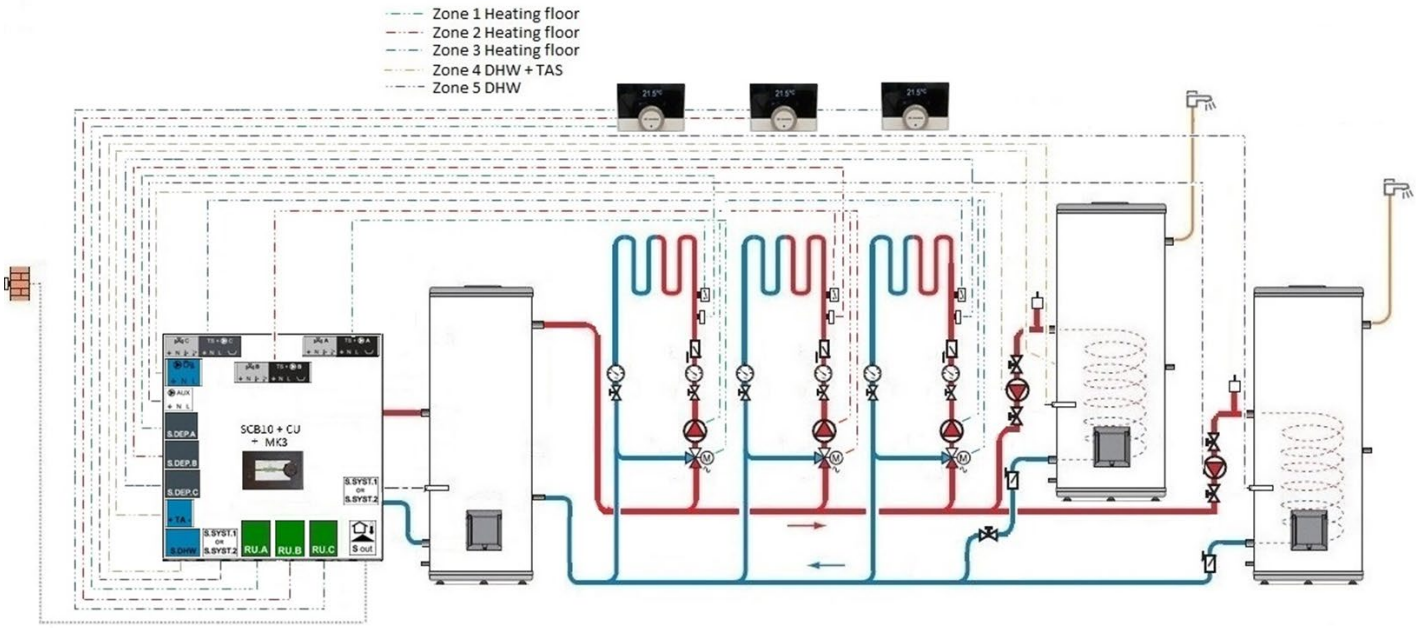
Calculated every 6 minutes before starting and check on the switch from night to day that the setpoint - 0.5 K has been reached.

