

4.4.2.5 Split plant part

By means of this menu the separable plant operation parameters can be controlled.

NOTE

The term “**Separable plant**” means the plant part that can be separated from the base plant by means of (valves) and that can operate independently to provide the DHW service.

The options available in this menu are:

- 4.4.2.5.1 Heating/DHW Select
- 4.4.2.5.2 Set point range
- 4.4.2.5.3 Water Differential
- 4.4.2.5.4 Regulation parameters
- 4.4.2.5.5 Robur Box water pumps delay
- 4.4.2.5.6 Switching-over step timing
- 4.4.2.5.7 Splitting valve parameters

4.4.2.5.1 Heating/DHW Select

By means of this sub-menu item, it is possible to choose whether use is made of the machines configured on the separable plant to produce DHW only (domestic hot water) or to produce (not at the same time) hot water for the heating plant and DHW (domestic hot water). The latter function allows the units belonging to this part of the plant (Separable part) to complement the production of hot water for heating purposes if no request for DHW is present, or to produce domestic hot water if a request of this type is received. The production of domestic hot water has priority over the request for heating.

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select “**Plants**” from the drop-down menu.
- 5 - Select the plant type:  for two-line cooling/heating plant;  for hot water production plant.
- 6 - Turn the knob to scroll the cursor downward until highlighting “Splitt.Plant Part” and press the knob to gain access to the screen.
- 7 - Select “**Heating/DHW select.**”.
- 8 - Position the cursor on next to the option that is to be set: “Heating and DHW (Alternate Service)” or “DHW only”.
- 9 - Press the knob to activate the option. The symbol indicates that the option has been enabled .
- 10 - To exit, select .

4.4.2.5.2 Set point range

This option permits to define the **set point temperature limit** (delivery) of the separable plant for the production of DHW. Then, the set point temperature will be set in the “User settings” menu, if on the RB100 or RB200 interface the following option is set: “Digital with set point DDC”; or acquired from Robur Box (RB100 or RB200). In particular, it is possible to define the **maximum** water temperature for the production of domestic hot water in the range from 5 ÷ 95°C (41÷203° F). For instance, if for a domestic hot water production plant the set point limit value is 60°C (140° F), the user can choose a set point value ranging from 5 °C (41° F) to 60°C (140° F).

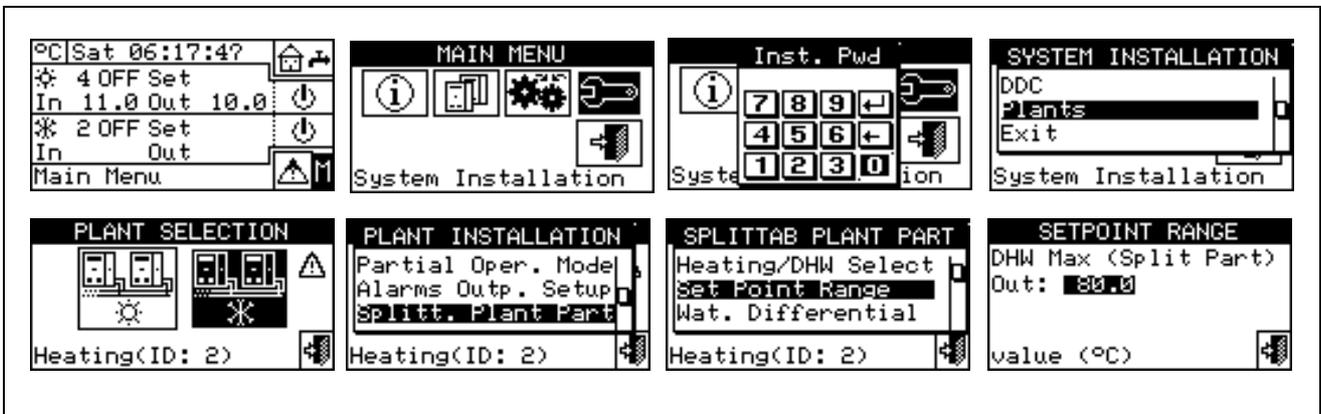
Instructions for modifying the set point limits follow:

- 1 - Select  from the initial screen to access the main menu.
- 2 - Select  to access the “**installation menu**”.
- 3 - Enter the installer password on the numerical keypad that appears on the display.

- 4 - Select **“Plants”** from the drop-down menu.
- 5 - Select  for two-line cooling/heating plants,  for hot water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting **“Splitt.Plant Part”** and press the knob.
- 7 - Turn the knob to scroll the cursor downwards until **“Set point Range”** is selected, and press the knob to access the screen.
- 8 - Position the cursor on the temperature value to be modified.
- 9 - Press the knob to allow the change of the selected value.
- 10 - Turn the knob to modify the value.
- 11 - Press the knob to confirm the set value.
- 12 - To exit, select .

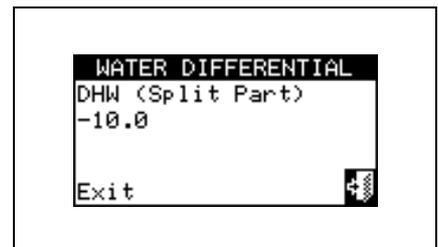
NOTE

If the DDC is the Master DDC for two plants, repeat steps 5 to 9 for the second plant.



4.4.2.5.3 Water Differential

The screen shows the differential set on the set point temperature of the separable plant for the production of DHW.



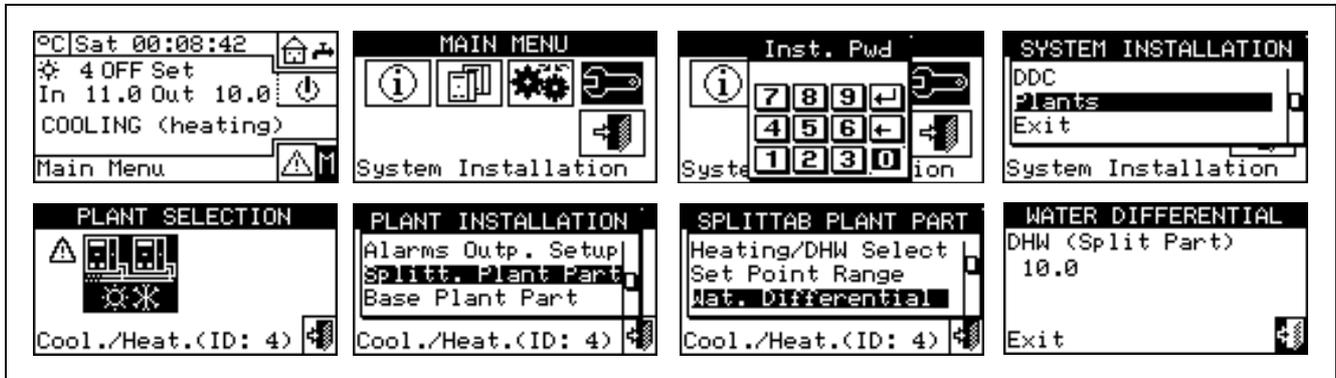
Configuration of differential

To set the value or values of the differential, proceed as follows.

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select **“Plants”** from the drop-down menu.
- 5 - Select the plant for which the differential is to be set:  for two-line cooling/heating plant;  for the hot water production plant;
- 6 - Turn the knob to scroll the cursor downward until highlighting **“Splitt.Plant Part”** and press the knob.
- 7 - Select **“Wat.Differential”** from the drop-down menu.

- 8 - Position the cursor on the differential value to be modified.
- 9 - Press the knob to allow the change of the selected value.
- 10 - Turn the knob to modify the value.
- 11 - Press the knob to confirm the set value.

12 - To exit, select .



4.4.2.5.4 Regulation parameters

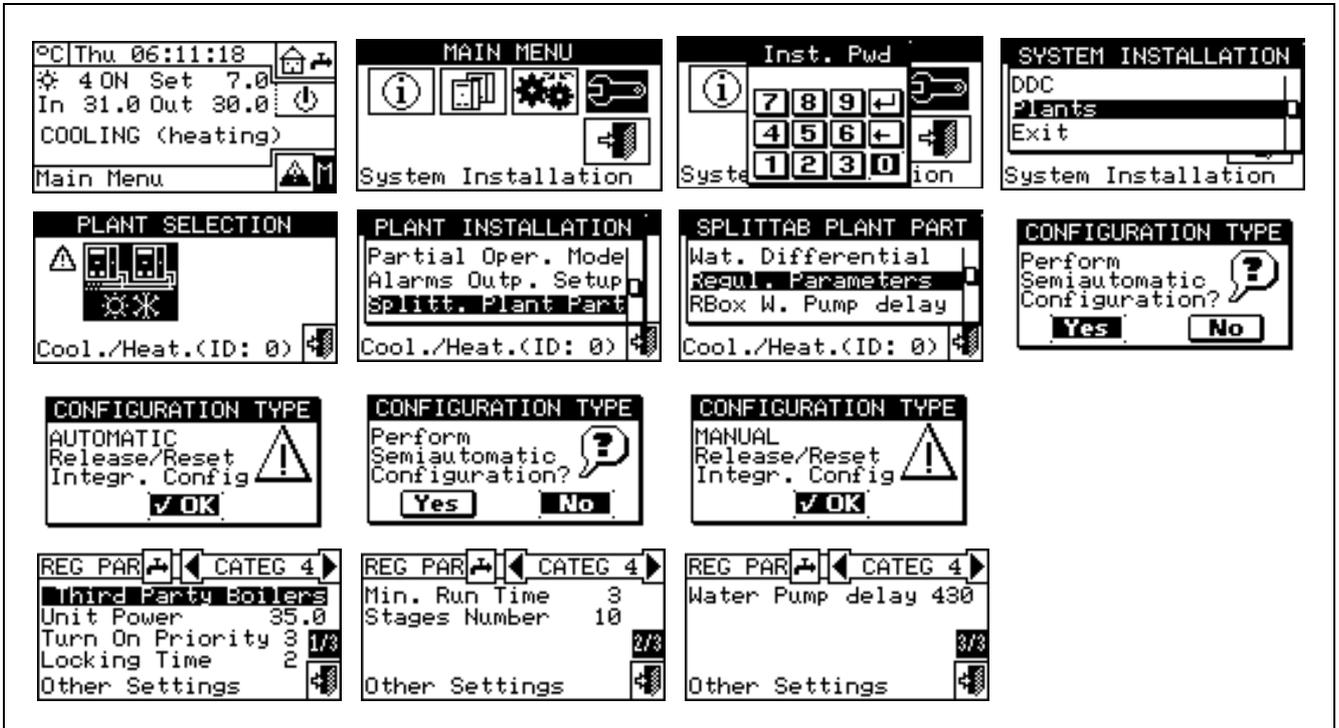
Setting of the regulation parameters

To set, proceed as described below:

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the system for which the parameters are to be set:  for two-line cooling/heating plant;  for the hot water production plant;
- 6 - Turn the knob to scroll the cursor downward until highlighting "Splitt.Plant Part" and press the knob.
- 7 - Only for two-line hot/cold systems:
- 8 - The display shows "Carry out semi-automatic configuration?"
- 9 - If you select "Yes" (normally advised) the display shows "AUTOM. CONFIGURATION enable/disable integrals"; the DDC automatically calculated for all machine categories the most appropriate values of the two parameters "enable integral" and "disable integral" according to the values set for the others. The value is calculated and set when you exit the panel.
- 10 - If you select "No" the display shows "MANUAL configuration of enable/disable integrals."; the DDC DOES NOT automatically calculate the two parameters "Enable integral" and "Disable integral". Use this option if you wish to set the two parameters manually, or to see the values set automatically by the DDC following previous access to the panel.
- 11 - Select the category of the machines for which the regulation parameters are to be set using the  and  buttons. Only the categories to which the machines effectively present on the system belong are proposed.
- 12 - Choose the page in which the first value to be edited is present, using the buttons ,  or , ,  (the number on the left on the button indicates the current page, the one on the right the total number of pages available).
- 13 - To modify the values set, position the cursor on the value to be modified.
- 14 - Press the knob to allow the change of the selected value.
- 15 - Turn the knob until the desired value is displayed.
- 16 - Press the knob to confirm the set value.

17 - If necessary repeat steps 12 - 17 - to complete the parameter settings for the selected category; then, again if necessary, set the parameters of other categories, executing step 11 - and steps 12 - 17 - again.

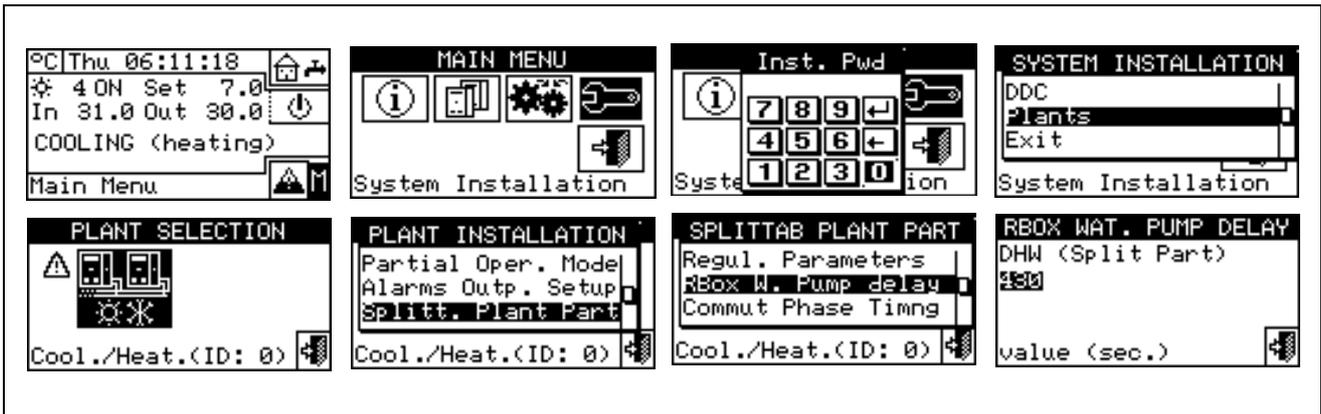
18 - To exit, select .



4.4.2.5.5 Robur Box water pumps delay

This parameter is used to set the switch-off delay on the common primary water pump on the separable plant part, when managed by RB200; if the water pump is not configured, access to the parameter settings panel is denied.