Appendix T

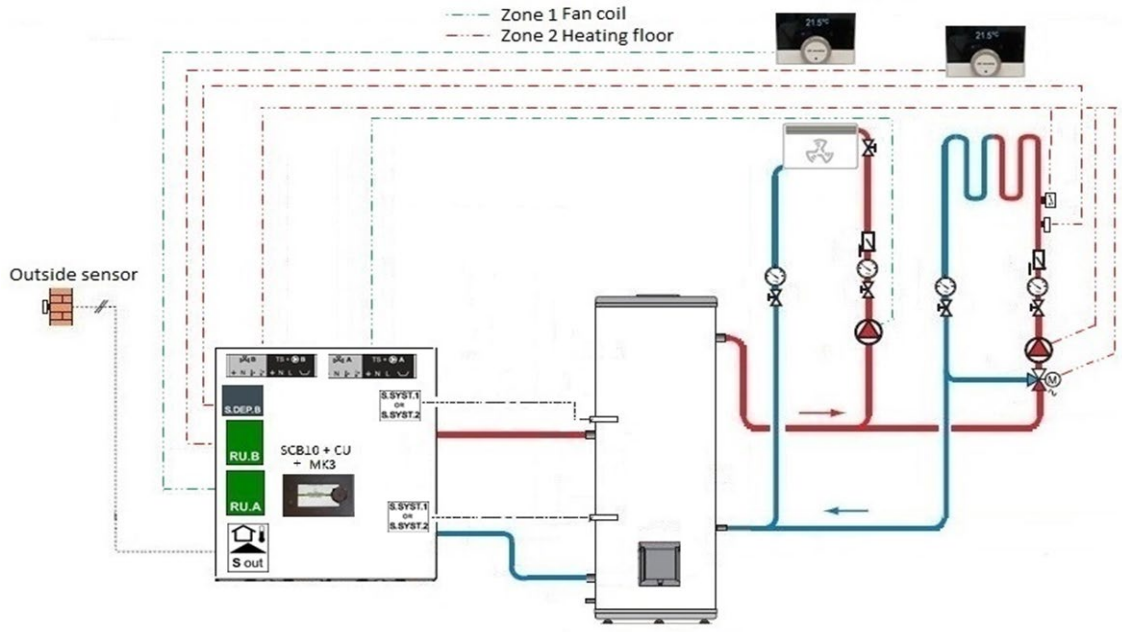
Storage tank type
BP001

It is a hot water storage tank intended to contain and temporarily store this water for heating or hot water supply needs. A buffer tank is also called a storage tank. The storage tank can be heated directly by an electrical resistance or by a primary circuit with heat transfer fluid. The buffer tank ensures the inertia of the hot water heating circuit to avoid temperature variations, and thus create the storage interface between the production and the demand.

Buffer tank with one sensor (BP001 = 1) :



Buffer tank with two sensors (BP001 = 2) :



Appendix U

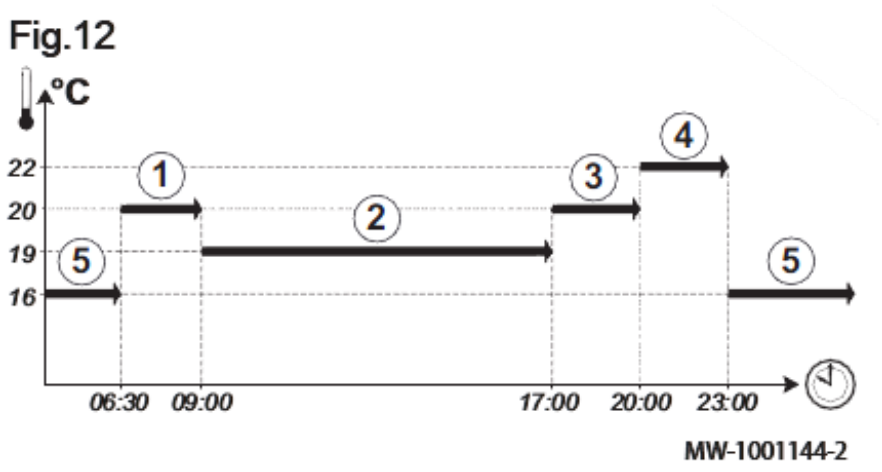
Activities

This term is used when programming time ranges. It refers to the client's desired comfort level for different activities during the course of the day. One set point temperature is associated to each activity. The last activity of the day remains valid until the first activity of the following day.
There are activities for heating and activities for cooling.