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the system for which the parameters are to be set:  for two-line cooling/heating plant;  for the hot water production plant;
- 6 - Turn the knob to scroll the cursor downward until highlighting "Splitt.Plant Part" and press the knob.
- 7 - Select "RBox W Pump Delay" from the drop-down menu.
- 8 - To modify the values set, position the cursor on the value to be modified.
- 9 - Press the knob to allow the change of the selected value.
- 10 - Turn the knob until the desired value is displayed.
- 11 - Press the knob to confirm the set value.



Take care not to confuse this parameter with the "Water pump delay" parameters which may be present in the regulation parameter settings panel of various categories of units (see Third party boiler water pump delay on page 63 and Third party chiller water pump delay on page 65): these parameters are in fact used to set the switch-off delay of water pumps dedicated to third party units, if present and controlled by the Robur system.

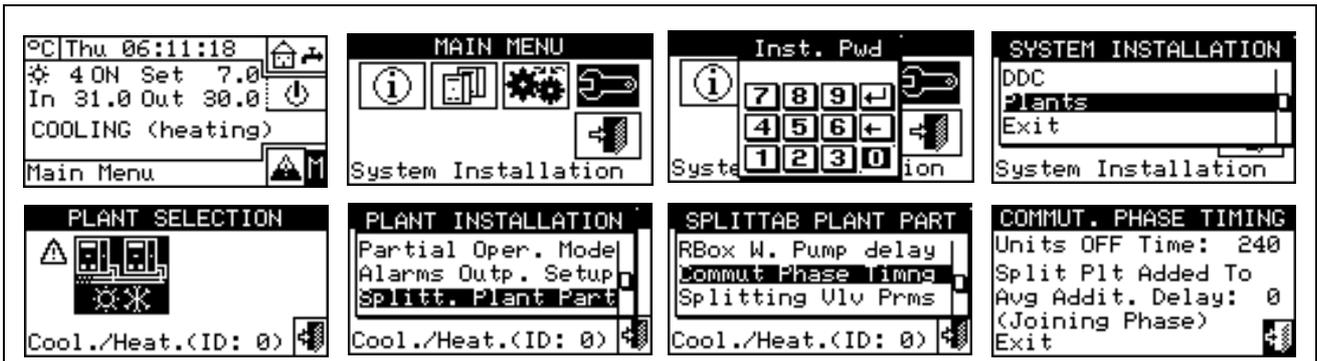
4.4.2.5.6 Switching-over step timing

This option permits to set the values concerning the times to be met during the switching-over step of the three-way deviation valves that separate the separable plant from the base plant. In particular what follows shall be set:

- Mach. time OFF: indicating the time in which the machine are off while the valves are switching over (used during both the separation step and the inclusion to the base plant);
- Average insert. add. delay of sep. plant. (inclusion phase): indicating how much time shall elapse after the inclusion step of the separable group units to the base plant, in order to consider the delivery and return temperature of the machine just included in the total average value of the plant.

To set above-said value, operate as described below:

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the plant:  for two-line cooling/heating plant;  for the hot water production plant;
- 6 - Turn the knob to scroll the cursor downward until highlighting "Splitt.Plant Part" and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Commut.Phase Timng" and press the knob.
- 8 - Place the cursor on the value to be edited; the value is expressed in seconds.
- 9 - "Units OFF time" can be set between 0 and 600 seconds. "Split Plt Added To Avg Addit.
- 10 - Delay" can be set from 0 to 300 seconds.
- 11 - Press the knob to allow the change of the selected value.
- 12 - Turn the knob to modify the value.
- 13 - Press the knob to confirm the set value.
- 14 - To exit, select .



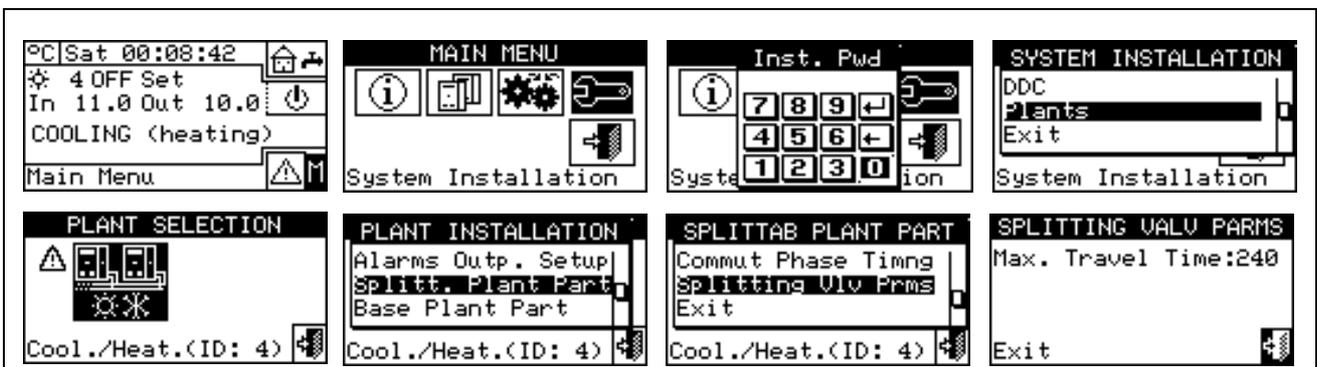
4.4.2.5.7 Splitting valve parameters

This parameter shall be set only in case use is made of three-way deviation valves for the separation of the separable group units provided with auxiliary limit switch contacts.

This parameter indicates the maximum time that the three-way valves can take to switch over from one position to the other. Shouldn't the valve reach the preset limit switch within this time, an error is generated (for further information see error list).

To set above-said value, operate as described below:

- 1 - Select from the initial screen to gain access to the main menu.
- 2 - Select to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the plant: for two-line cooling/heating plant; for the hot water production plant;
- 6 - Turn the knob to scroll the cursor downward until highlighting "Splitt.Plant Part" and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Splitting. Vlv Prms" and press the knob.
- 8 - Place the cursor on the value to be edited; the value is expressed in seconds (from 0 to 600 secs.).
- 9 - Press the knob to allow the change of the selected value.
- 10 - Turn the knob to modify the value.
- 11 - Press the knob to confirm the set value.
- 12 - To exit, select .



4.4.2.6 Base plant part

By means of this menu it is possible to set the operation parameters of the base plant.

NOTE

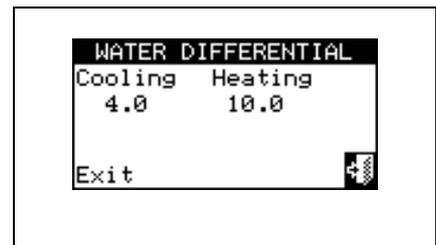
The term “Base plant” means the plant part containing all the units, excluding the ones that can be separated from the same plant.

The options available in this menu are:

- 4.4.2.6.1 *Water Differential*
- 4.4.2.6.2 *Auxiliary boiler operation*
- 4.4.2.6.3 *Rated plant power*
- 4.4.2.6.4 *Regulation parameters*
- 4.4.2.6.5 *RoburBox water pump delay*
- 4.4.2.6.6 *Units use priority (Master DDC of plants with GAHP- GS/WS only)*
- 4.4.2.6.7 *Temperature Alarm Setup (Master DDC only)*
- 4.4.2.6.8 *Cool/Heating inversion valve parameters*
- 4.4.2.6.9 *Cooling/heating service configuration*
- 4.4.2.6.10 *Heating/DHW select*
- 4.4.2.6.11 *Base DHW service configuration*

4.4.2.6.1 Water Differential

The screen shows the differential set on the set point temperature. The figure contains the value for a chilled water production plant.

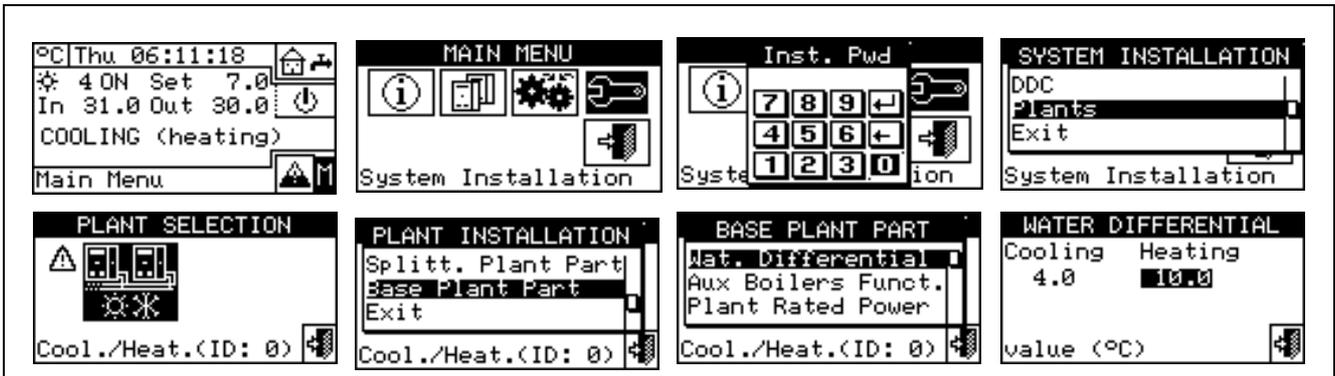


Configuration of differential

To set the value or values of the differential, proceed as follows.

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select “Plants” from the drop-down menu.
- 5 - Select the plant for which the differential is to be set:  for two-line cooling/heating plants,  for hot water production plants, or  for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting “Base plant part” and press the knob.
- 7 - Select “Wat.Differential” from the drop-down menu.
- 8 - Place the cursor on the differential value to be modified: for “cold only” plants  only the value of the cooling differential will appear (Condit); for the “hot only” plants  only the value of the heating differential will appear (Heating), for the two-line hot/cold plants  the values of both heating and cooling differentials will appear (Condit. and Heating).
- 9 - Press the knob to allow the change of the selected value.
- 10 - Turn the knob to modify the value.
- 11 - Press the knob to confirm the set value.

12 - To exit, select 



4.4.2.6.2 Auxiliary boiler operation

To set the operating modes of the auxiliary boilers (only in heating or 2-line cooling/heating plant) proceed as described below; for more information on the topic see paragraph 4.2 on page 55. and the Applications Manual (code D-LBR630).

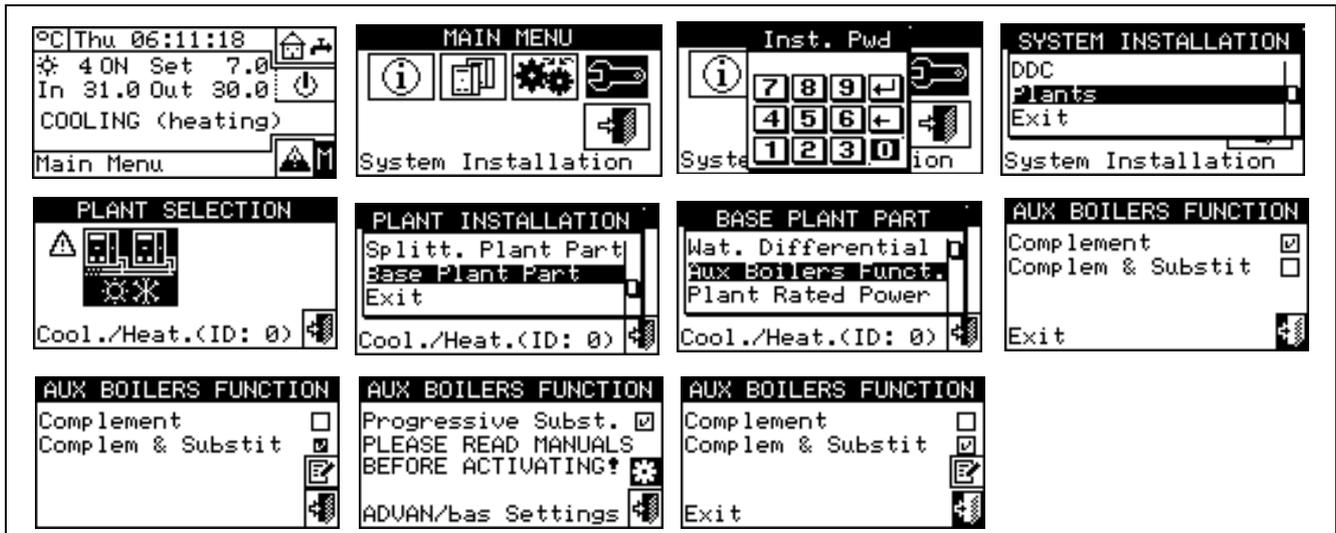
- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the plant for which the differential is to be set:  for two-line cooling/heating plants,  for hot water production plants, or  for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Select "Auxil. boiler operation" from the drop-down menu.
- 8 - Position the cursor on next to the option that is to be set: "Complement" or "Complem.& Substit".
- 9 - Press the knob to activate the option. The symbol indicates that the option has been enabled .
- 10 - When the "Complem. & Substit." function is enabled the display shows the symbol , selecting and pressing the knob we can enable the "Progressive substitution" function.
- 11 - To exit, select 

WARNING

Selecting "Progressive substitution" also required:

- Special plant configuration.
- The presence of an additional temperature probe on the return manifold of the heat pump.
- The setting of additional parameters in the regulation parameter settings panel (see 4.4.2.6.4 on page 96).

Discuss the applicability of this option with the Robur Pre-Sales Service, before using it.



4.4.2.6.3 Rated plant power

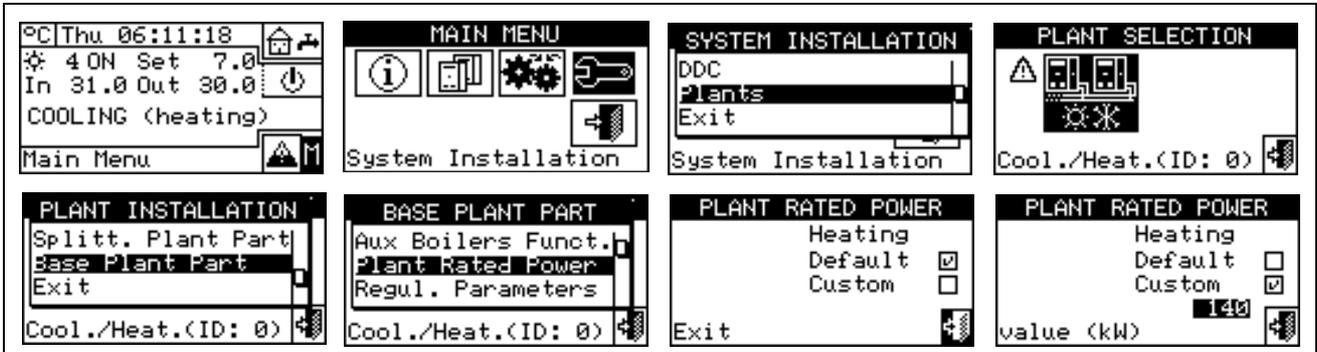
The rated plant power can be set only for heating and 2-line cooling/heating plants and only if auxiliary boilers are operating in "Complem & Substitution" mode (see paragraph 4.2 on page 55).

To set the rated plant power, proceed as follows.

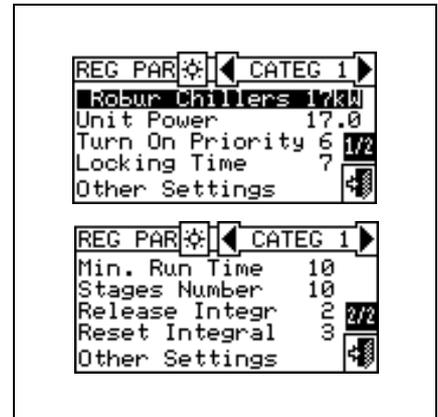
- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the plant for which the differential is to be set:  for two-line cooling/heating plants,  for hot water production plants, or  for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Select "Rated Plant Power" from the drop-down menu.
- 8 - Position the cursor on next to the option that is to be set: "Default" or "Custom".
- 9 - Press the knob to activate the option. The symbol indicates that the option has been enabled .
- 10 - Select "Custom" to change the power value (expressed in kW).
- 11 - To exit, select .

NOTE

The pre-set option is “Default”, which assigns the sum of the powers of all auxiliary boilers as the rated plant power. This value is usually correct when the auxiliary boilers run in “Complement and substitution” mode, as in this case the boilers must provide 100% of the power needed in high thermal load conditions



4.4.2.6.4 Regulation parameters



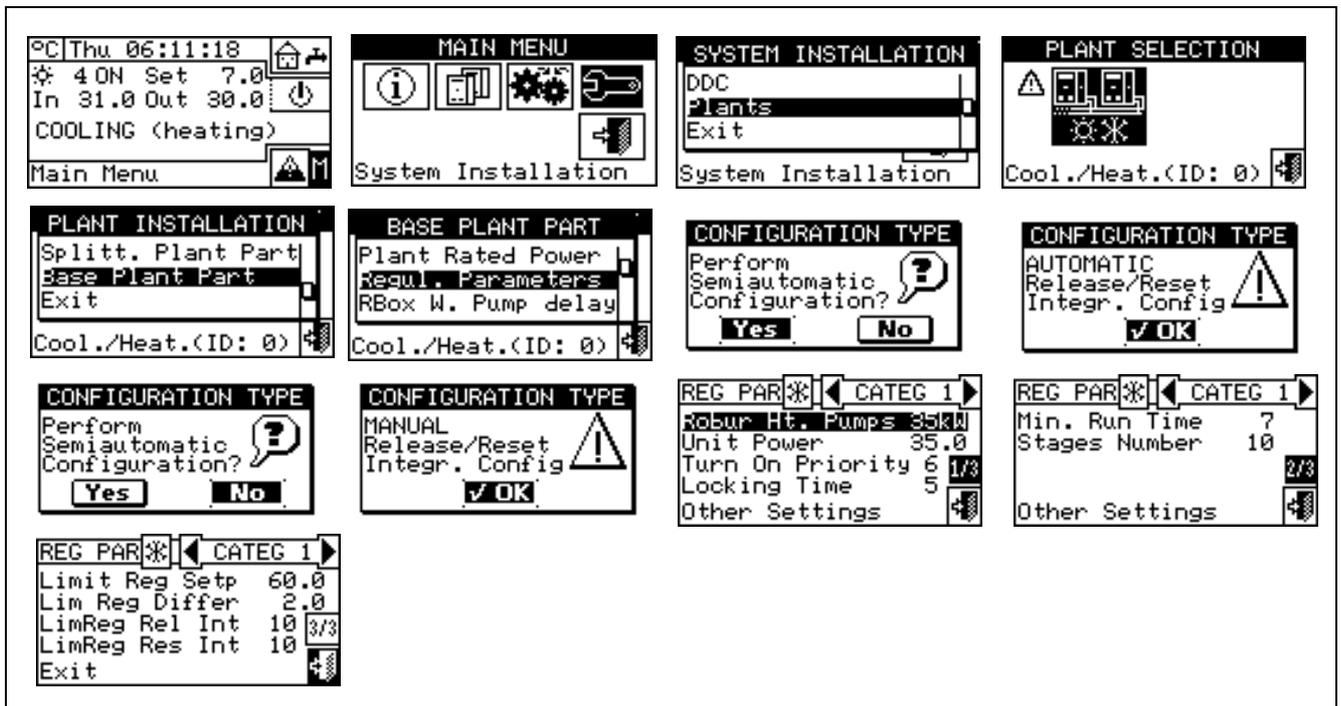
Setting of the regulation parameters

To set, proceed as described below:

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select “Plants” from the drop-down menu.
- 5 - Select the system for which the parameters are to be set:  for two-line cooling/heating plants,  for hot water production plants, or  for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting “Base plant part” and press the knob.
- 7 - Only for two-line hot/cold systems:
- 8 - The display shows “Carry out semi-automatic configuration?”
- 9 - If you select “Yes” (normally advised) the display shows “AUTOM. CONFIGURATION enable/disable integrals”; the DDC automatically calculated for all machine categories the most appropriate values of the two parameters “enable integral” and “disable integral” according to the values set for the others. The value is calculated and set when you exit the panel
- 10 - If you select “No” the display shows “MANUAL configuration of enable/disable integrals.”; the DDC DOES NOT automatically calculate the two parameters “Enable integral” and “Disable integral”. Use this option if

you wish to set the two parameters manually, or to see the values set automatically by the DDC following previous access to the panel.

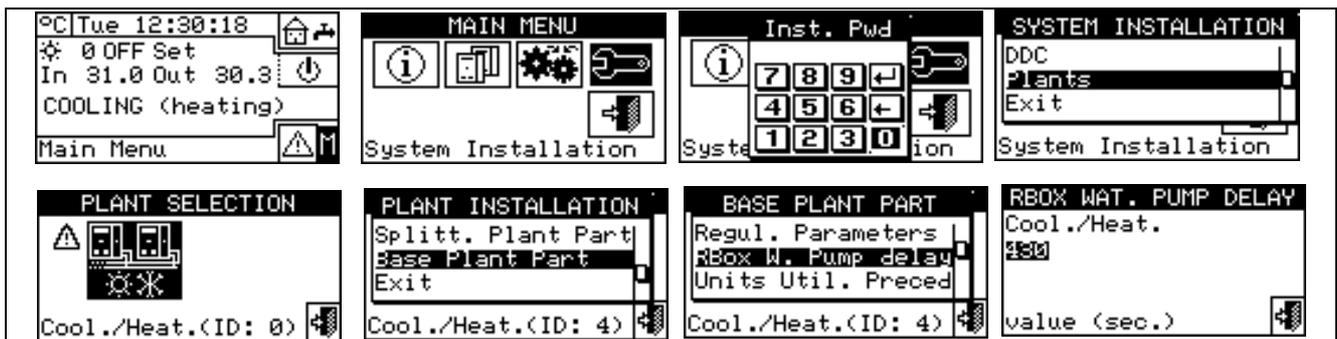
- 11 - Only for 2-line hot/cold systems: select the button with the ☼ or ☽ symbol, to select the functioning mode for which the parameters are to be set: ☼ for HEATING, ☽ for COOLING.
- 12 - Select the category of the machines for which the regulation parameters are to be set using the ◀ and ▶ buttons. Only the categories to which the machines effectively present on the system belong are proposed.
- 13 - Choose the page in which the first value to be edited is present, using the buttons 1/2, 2/2 or 1/3, 2/3, 3/3 (the number on the left on the button indicates the current page, the one on the right the total number of pages available).
- 14 - To edit the set values, position the cursor on the value to edit (for the description of the parameters, refer to paragraph 4.3.1 "HEATING SERVICE" on page 57 and/or paragraph 4.3.3 "CONDITIONING OPERATION" on page 64).
- 15 - Press the knob to allow the change of the selected value.
- 16 - Turn the knob until the desired value is displayed.
- 17 - Press the knob to confirm the set value.
- 18 - If necessary repeat steps 13 - 17 -to complete the parameter settings for the selected category; then, again if necessary, set the parameters of other categories, executing step 12 - and steps 13 - 17 - again.
- 19 - Only for 2-line hot/cold systems: if necessary select the button with the symbol ☼ or ☽ again to select another operating mode: ☽ for HEATING, ☼ for COOLING and repeat steps 12 -18 to set the parameters for the machine categories in the newly selected operating mode.
- 20 - To exit, select



4.4.2.6.5 RoburBox water pump delay

This parameter is used to set the switch-off delay on the common primary water pump and/or the secondary plant water pump, if at least one of these is configured and managed by RB200; if neither of the two water pumps is configured, access to the parameter settings panel is denied.

- 1 - To set the delay, proceed as described below:
- 2 - Select  from the initial screen to gain access to the main menu.
- 3 - Select  to gain access to the System installation.
- 4 - If required, enter the installer password on the numerical keypad that appears on the display.
- 5 - Select "Plants" from the drop-down menu.
- 6 - Select the system for which the parameters are to be set:  for two-line cooling/heating plants,  for hot water production plants, or  for chilled water production plants.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 8 - Select "RBox W Pump Delay" from the drop-down menu.
- 9 - To modify the values set, position the cursor on the value to be modified.
- 10 - Press the knob to allow the change of the selected value.
- 11 - Turn the knob until the desired value is displayed.
- 12 - Press the knob to confirm the set value.



NOTE

Take care not to confuse this parameter with the "Water pump delay" parameters which may be present in the regulation parameter settings panel of various categories of units (see Third party boiler water pump delay on page 63 and Third party chiller water pump delay on page 65): these parameters are in fact used to set the switch-off delay of water pumps dedicated to third party units, if present and controlled by the Robur system.

4.4.2.6.6 Units use priority (Master DDC of plants with GAHP- GS/WS only)

The option present inside the installation menu allows to define the activation priority of the GAHP-GS/WS units for every system managed by DDC in relation to other types of units belonging to the same category (Category 1). The units with the highest priority are switched on first and switched off last.

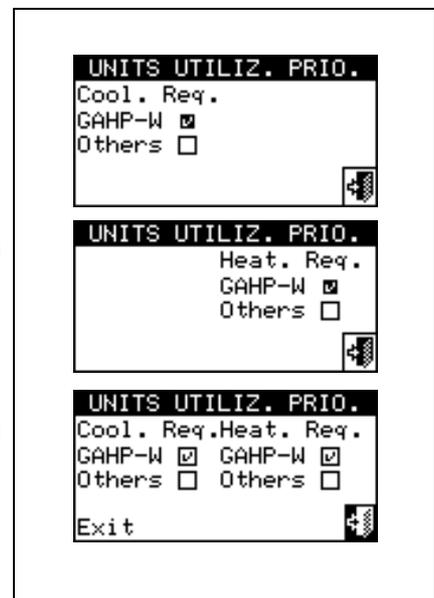
To set **“Machine use priority”**, follow the instructions below:

- 1 - Select from the initial screen to gain access to the main menu.
- 2 - Select to gain access to the System installation.
- 3 - Enter the installer password, if requested, on the numerical keypad that appears on the display.
- 4 - Select “Plants” from the drop-down menu.
- 5 - Select the symbol for two-line cooling/heating plants, for hot water production plants, or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting “Base plant part” and press the knob.
- 7 - Turn the knob to scroll the cursor downwards until **“Units Util.Preced”** is selected, and press the knob to access the screen.
- 8 - For chilled water production plants (left column of screen), position the cursor on next to the units to which activation priority is to be given (GAHP- GS/WS or “others”) and press the knob to confirm. The symbol indicates that the units selected will have activation priority.

For hot water production plants (right column of screen), position the cursor on next to the units to which activation priority is to be given (GAHP- GS/WS or “others”) and press the knob to confirm. The symbol indicates that the units selected will have activation priority.

For two-line hot/cold plants, position the cursor on next to the units to which activation priority is to be given (e.g. GAHP- GS/WS or **“others”**) and press the knob to confirm. Effect the choice for heating and cooling activation priority. The symbol indicates that the units selected will have activation priority.

- 9 - To exit, select .



NOTE

The GAHP- GS/WS unit is indicated with GAHP-W (W: water source)=.

In the table below, the order in which the plant decides to switch on the units is shown on the basis of the choice made for machine use priority and for operating mode.

Type	Cooling			
	GAHP-GS/WS	GA ACF-HR	GA-ACF	GAHP-AR
Priority(1)	1	2	3	3
Priority(2)	3	1	2	2

Heating				
Type	GAHP-GS/WS	GAHP-A	GAHP-AR	AY
Priority(1)	1	2	2	3
Priority(2)	2	1	1	3

Priority (1): Priority has been given to GAHP-GS/WS units.
 Priority (2): Priority has been given to other units.

NOTE

The order of operating priority corresponds to the numerical order indicated in the table (1 = highest priority, 3 = lowest priority).

4.4.2.6.7 Temperature Alarm Setup (Master DDC only)

This option allows the user to set the alarm temperatures for hot and/or chilled water production plants. For a chilled-water-only production plant, or a two-line hot/cold plant in cooling mode, an error is generated if the temperature is higher than that set. For a hot water production plant, or a two-line hot/cold plant in heating mode, an error is generated if the temperature is lower than that set.

It is possible to:

- Disable the function;
- Specify whether the limit indicated refers to outlet or inlet water temperatures.

The factory default values are:

- Cooling: 110°C (230° F);
- Heating: -30°C (-22° F).

Instructions for configuring the alarm temperature:

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select **"Plants"** from the drop-down menu.
- 5 - Select the  symbol for two-line cooling/heating plants,  for hot water production plants,  or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Turn the knob to scroll the cursor downwards until "Temp. Alarm setup" is selected and press the knob to access the screen.
- 8 - Position the cursor on next to the option to be set (outlet water temperature, inlet water temperature) and press the knob to select it.
- 9 - Position the cursor on the temperature value to be set. Press the knob. The number starts to flash. Turn the knob to modify the value and press the knob to confirm.