CircA : heating activities CP080 to CP085
CircB : heating activities CP086 to CP091
CircC : heating activities CP098 to CP103
AUX : heating activities CP104 to CP109
CircA : cooling activities CP140 to CP145
CircB : cooling activities CP146 to CP151
CircC : cooling activities CP158 to CP163
AUX : cooling activities CP164 to CP169

Start of the activity	Activity	Set point temperature
6 : 30	Morning ①	20 °C
9 : 00	Absence ②	19 °C
17 : 00	Comfort ③	20 °C
20 : 00	Evening ④	22 °C
23 : 00	Reduced ⑤	16 °C

Fig.12



Error codes

Warning code (**Axx.xx**)

Does not block the generator

Code	Details	Recommendations
A00.32	Outside temperature sensor is either shorted or measures a temperature above range	Sensor defective or not present: Check that the sensor has been fitted and connected properly Check the wiring between the central unit PCB and the sensor Check the Ohmic value of the sensor Replace the sensor if necessary.
A00.33	The outside sensor is either shorted or measures a temperature above range	
A00.34	TOutside Missing. Outdoor temperature sensor was expected but not detected	
A00.73	Buffer Tank Oudoor temperature sensor was expected but not detected	Check the sensor, its positioning and its connections. Check its ohmic value.
A02.00	Reset In Progress	Wait for the card to restart
A02.18	OBD Error Object Dictionary Error	Configuration Error: Restore CN1 and CN2
A02.37	Uncritical device disconnected	SCB PCB not found: Bad connection: check the wiring and the connectors. Defective SCB PCB: replace the SCB PCB
A02.54	OpenTherm ASK warning	BUS warning - room sensor
A10.08	Outdoor Temperature sensor Zone A missing	Check that there is an outside sensor and that it is properly connected on your appliance.
A10.17	Outside sensor Zone B missing	
A10.26	Outside sensor Zone C missing	
A10.33	DHW cicuit calorifier top temperature sensor is disconnected	Check the sensor, its positioning and its connections. Check its Ohmic value.
A10.34	DHW cicuit calorifier top temperature sensor is short circuited	
A10.45	Measure of Room Temperature Zone A is missing	Check the connection of the room sensor. Check the temperature displayed on the room sensor.
A10.46	Measure of Room Temperature Zone B is missing	
A10.47	Measure of Room Temperature Zone C is missing	
A10.50	Domestic hot water temperature sensor top zone is missing	Check the sensor, its positioning and its connections. Check its ohmic value.
A10.54	Domestic hot water temperature sensor, DHW circuit is missing	
A10.56	Domestic hot water temperature sensor AUX circuit is missing	

Blockage code **Hxx.xx**

Code	Text display	Recommendations
H00.69	Buffer Tank temperature sensor is either removed or measures a temperature below range	Check the sensor, its positioning and its connections. Check its ohmic value.
H00.70	Buffer Tank temperature sensor is either shorted or measures a temperature above range	
H00.71	Buffer Tank top temperature sensor is either removed or measures a temperature below range	
H00.72	Buffer Tank top temperature sensor is either shorted or measures a temperature above range	
H00.74	Buffer Tank temperature sensor was expected but not detected	
H00.75	Buffer Tank Top temperature sensor was expected but not detected	
H00.76	Cascade Flow temperature sensor is either removed or measures a temperature below range	
H00.77	Cascade Flow temperature sensor is either shorted or measures a temperature above range	
H00.78	Cascade Flow temperature sensor was expected but not detected	
H02.02	Waiting For Configuration Number : Configuration error or unknown configuration number.	Restore CN1 and CN2 (see appliance data plate)
H02.03	Configuration Error : Configuration error or unknown configuration number.	Restore CN1 and CN2 (see appliance data plate)
H02.04	Parameter error	Factory settings incorrect Parameters are not correct : - Restart the boiler - Restore CN1 and CN2 (see appliance data plate) - Replace the control unit
H02.05	CSU and CU does not match CSU does not match CU type	Configuration Error: Restore CN1 and CN2.
H02.16	Internal CSU Timeout: Internal CSU time exceeded	Replace the SCB-10 board.
H02.36	Functional device has been disconnected, PCB or appliance Bad connection between the CU-OH–02 and SCB-10 PCBs	Check the connections between the two PCBs
H02.53	OpenTherm ASK Error	BUS warning - room sensor
H02.55	Invalid or missing device serial number on SCB-10: Serial number missing or not valid	