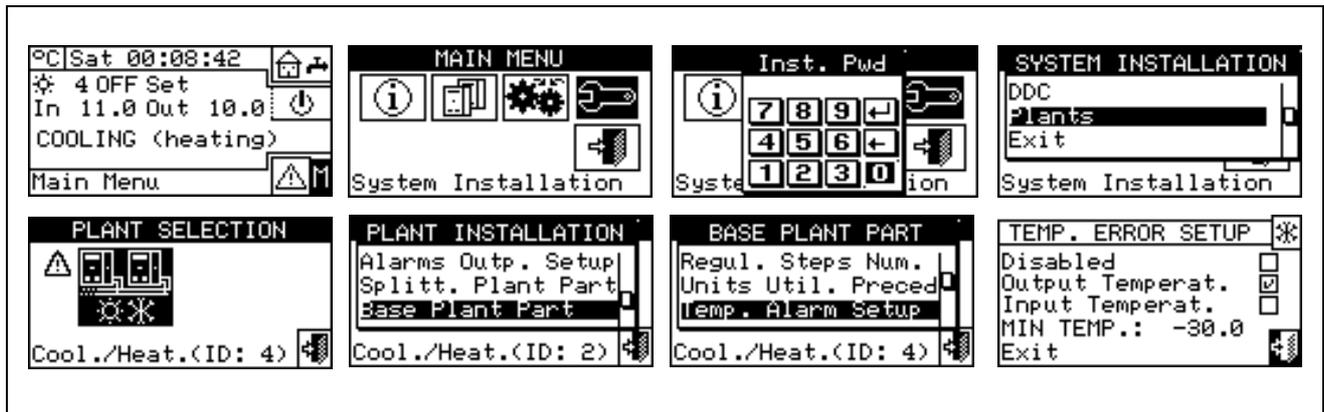
NOTE

The limit temperature value appears only if the function is enabled (Disabled).

- 10 - Position the cursor on  to select the cooling plant; select  to select the heating plant.
- 11 - To exit, select .

NOTE

Repeat steps 5 to 9 for the second plant if the DDC is the Master DDC for two plants.



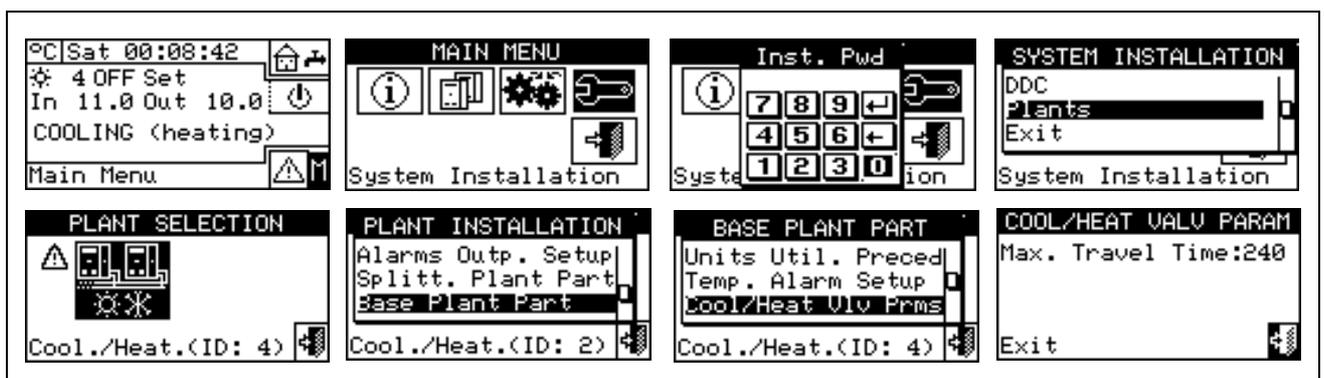
4.4.2.6.8 Cool/Heating inversion valve parameters

This parameter shall be set in case use is made on the base plant of three-way centralised deviation valves for the plants switching over (inversion from cooling to heating and vice-versa).

This parameter indicates the maximum time that the three-way valves can take to switch over from one position to the other. In case of valves with auxiliary contacts, if the valve has not reached the preset limit switch in this period of time, an error is generated (for further information see the error list). In case of valves not provided with these contacts, after this time has elapsed, the DDC assumes the switching-over step is over.

To set above-said value, operate as described below:

- 1 - Select from the initial screen to gain access to the main menu.
- 2 - Select to gain access to the System installation.
- 3 - If required, enter the installer password on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the plant: for two-line cooling/heating plant; for the hot water production plant; for the chilled water production plant.
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Cool/Heat Vlv Prms" and press the knob.
- 8 - Place the cursor on the value to be edited; the value is expressed in seconds.
- 9 - Press the knob to allow the change of the selected value.
- 10 - Turn the knob to modify the value. The value can be set from 0 to 600 seconds.
- 11 - Press the knob to confirm the set value.
- 12 - To exit, select .



4.4.2.6.9 Cooling/heating service configuration

DDC /Robur Box request enabling

This menu item permits to set, for the heating and cooling services, if the unit switching-on requests are controlled only by the DDC, only by the optional Robur BOX (RB100 or RB200) device, or by both (DDC and Robur BOX).

To disable the request by one of the Robur control devices, position the cursor on and press the knob. The symbol indicates that the request is not active.

NOTE

The operation requests for the DHW services are ALWAYS controlled by the Robur Box (RB100 or RB200) device, therefore it is not possible to enable the DHW service when this device is missing. For more information please consult the installation and user booklet of the RB 100 (code D-LBR468) and the RB 100 applications manual (code D-LBR467), or the installation and user booklet of the RB 200 device (code D-LBR632) and the Applications Manual (code D-LBR630), according to the type of device used.

On/off command configuration

The on/off commands that determine switch-on of the plant for the cooling and heating services may be considered as switches in series inside the DDC. The plant may be switched on only if all the enabled on/off commands are ON (closed). If the plant is on (“ON” displayed in the main screen), one or more units will be on only when the condition for water thermostating is not met (water temperature different from that of the set point set). Figure 19 illustrates this screen.

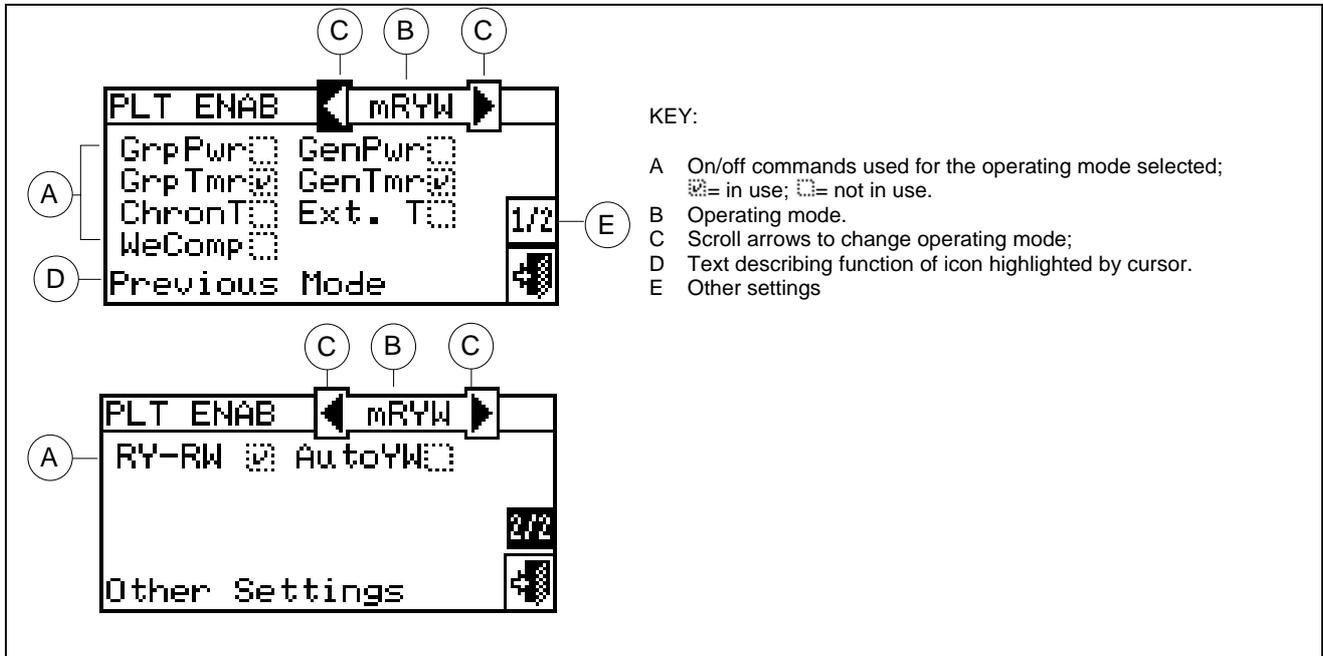


Figure 19 – EXAMPLE OF SCREEN IN ON/OFF COMMAND CONFIGURATION MENU

NOTE

With the exception of the “General switch” consent, all the consents described below affect ONLY the generation of requests by DDC not by Robur Box (RB 100 or RB200).

A description of each on/off command is given below, with the aim of aiding the installation technician in selecting the most suitable operating mode (e.g. CUSTOM).

	On/off command for the main power switch of the plant for both Single DDC and Multi DDC plants.
	The symbol indicates that the command is enabled and means that the button in the “Plant control” menu is enabled.
	This symbol indicates that the on/off command is disabled and means that the button in the “Plant control” menu is disabled (= button disabled and on/off command set to always ON). For CUSTOM operating mode it is possible to decide whether to enable the command or not: 1 - To enable the command, turn the knob to position the cursor on and press the knob. The symbol indicates that the command is enabled, and so the corresponding button in the “Plant control” menu will be enabled. 2 - To disable the command, turn the knob to position the cursor on and press the knob. The symbol indicates that the command is disabled, and so the corresponding button in the “Plant control” menu will be disabled ().

<p>GrpPwr</p>	<p>On/off command for the partial power switch of the plant. It may be used only for Multi DDC plants. It represents the switch for groups of units managed by a specific DDC.</p> <p>The  symbol indicates that the command is enabled and means that the  button in the "Plant control" menu is enabled.</p> <p>This symbol indicates  that the on/off command is disabled and means that the  button in the "Plant control" menu is disabled ( = button disabled and on/off command set to always ON).</p> <p>For CUSTOM operating mode it is possible to decide whether to enable the command or not:</p> <ol style="list-style-type: none"> 1 - To enable the command, turn the knob to position the cursor on  and press the knob. The  symbol indicates that the command is enabled, and so the corresponding button  in the "Plant control" menu will be enabled. 2 - To disable the command, turn the knob to position the cursor on , and press the knob. The  symbol indicates that the command is disabled and that the corresponding button in the "Plant control" menu will be disabled ().
<p>GenTmr</p>	<p>Via this on/off command, the user may enable the "General water T timer". In the "User settings" menu it is possible to define all the parameters that define the operating mode in which the general water T timer on/off command is present, such as set point temperature, etc. For programming instructions, see Paragraph 3.4.1.1.1.3 – "<i>General water T timer</i>".</p> <p>The  symbol indicates that the command is enabled and means that the  button in the "Plant control" menu is enabled.</p> <p>The  symbol indicates that the command is disabled and means that the  button in the "Plant control" menu will be disabled ().</p> <p>For CUSTOM operating mode it is possible to decide whether to enable the command or not:</p> <ol style="list-style-type: none"> 1 - To enable the command, turn the knob to position the cursor on  and press the knob. The  symbol indicates that the command is enabled, and so the corresponding button  in the "Plant control" menu will be enabled. 2 - To disable the command, turn the knob to position the cursor on , and press the knob. The  symbol indicates that the command is disabled and that the corresponding button in the "Plant control" menu will be disabled (). <p>This command is ON (switch closed) in the following cases:</p> <ol style="list-style-type: none"> 1 - The command is enabled  and the button in the plant control menu is enabled : the consent will be ON (switch closed) only during the programmed timer cycles. 2 - The command is enabled  and the plant control menu button is disabled : the command will always be ON. 3 - The command is disabled : the consent will always be ON.
<p>GrpTmr</p>	<p>This on/off command regards the "Partial water T timer" of the plant and is used only for Multi DDC plants. If this command is enabled, it allows different weekly timer programming to be made for the units managed by a specific DDC.</p> <p>In the "User settings" menu, it is possible to program all the parameters that allow the use of the Partial water T timer on/off command such as switch-on time, etc. For programming instructions, see Paragraph 3.4.1.1.1.4 – "<i>Partial water T timer</i>".</p> <p>The  symbol indicates that the command is enabled and means that the button in the "Plant control" menu is active.</p> <p>The  symbol indicates that the command is disabled and means that the  button in the "Plant control" menu will be disabled ().</p> <p>For CUSTOM operating mode it is possible to decide whether to enable the command or not:</p> <ol style="list-style-type: none"> 1 - To enable the command, turn the knob to position the cursor on  and press the knob. The  symbol indicates that the command is enabled, and so the corresponding button in the "Plant control" menu will be active.