H02.61	Zone A doesn't support the selected function (Circuit A type setting error)	The type of hydraulic circuit entered is not allowed on this circuit of the board. Check the setting ot parameter CP02X (X: according to affected circuit)
H02.62	Zone B doesn't support the selected function (Circuit B type setting error)	
H02.63	Zone C doesn't support the selected function (Circuit C type setting error)	
H02.64	Zone C (DHW) doesn't support the selected function (DHW circuit type setting error)	
H02.65	Zone E (AUX) doesn't support the selected function (AUX circuit type setting error)	
H02.66	The anti corrosion protection (TAS) of the Domestic Hot Water tank is not connected	Check the connections and the TAS anode
H02.67	The anti corrosion protection (TAS) of the Domestic Hot Water tank is in short circuit	Check the connections and the TAS anode
H10.00	Flow temperature sensor Zone A Open	Check the sensor, its positioning and its connections. Check its ohmic value.
H10.01	Flow temperature sensor Zone A in short circuit	
H10.02	Domestic Hot Water temperature sensor Zone A is disconnected	
H10.03	Domestic Hot Water temperature sensor Zone A is short-circuited	
H10.04	Swimming Pool Temperature Sensor Zone A is disconnected	
H10.05	Swimming Pool Temperature Sensor Zone A is short-circuited	
H10.09	Flow temperature sensor Zone B is disconnected	
H10.10	Flow temperature sensor Zone B short-circuited	
H10.11	Domestic Hot Water Temperature Sensor Zone B is disconnected	
H10.12	Domestic Hot Water Temperature Sensor Zone B is short-circuited	
H10.13	Swimming Pool Temperature Sensor Zone B is disconnected	
H10.14	Swimming Pool Temperature Sensor Zone B is short-circuited	
H10.18	Flow temperature sensor Zone C is disconnected	
H10.19	Flow temperature sensor Zone C is short-circuited	
H10.20	Domestic Hot Water Temperature Sensor Zone C (DHW circuit) is disconnected	
H10.21	Domestic Hot Water Temperature Sensor Zone C (DHW circuit) is short-circuited	
H10.22	Swimming Pool Temperature Sensor Zone C is disconnected	Check the sensor, its positioning and its connections. Check its ohmic value.
H10.23	}Swimming Pool Temperature Sensor Zone C is short-	Check the sensor, its positioning and its

	circuited	connections. Check its ohmic value.
H10.27	Flow temperature sensor Zone D (DHW circuit) is disconnected	Check the sensor, its positioning and its connections. Check its ohmic value.
H10.28	Flow temperature sensor Zone D (DHW circuit) is short-circuited	Check the sensor, its positioning and its connections. Check its ohmic value.
H10.29	Domestic Hot Water Temperature Sensor Zone D (DHW circuit) disconnected	- The DHW sensor has been (even temporarily) connected to the scb-10 board by mistake: Set the parameters CP502 to 0 (off) and CP022 to 0 (off). If the error persists, return to the factory settings on the scb-10 board: Reset CN1 and CN2 (see nameplate) - Check the sensor, its positioning and its connections. Check its ohmic value.
H10.30	Domestic Hot Water Temperature Sensor Zone D (DHW circuit) short-circuited	Check the sensor, its positioning and its connections. Check its ohmic value.
H10.36	Flow temperature sensor Zone E (AUX circuit) disconnected	Check the sensor, its positioning and its connections. Check its ohmic value.
H10.37	Flow temperature sensor Zone E (AUX circuit) short-circuited	Check the sensor, its positioning and its connections. Check its ohmic value.
H10.38	Domestic Hot Water Temperature Sensor Zone E (AUX) disconnected	Check the sensor, its positioning and its connections. Check its ohmic value.
H10.39	Domestic Hot Water Temperature Sensor Zone E (AUX) short-circuited	Check the sensor, its positioning and its connections. Check its ohmic value.