	<p>symbol indicates that the command is enabled, and so the corresponding button  in the “Plant control” menu will be enabled.</p> <p>2 - To disable the command, turn the knob to position the cursor on , and press the knob. The  symbol indicates that the command is disabled and so the corresponding button in the “Plant control” menu will be disabled (.</p> <p>This command is ON (switch closed) in the following cases:</p> <p>1 - The command is enabled  and the button in the plant control menu is enabled : the consent will be ON (switch closed) for the duration of the programmed timer cycles.</p> <p>2 - The  command is enabled and the button in the “Plant control” menu is disabled . The command is disabled .</p>
<p>ChronT</p>	<p>It is present on the master and slave DDC and is the command for the ambient chronothermostat in the DDC. It is present by default in AmbT operating mode and may selected for CUSTOM mode. In the “User settings” menu it is possible to configure all the parameters that define the operating mode in which the chronothermostat on/off command is present: set-point, room temperature, differential, etc. For programming instructions, see Paragraph 3.4.1.2.3 – “Chronothermostat”.</p> <p>The  symbol indicates that the command is enabled and means that the  button in the “Plant control” menu is enabled.</p> <p>The  symbol indicates that the command is disabled. The chronothermostat button in the “Plant Control” menu can be enabled  or disabled  depending whether the “WeComp” function is enabled or not (climatic curve function).</p> <p>For CUSTOM operating mode it is possible to decide whether to enable the command or not:</p> <p>1 - To enable the command, turn the knob to position the cursor on  and press the knob. The  symbol indicates that the command is enabled, and so the corresponding button  in the “Plant control” menu will be enabled.</p> <p>2 - To disable the command, turn the knob to position the cursor on , and press the knob. The symbol  indicates that the command is disabled. The chronothermostat button in the “Plant Control” menu can be enabled  or disabled  depending whether the “WeComp” function is enabled or not (climatic curve function).</p> <p>This on/off command is ON (switch closed) in the following cases:</p> <p>1 - The  command is enabled and the plant control menu button is enabled : the command will be in the ON state (switch closed) when chronothermostat timer programming is active and the required condition for ambient air thermostating is not met (i.e. the ambient air temperature is different from that set).</p> <p>2 - The command is enabled  and the plant control menu button is disabled : the command will always be ON.</p> <p>3 - The command is disabled : the consent will always be ON.</p> <p>NOTE: for multi-DDC systems, the consent enabled on the slave DDC(s) acts only on the single DDC; for the master DDC it is possible to select whether the consent must act only on that DDC or on the whole system.</p> <p>NOTE: on the DDC(s) in the system in which this command is enabled an internal room temperature probe must be installed.</p>
<p>Ext. T</p>	<p>This on/off command is present only on the master DDC in ExtT operating mode or WCmp mode and for CUSTOM mode if selected. The command allows a switch to be closed, depending on external temperature. In the “User settings” menu it is possible to configure all the parameters that define the Test operating mode, including external temperature enabling, differential, etc. This command is ON (switch closed) in the following cases:</p> <p>1 - In heating mode, when the external ambient temperature is lower than that set (set point) (for details regarding ExtT mode, see Paragraph 4.5.3.1.5 – “Instructions for operation in ExtT mode”).</p> <p>2 - In cooling mode, when the external ambient temperature is higher than that set.</p>

	<p>3 - In all operating modes in which the command is disabled (switch closed).</p> <p>The  symbol indicates that the command is enabled.</p> <p>The  symbol indicates that the command is disabled.</p> <p>For CUSTOM operating mode it is possible to decide whether to enable the command or not:</p> <ol style="list-style-type: none"> 1 - To enable the command, turn the knob to position the cursor on  and press the knob. The  symbol indicates that the command is enabled. 2 - To disable the command, turn the knob to position the cursor on  and press the knob. The symbol  indicates that the command is disabled. <p>NOTE: in the case of multi-DDC systems, the consent enabled on the master DDC also acts on the slave DDCs, so on the whole system.</p>
<p>WeComp</p>	<p>It is present only on the master DDC in WCmp operating modes, or if selected in CUSTOM mode.</p> <p>It is not a real consent but a function that allows to activate the use of a climatic curve to automatically regulate the temperature of the water depending on the external temperature.</p> <p>The symbol  indicates that the function is active and implies enabling of the  button in the “Plant Control” menu.</p> <p>NOTE: the climatic curve function must be enables in the “Enabling of climatic curve” user level menu (see paragraph 3.4.1.1.1.2), otherwise the button will be disabled .</p> <p>The  symbol indicates that the function is not active. The chronothermostat button in the “Plant Control” menu can be enabled  or disabled  depending whether the “ChronT” function is enabled or not (chronothermostat on internal room probe).</p> <p>For CUSTOM operating mode it is possible to decide whether to activate this function or not::</p> <ol style="list-style-type: none"> 1- To enable the function, turn the knob to position the cursor on  and press the knob. The  symbol indicates that the function is active and therefore the corresponding button in the “Plant Control” menu will be enabled . 2- To deactivate the function, turn the knob to position the cursor on  and then press the knob. The  symbol indicates that the function is not active. The chronothermostat button in the “Plant Control” menu can be enabled  or disabled  depending whether the “ChronT” function is enabled or not (chronothermostat on internal room probe). <p>It is not possible to select the "WeComp" function at the same time as the “GenTmr” or “ChronT” consent.</p> <p>The climatic curve function is effectively active if, as well as selecting () “WeComp”, it is enabled in the “Enabling climatic curve” user level menu (see paragraph 3.4.1.1.1.2).</p> <p>When () “WeComp” is selected, the repeated pressing of the chronothermostat activation/deactivation button in the “Plant control” menu allows to set the following modes:</p> <ul style="list-style-type: none"> •  the room temperature set-point is that active on the bases of the programming set on the chronothermostat. •  or : the room temperature set-point is always T3 (maximum level of the heating or cooling service). •  the room temperature set-point is always T2 (average level of the heating or cooling service) •  or : the room temperature set-point is always T1 (minimum level of the heating or cooling service) <p>NOTE: continuing to press the knob, the sequence is repeated.</p> <p>NOTE: the climatic curve function is active in all modes stated above.</p>

<p>RY-RW</p>	<p>This on/off command is present on master and slave DDC in RYWm and RYWa operating modes, or if selected in CUSTOM mode. The status of the commands is directly correlated to the status of the external RW - RY contacts on the rear of the DDC. For further details regarding the meaning of RW and/or RY, see Paragraph 4.5.3.1.2 - "Instructions for operation in mRYW mode". In all other cases, i.e. when the commands are not enabled, it is in the ON state.</p> <p>The  symbol indicates that the RY and RW commands are enabled.</p> <p>The  symbol indicates that the commands are disabled (commands always present: switches closed).</p> <p>For CUSTOM operating mode it is possible to decide whether to enable the commands or not:</p> <ol style="list-style-type: none"> 1 - To enable the commands, turn the knob to position the cursor on , and press the knob. The  symbol indicates that the commands are enabled. 2 - To disable the commands, turn the knob to position the cursor on , and press the knob. The  symbol indicates that the commands are disabled. <p>The RY command is in the OFF state (switch open) if, with RYWm mode selected, the RY contact is open. The RY command is in the OFF state (switch open) if, with RYWm mode selected, the RW contact is open.</p> <p>The command, for the cooling plant, is ON (switch closed) in the following cases:</p> <ol style="list-style-type: none"> 1 - The RY-RW command is enabled () and the RY contact is closed. 2 - The RY-RW command is disabled (). <p>The command, for the heating plant, is ON (switch closed) in the following cases:</p> <ol style="list-style-type: none"> 3 - The RY-RW command is enabled () and the RW switch is closed. 4 - The RY-RW command is disabled (). <p>NOTE: RY and RW consents act on the single DDC (master or slave) on which they are configured; in multi-DDC systems this allows to selectively give consent to one or more DDCs from the outside.</p>
<p>AutoYW</p>	<p>Only for 2-line hot/cold plants and only for the plant master DDC: this is present in RYWa mode or, if selected, in CUSTOM mode; if enabled, it specifies that the cooling/heating commutation is automatic according to the request on the RY - RW contacts (RY closed: commutation in cooling; RW closed: commutation in heating); If disabled  it specifies that the cooling/heating commutation is done manually using the plant control menu button  or via Bus.</p> <p>The  symbol indicates that the function is disabled:</p> <ul style="list-style-type: none"> • if the "BUS plant control" is selected in the "BUS access configuration" menu, the cooling/heating switching-over is managed by the access to the BUS in BMS mode ( button disabled in plant control menu); • otherwise it is managed manually ( button enabled in plant control menu); moreover, if the "RM plant control" option is selected in the "BUS access configuration" menu", the switching-over can be carried out also via BUS in RM mode. <p>The  symbol indicates that the function is enabled and ALWAYS implies that the button is disabled ( in the Plant control menu (automatic cooling/heating switching according to the state of the RY and RW contacts).</p> <p>For CUSTOM operating mode it is possible to decide whether to enable this function or not:</p> <ol style="list-style-type: none"> 1 - To enable the function, turn the knob to position the cursor on  and press the knob. 2 - To disable the function, turn the knob to position the cursor on  and press the knob. <p>If  is enabled, and the RW and RY contacts are both closed, an error is generated and the plant switched off.</p> <p>NOTE: in CUSTOM mode, enabling the YWAUTO does not necessarily require the enabling of consents RY-RW; it is therefore possible to obtain a configuration in which the RY and RW contacts are used only for the cooling/heating commutation, but not as consents to switch the plant on.</p>

For further information about the "Plant control" menu, consult Paragraph 2.4 – "PLANT CONTROL MENU" on page 11.

The consents can be represented as serial switches, as indicated in Figure 20 on page 108; The example represents the Custom operation mode with all the available consents. The BMS On-Off switch is managed

ONLY if the “BMS plant control” item is enabled in the “BUS access configuration” menu (for further information see paragraph BUS access setup “82” on page).

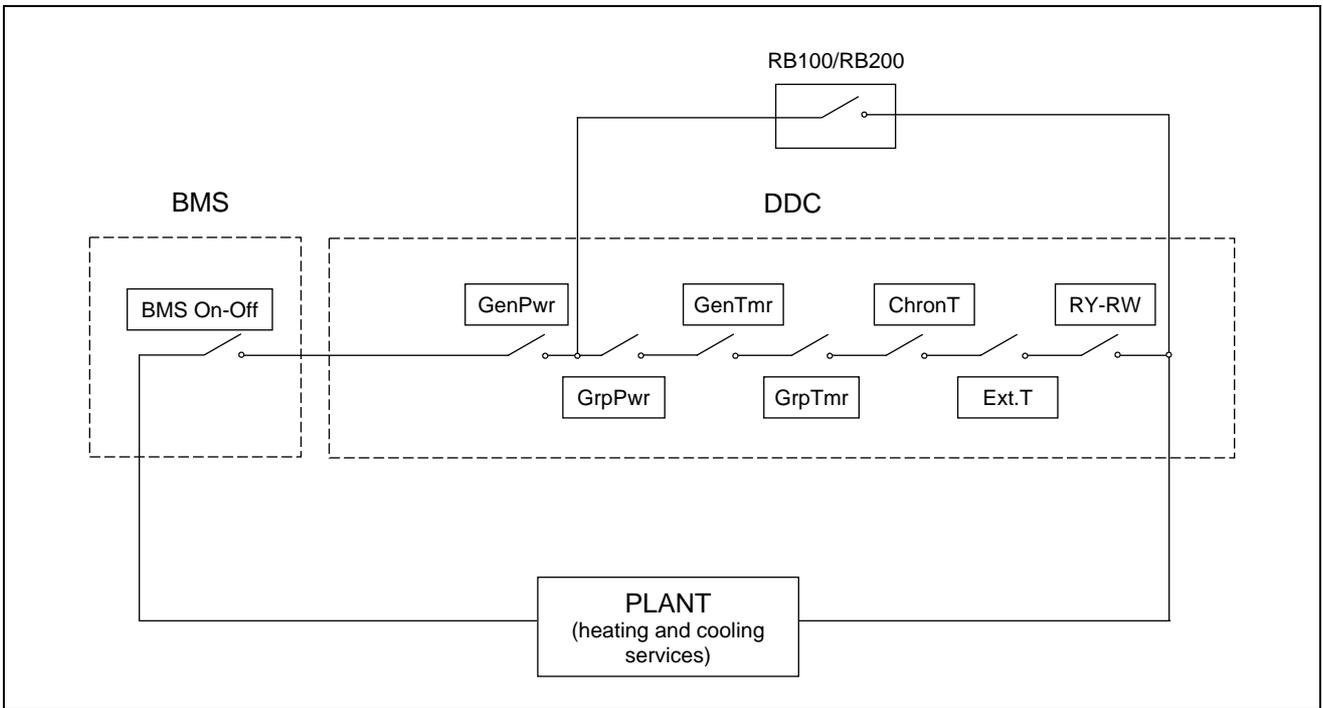


Figure 20 – MAIN CONSENTS DIAGRAM

The WeComp function (climatic curve) is not represented in the Figure 20 layout as it does not act as a consent (On-Off) but by varying the temperature on the flow water depending on the external temperature.

The Digital Panel foresees various modalities for the management of unit operation as indicated in the table below.

OPERATING MODE	MANUAL (MAN)	RYWm	RYWa	ExtT	AmbT	WCmp	MON	CUST
Global On-Off	X			X	X	X		X*
<i>Partial On-Off</i>	X			X	X	X		X*
Global water T timer	X	X	X	X				X*
<i>Partial water T timer</i>	X	X	X	X				X*
External Temperature				X		X		X*
Chronothermostat					X			X*
Climatic curve						X		X*
RY-RW		X	X					X*
AutoYW			X					X*

Table 6 – Operating modes (bus access not configured)

X*	In CUSTOM operating mode it is possible to select freely the ON/OFF commands that determine the activation of the plant. It is not however possible to select the "WeComp" function at the same time as the "GenTmr" or "ChronT" consent..
	Multi DDC plants only.
	Two-line hot/cold plants only.

To select the operating mode of the plant, carry out the following operations:

- 1 - Select from the initial screen to gain access to the main menu.
- 2 - Select to gain access to the System installation.
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select **"Plants"** from the drop-down menu.
- 5 - Select the appropriate icon: for two-line cooling/heating plant; for the hot water production plant; for the chilled water production plant.
- 6 - Turn the knob to scroll the cursor downward until highlighting **"Base plant part"** and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting **"Cond/Heat. serv. Conf."**.
- 8 - Turn the knob to scroll the cursor downwards until **"Partial operation mode"** is selected and press the knob to access the screen.
- 9 - Select or to change the operating mode.
- 10 - If CUSTOM mode is selected, pass to each individual item (☐), enabling those desired (☑).
- 11 - To exit, select .

NOTE

If the DDC is the Master of two plants, repeat from 5 to 9 for the second plant

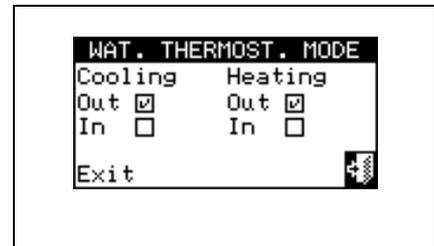
Setting the water thermostating mode (Master DDC only)

This option, contained in the System installation, allows the user to define thermostating mode for hot and/or chilled water production plants.

Thermostating may be controlled on the outlet or inlet pipes.

Instructions for setting the water thermostating mode follow:

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select **"Plants"** from the drop-down menu.
- 5 - Select the  symbol for two-line cooling/heating plants,  for hot water production plants,  or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting **"Base plant part"** and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting **"Cond/Heat. serv. Conf."**.
- 8 - Turn the knob to scroll the cursor downwards until "Wat. Thermost. Mode" is selected, and press the knob to access the screen.
- 9 - For the chilled water production plant (left column on the screen), position the cursor on and press the knob to select on the pipe where thermostating is to be performed (outlet or inlet).
- 10 - For hot water production plants, in the screen's right-hand column, position the cursor on and press the knob to select on which pipe thermostating is to be performed (outlet or inlet).
- 11 - To exit, select .



NOTE

If the DDC is the Master of two plants, repeat from 5 to 9 for the second plant

Climatic curve parameters

The option present inside the installation menu allows to define the parameters of the climatic curve that will affect the flow temperature of the hot and/or cooled water.

The climatic curves allow to calculate the temperature of the system water depending on the external temperature measured and the set-point temperature of the internal environment.

Depending on the type of system, in particular, the type of exchangers (radiators, fan coils, floor radiators, etc.) and the features of the building, a specific curve must be used, selected from the family of climatic curves. Moreover, on variation of the internal room set-point temperature, the curve effectively used will be modified automatically.

The climatic curves used in the PDC for cooling are different from those used for heating and the methods of selection of the specific curve to be used differ.

As far as the **cooling** is concerned, the climatic curves are a family of straight lines and the choice of curve to use is done by specifying two points it must pass through: in detail, the temperature that the cooled water must have at the external temperature of 25 °C (77° F) and 35 °C (95° F) must be specified; for example, in the graphics stated in Figure 21, the curve selected implies that the machines will produce cooled water at a temperature of 7° C (44,6° F) when the external temperature is 35°C (95° F) and 10°C (50° F) when the external temperature is 25°C (77° F).

The curve defined in this way refers to an internal environment set-point temperature of 25 °C (77° F). If the set-point temperature is different, the system automatically adapts the curve used.

If the slope of the curve selected is not correct, the following cases may occur, to be evaluated during the first working period of the system:

- **Internal ambient temperature higher when the external temperature is higher:** the slope is insufficient; **lower** the water temperature for external temperature 35°C (95° F) or **raise** the value for external temperature 25°C (77° F).
- **Internal ambient temperature higher when the external temperature is lower:** the slope is too steep; **raise** the water temperature for external temperature 35°C (95° F) or **lower** the value for external temperature 25°C (77° F).

If, however, the slope is correct (internal environment temperature stable on variation of the external temperature), but the internal temperature does not coincide with that set as set-point, the following cases may occur:

- Internal ambient temperature still higher than the set point: in this case, intervention must be made on the Offset parameter of the climatic curve, setting a **negative** value equal to the offset of the internal temperature from the set-point; for example, if the set-point is 24 °C (75,2° F) and the effective internal temperature is 27 °C (80,6° F), set the Offset parameter at a value of -3 °C (-5,4° F).
- Internal ambient temperature still lower than the set point: in this case, a **positive** value must be set for the Offset parameter of the climatic curve; for example, if the set-point is 24 °C (75,2° F) and the effective internal temperature is 22 °C (71,6° F), set the Offset parameter at a value of 2 °C (3,6° F). Water T.

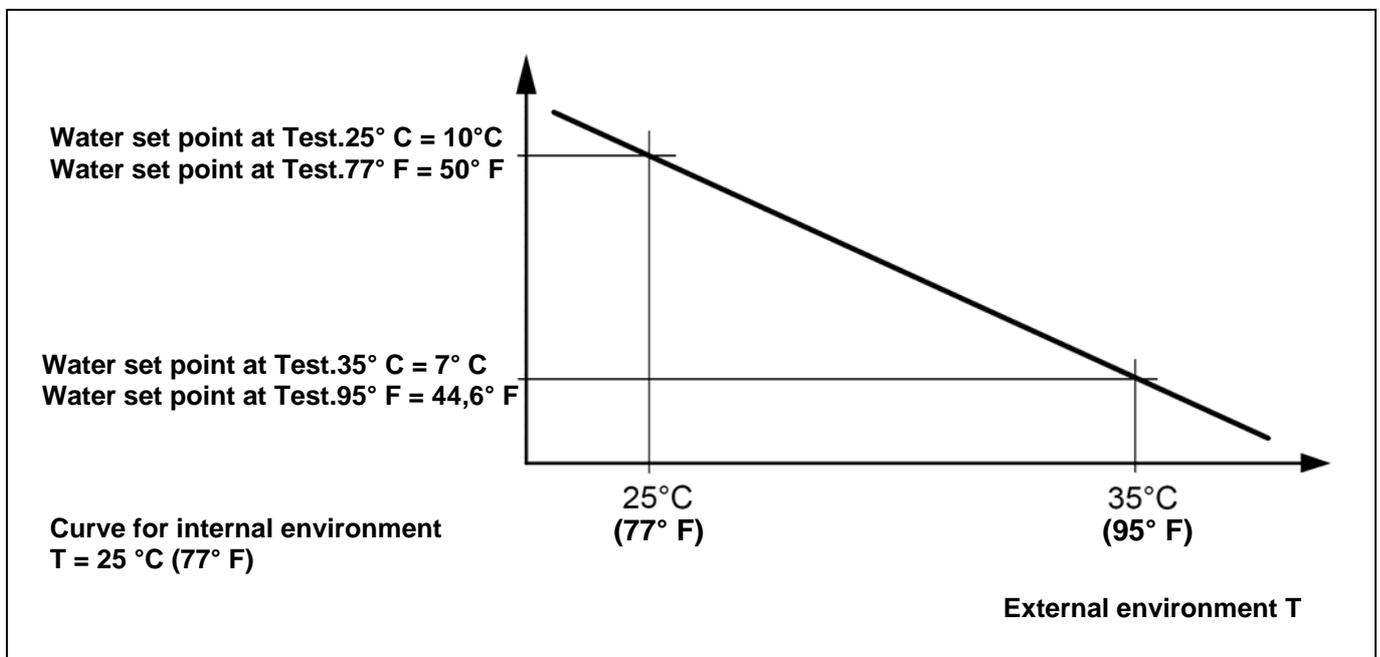


Figure 21 —GRAPHICS OF THE "CONDITIONING CURVES"

Regarding heating, the family of climatic curves is indicated in Figure 22 and the choice of the curve to use is made by specifying the value of a parameter that indicates the slope of the curve. The curve defined in this way refers to an internal environment set-point temperature of 20 °C (68 °F) . If the set-point temperature is different, the system automatically adapts the curve used.

To initially set a suitable heating climatic curve, operate as follows:

- Obtain the data relative to the temperature necessary when the external temperature is equal to the "project temperature" (for example: waterT = 60 °C (140 °F) when External = -10 °C (14 °F).
- Using the Figure 22 graphics, select the curve that satisfies the requisite of the previous point; for the example in the previous point, see Figure 23.
Take note of the value of the parameter that expresses the slope of the curve and set it.
For the example in the previous points, set the value of 1.5, as indicated in Figure 23.
NOTE: if no curve passes through the point corresponding to the project temperature, select an intermediate value between those of the curve immediately above or immediately below this point.

- Indicatively, a system that uses floor radiant heat exchangers will use "low" slope values, a fan coil system will use "medium" values and a system with radiators "high" values
- Set the Offset parameter at 0.

If the slope of the curve selected is not correct, the following cases may occur, to be evaluated during the first working period of the system:

- Internal ambient temperature higher when the external temperature is higher: in this case the slope is insufficient, set a **higher** value for the slope parameter.
- Internal ambient temperature higher when the external temperature is lower: in this case the slope is excessive, set a **lower** value for the slope parameter.

If, however, the slope is correct (internal environment temperature stable on variation of the external temperature), but the internal temperature does not coincide with that set as set-point, the following cases may occur:

- Internal ambient temperature still higher than the set point: in this case, intervention must be made on the Offset parameter of the climatic curve, setting a **negative** value equal to the offset of the internal temperature from the set-point; for example, if the set-point is 22 °C (71,6° F) and the effective internal temperature is 26 °C (78,8° F), set the Offset parameter at a value of -4 °C (-7,2° F).
- Internal ambient temperature still lower than the set point: in this case, a **positive** value must be set for the Offset parameter of the climatic curve; for example, if the set-point is 20 °C (68° F) and the effective internal temperature is 19 °C (66,2° F), set the Offset parameter at a value of 1 °C (1,8° F).

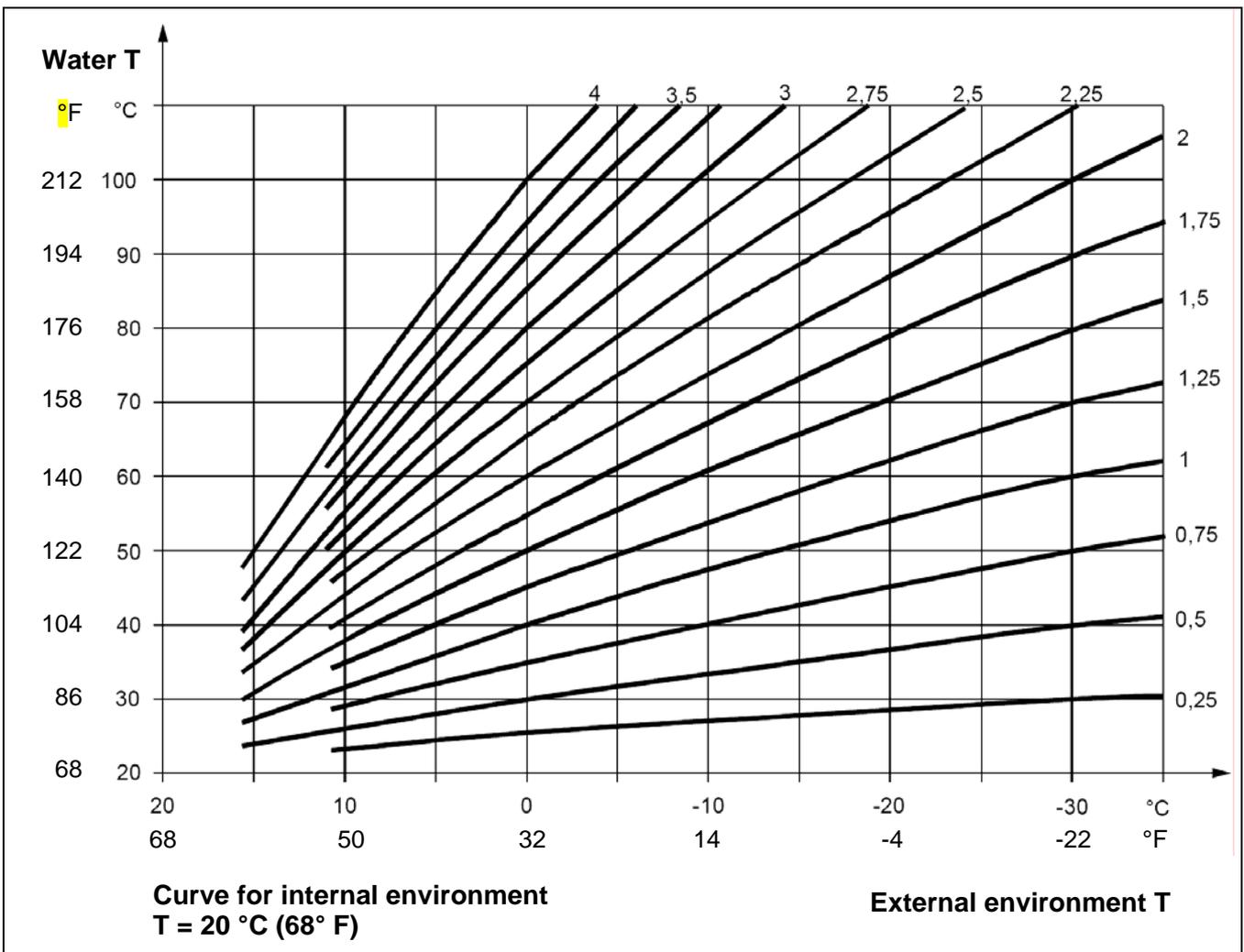


Figure 22 —GRAPHICS OF THE "HEATING CURVES"

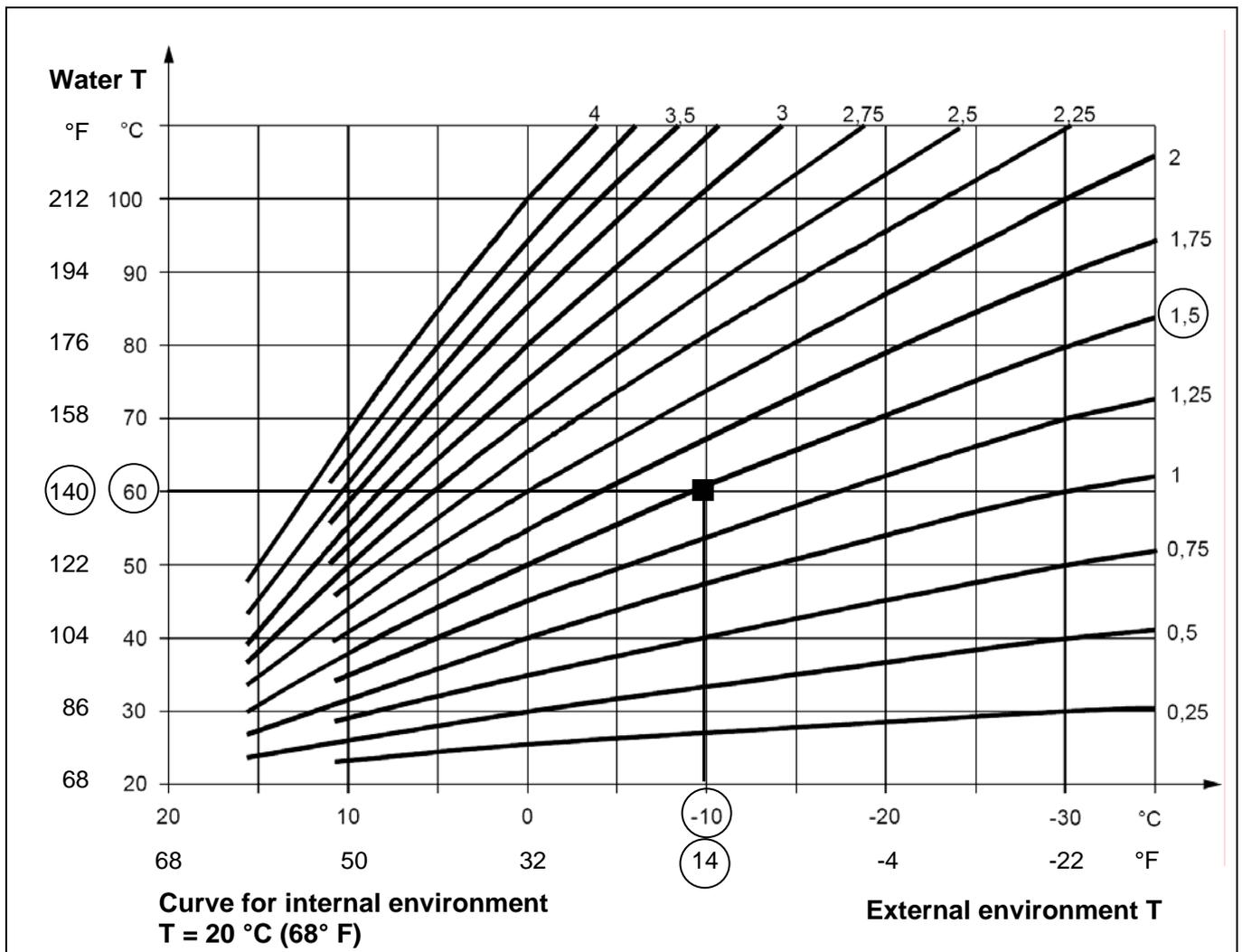


Figure 23 – EXAMPLE OF SELECTION OF A HEATING CURVE ON THE BASIS OF THE RATED TEMPERATURE

NOTE

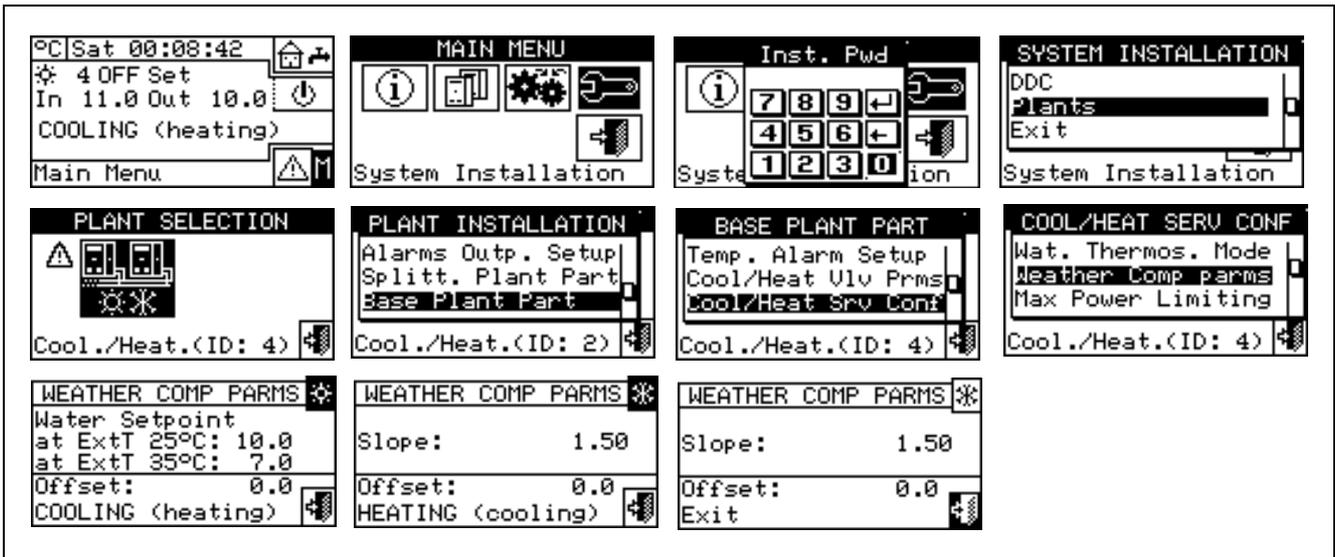
Limitation of the water temperature range of variation.

Often it is good practice to limit the effective travel accepted of the water temperature, with respect to that corresponding to the entire variation range of the external temperature, which should be derived just from the calculation with climatic curve. This can be performed by accessing the menu **Maximum water setpoint** (page 116) and **Min water set-point** (page 117).

Instructions for setting the climatic curve parameters:

- 1 - Select from the initial screen to gain access to the main menu.
- 2 - Select to gain access to the System installation.
- 3 - Enter the installer password, if requested, on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the symbol for two-line cooling/heating plants, for hot water production plants, or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Cool/Heat. serv. Conf.".

- 8 - Turn the knob to scroll the cursor downwards until “**Weather Comp parms**” is highlighted, and press the knob to access the screen.
- 9 - For the cooled water production system set the “**Water set-point at ExtT. 25 °C (77° F)**” parameter and “**Water set-point at ExtT. 35 °C (95° F)**” parameter and any “**Offset**” parameter.
- 10 - For the hot water production system, set the “**Slope**” parameter of the heating curve and any “**Offset**” parameter.
- 11 - To exit, select .



Maximum power limitation

This optional function allows to limit the maximum power made available by the system for the heating and cooling services, according to the outdoor temperature.

The maximum power installed in a heating or cooling system is dimensioned for the maximum heat load condition, which can be minimum (in heating mode) or maximum (in cooling mode) project outdoor temperature.

Therefore, in climatic conditions that are not extreme, the power installed would be over-abundant; especially in plants with a high number of stages or mixed type (heat pumps plus boilers), more efficient regulation can be obtained by appropriately limiting the power available, i.e. by preventing the regulator using, also only temporarily, an excessive number of machines.

In heating mode, the function operates by progressively reducing the number of machines that can be used on increase of the outdoor temperature. Once activated, three parameters must be appropriately set:

- **External temperature at 100% power:** set the minimum rated value of the external temperature.
- **External temperature at 0% power:** the external temperature must be set, over which power in heating mode is not requested.

NOTE: to prevent limiting the power excessively, it is good practice to insert a margin, setting values slightly higher than the theoretical ones for these two parameters.

- **Enabling delay:** with this parameter it is possible to insert an activation delay of the power limiting function, calculated starting from system switch-on. In this way, it is possible to allow the system to always use all power available during the system start-up phase.

In cooling mode, the function operates in the same way, clearly with inverted logic with respect to the variations of the outdoor temperature.

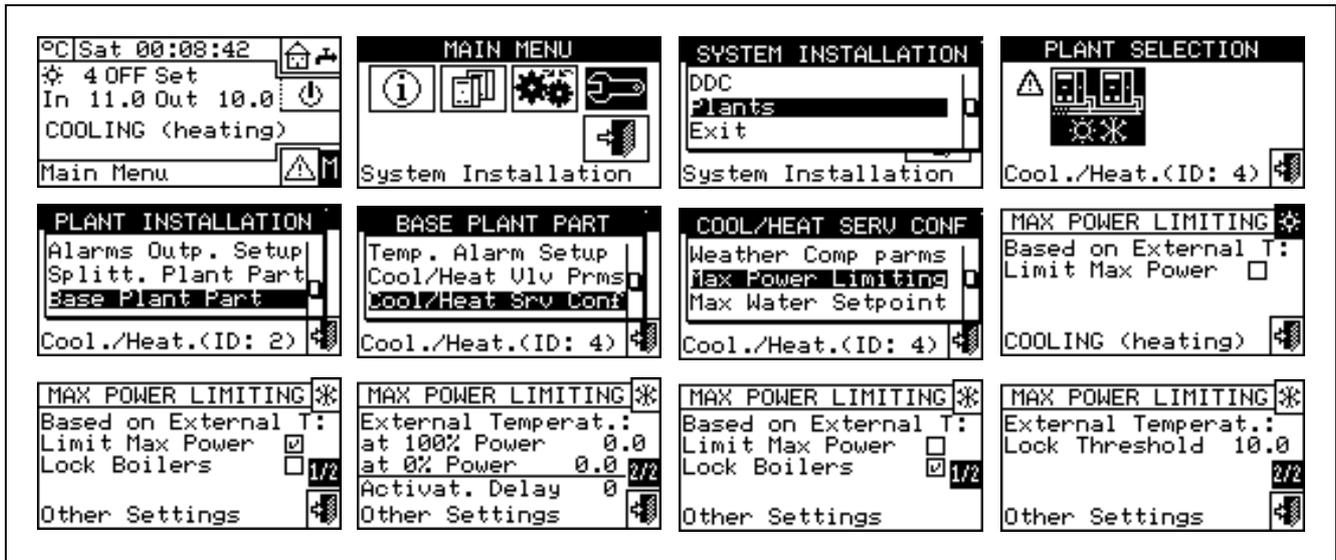
It is possible to activate or not and separately configure the heating and cooling mode.

As an alternative to this function, limited to the heating mode, a simplified version can be activated that operates only by preventing the use of the least efficient heat generators (boilers) over an external temperature data. In this case, once the function is activated, just one parameter must be set:

- **Boiler disabling external temperature threshold:** the external temperature value must be set over which the boilers must not be used.

Follow the instructions given below to activate and configure the function:

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - Enter the installer password, if requested, on the numerical keypad that appears on the display.
- 4 - Select "Plants" from the drop-down menu.
- 5 - Select the  symbol for two-line cooling/heating plants,  for hot water production plants,  or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Cool/Heat. serv. Conf.".
- 8 - Turn the knob to scroll the cursor downwards until "**Max. Power Limiting**" is selected, and press the knob to access the screen.
- 9 - Only for 2-line hot/cold systems: select the button with the  or  symbol, to select the functioning mode for which the parameters are to be set:  for HEATING,  for COOLING.
- 10 - To activate the function for the cooled water production system, select the only option available, "**Limit Max Power**". At this point, page 2/2 must be accessed to set/modify the three parameters relative to the function: Outdoor temperature at 100% and 0% power and Activation delay of the limitation function from system switch-on.
- 11 - To activate the function for the hot water production system, choose and select one of the "**Limit Max Power**" or "**Lock boilers**" options. In both cases, page 2/2 must be accessed to set/modify:
 - If "**Limit Max Power**" is selected, the three parameters stated in point 10, relative to the hot water production system.
 - If "**Lock boilers**" is selected, the outdoor temperature threshold parameter prevents the boilers.
- 12 - To exit, select .



Maximum water setpoint

The option present inside the installation menu allows to define the **maximum limit of the set-point temperatures** (flow and return) for cooling and heating on the base part of the system. The set-point temperatures will be set subsequently by the user by means of “**User settings**” Menu. In particular, the user can define the minimum temperature for the production of chilled water in the field from -30°C to +40°C (-22°F to 104° F) and the e maximum temperatures for the production of hot water in the field from +5°C to +95°C (+41° F to +203° F). For instance, should a value of +5°C (+41° F) be set for a chilled water production plant, the user can define a temperature value upper than +5°C (+41° F). In case of hot water production plant, the setting of a temperature value equal to +60°C (+140° F) will allow the user to choose a hot water setpoint value lower than +60° C (+140° F). Moreover, if the climatic curve function is active, these limits are applied to the set-point determined by the system depending on the external temperature.

In the example for heating systems given above, the maximum set-point temperature of the water will be +60°C (+140° F) even if the climatic curve function should request a higher value.

The set-point limits for the thermostating on delivery and return are set separately.

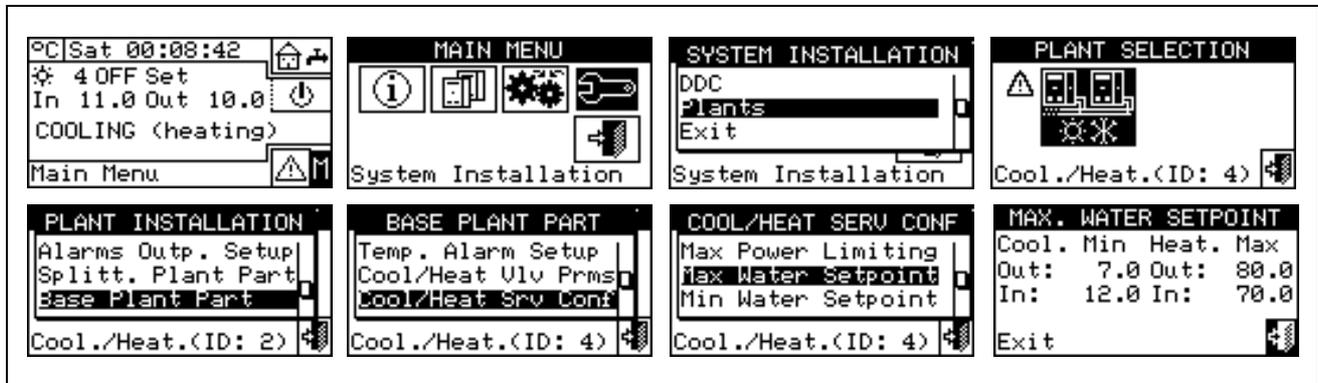
To modify the set-point limits, follow the instructions below:

- 1 - Select  from the initial screen to access the main menu.
- 2 - Select  to access the “installation menu”.
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select “**Plants**” from the drop-down menu.
- 5 - Select the  symbol for two-line cooling/heating plants,  for hot water production plants,  or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting “Base plant part” and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting “Cool/Heat srv.Conf.” and press the knob.
- 8 - Turn the knob to scroll the cursor downward until highlighting “Max water set-point” and press the knob.
- 9 - Position the cursor on the temperature value to be modified.
- 10 - Press the knob to allow the change of the selected value.
- 11 - Turn the knob to modify the value.
- 12 - Press the knob to confirm the set value.

13 - To exit, select

NOTE

If the DDC is the Master DDC for two plants, repeat steps 5 to 9 for the second plant.



Min water set-point

The option present inside the installation menu allows to define the **minimum limit of the set-point temperatures** (flow and return) for cooling and heating on the base part of the system. The set-point temperatures will be set subsequently by the user by means of “**User settings**” Menu. In particular, the user can define the maximum temperatures for the production of chilled water in the field from -30°C to +40°C (-22° F to +104° F) and the minimum temperatures for the production of hot water in the field from +5°C to +95°C (+41° F to +203° F). For instance, should a value of +30°C (+86° F) be set for a chilled water production plant, the user can define a temperature value lower than +30°C (+86° F). In case of hot water production plant, the setting of a temperature value equal to +40°C (+104° F) will allow the user to choose a hot water set-point value ranging exceeding +40°C (+104° F).

Moreover, if the climatic curve function is active, these limits are applied to the set-point determined by the system depending on the external temperature. In the example for heating systems given above, the minimum set-point temperature of the water will be 40°C (+104° F) even if the climatic curve function should request a lower value.

NOTE

The settings of the max and min set-points are linked to each other, therefore if set as max set-point value (for the production of hot water) at 50 °C (122° F) the min set-point value that can be set must be lower than or equal to 50°C (122° F).

NOTE

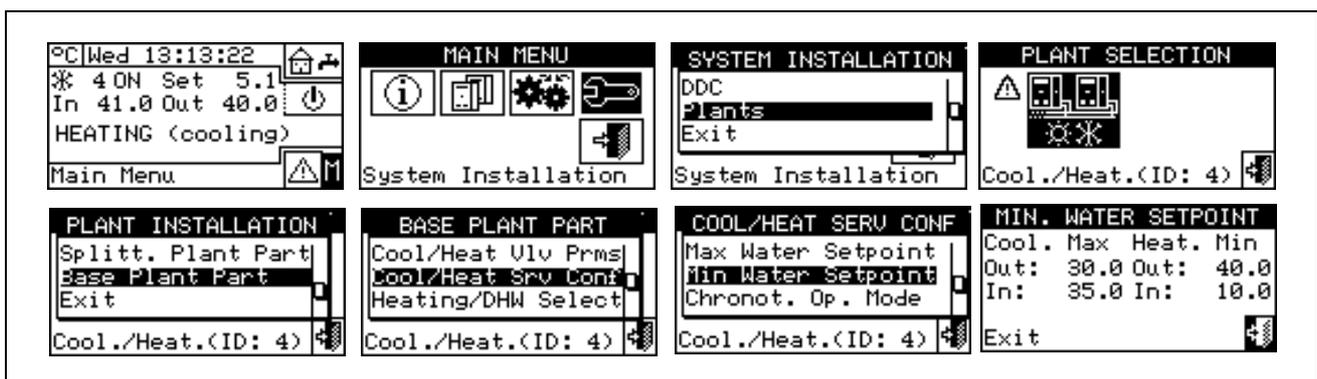
The set-point limits for the thermostating on outlet and inlet are set separately

To modify the set-point limits, follow the instructions below:

- 1 - Select  from the initial screen to access the main menu.
- 2 - Select  to access the "installation menu".
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select **"Plants"** from the drop-down menu.
- 5 - Select the  symbol for two-line cooling/heating plants,  for hot water production plants,  or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Cool/Heat srv.Conf." and press the knob.
- 8 - Turn the knob to scroll the cursor downward until highlighting "Min water set-point" and press the knob.
- 9 - Position the cursor on the temperature value to be modified.
- 10 - Press the knob to allow the change of the selected value.
- 11 - Turn the knob to modify the value.
- 12 - Press the knob to confirm the set value.
- 13 - To exit, select .

NOTE

If the DDC is the Master DDC for two plants, repeat steps from point 5 for the second plant



Chronothermostat mode (Master DDC of Multi DDC plants only)

This option, in the System installation, allows the user to define, for each plant managed by the DDC, the operating mode of the Master DDC's chronothermostat.

Two operating modes are available:

- **General chronothermostat** (Master and slave): in this case the Master DDC's chronothermostat also controls the commands on the Slave DDCs.

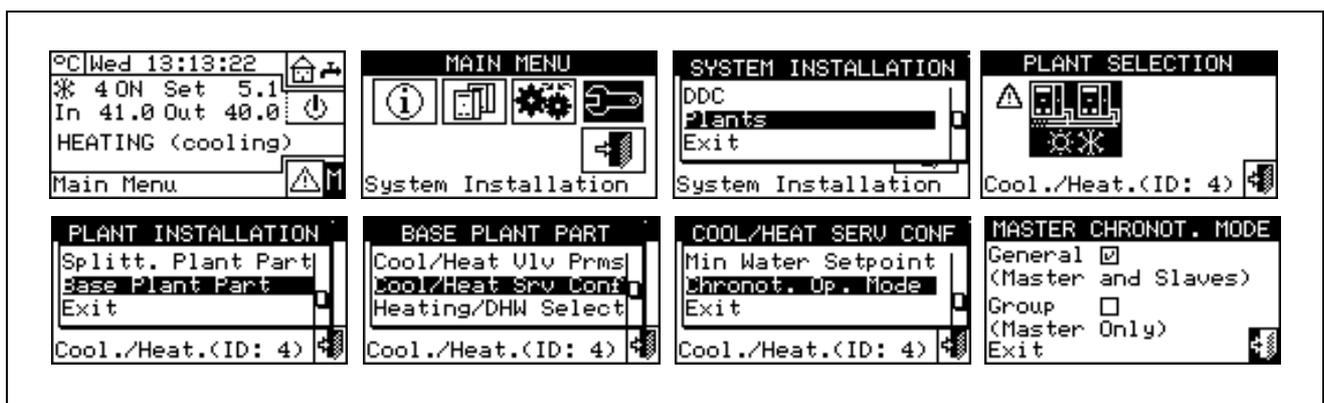
- Partial chronothermostat (Master DDC only): The chronothermostat of the Master DDC gives the on command only to the units that it manages directly.

In practice, two typical configurations are used:

1. **Single chronothermostat:** the plant is controlled exclusively by the Master DDC chronothermostat. It is necessary to select the “General” option described above and to disable the chronothermostat command on the Slave DDCs. (see Paragraph “On/off command configuration” on page 103). In addition, it is necessary to connect the ambient temperature sensor, supplied as an optional extra, to the Master DDC.
2. **Zone chronothermostat:** with this type of configuration it is possible to control the temperature of 3 different environments. It is necessary to enable the chronothermostat commands on all of the DDCs and select the “Partial” option described above on the Master DDC. In addition, it is necessary to connect the ambient sensors (supplied as an optional extra) to each DDC.

Instructions for setting the “Chronot. Op. Mode” on the Master DDC follow:

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - Enter the installer password, if requested, on the numerical keypad that appears on the display.
- 4 - Select “Plants” from the drop-down menu.
- 5 - Select the  symbol for two-line cooling/heating plants,  for hot water production plants,  or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting “Base plant part” and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting “Cool/Heat. serv. Conf.”.
- 8 - Turn the knob to scroll the cursor downwards until “Chronot. Op. Mode” is selected, and press the knob to access the screen.
- 9 - Position the cursor on next to the option to be set (general,group) and press the knob to make the choice. The symbol indicates that the option has been enabled .
- 10 - To exit, select .



NOTE

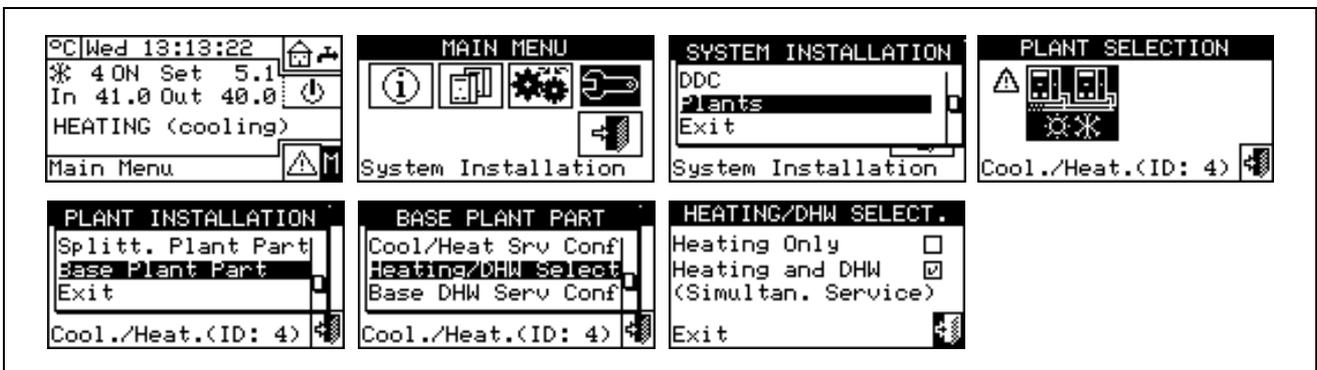
Repeat steps 5 to 8 for the second plant if the DDC is the Master DDC for two plants.

4.4.2.6.10 Heating/DHW select

By means of this sub-menu item, it is possible to choose if the machines that build up the base plant serve only for the production of hot water for the heating plant or if they serve for the production (also contemporary) of hot water for the heating plant and of domestic hot water (DHW).

- 1 - Select  from the initial screen to gain access to the main menu.

- 2 - Select  to gain access to the System installation.
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select **"Plants"** from the drop-down menu.
- 5 - Select the plant type:  for two-line cooling/heating plant;  for the hot water production plant;
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Heating/DHW select."
- 8 - Place the cursor on next to the option you wish to set: "Heating and DHW (Simultan.service)" or "Heating only."
- 9 - Press the knob to activate the option. The symbol indicates that the option has been enabled .
- 10 - To exit, select .



4.4.2.6.11 Base DHW service configuration

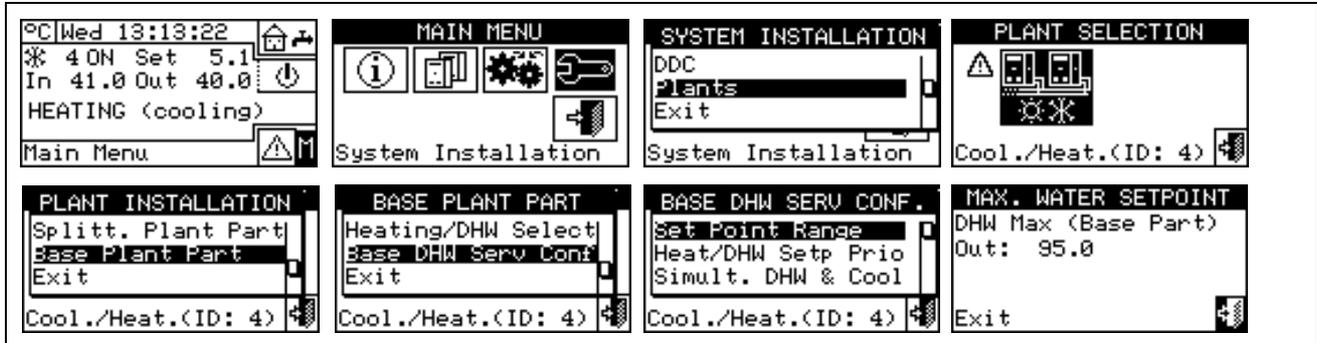
Set-point limit

The option present inside the installation menu allows to define the maximum limit of the set-point temperature (flow) for the production of DHW on the base part of the system. The set-point temperature will be set subsequently by the user by means of "User settings" Menu. In particular, it is possible to define the maximum temperature for the production of DHW within a field of +5°C / +95°C (+41° F / +203° F). For example, if a value of +60°C (+140° F) is set, the user can define a temperature value between +5°C (+41° F) and +60°C (+140° F).

- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to access the "installation menu".
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select **"Plants"** from the drop-down menu.
- 5 - Select the  symbol for two-line cooling/heating plants,  for hot water production plants,  or for chilled water production plants.
- 6 - Turn the knob to scroll the cursor downward until highlighting "Base plant part" and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting "Base DHW srv.Conf." and press the knob.
- 8 - Turn the knob to scroll the cursor downward until highlighting "Set-point Range" and press the knob.
- 9 - Position the cursor on the temperature value to be modified.
- 10 - Press the knob to allow the change of the selected value.
- 11 - Turn the knob to modify the value.
- 12 - Press the knob to confirm the set value.
- 13 - To exit, select .

NOTE

If the DDC is the Master DDC for two plants, repeat steps from point 5 for the second plant



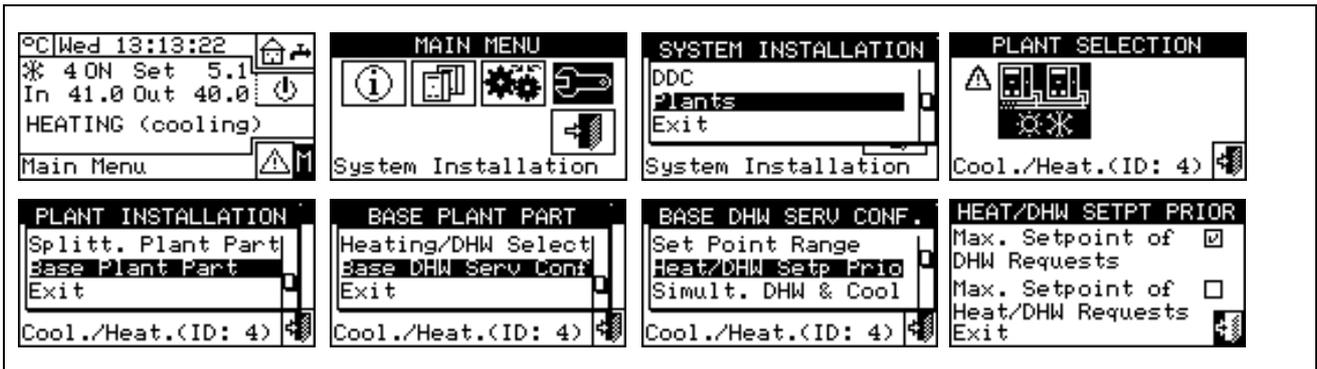
Heat/DHW setpoint priority

This parameter permits to set of which setpoint value use shall be made for the operation of the base plant units in case several switching-on requests are present. In particular, the choice of the reference setpoint will be assessed by the plant among the setpoint requests for the base DHW service and the setpoint requests for the heating service. It is important to remember that more requests of the same type can be obtained from both the DDC and one or more RB100 or RB200 devices.

By selecting the “Max. DHW request setpoint” option, the DDC will consider the maximum value of all the base domestic hot water requests as reference setpoint for the plant management. Should both base DHW and heating requests exist, the setpoint utilized by the system will be the one relative to the DHW request specifying the highest setpoint value. In case only heating requests are present (and not base DHW request) the utilized setpoint will be the highest one among all the heating requests.

By selecting the “Max. Heat./DHW request setpoint” item, the DDC will consider the maximum value of both base DHW and heating requests as the setpoint of which use shall be made for the plant management.

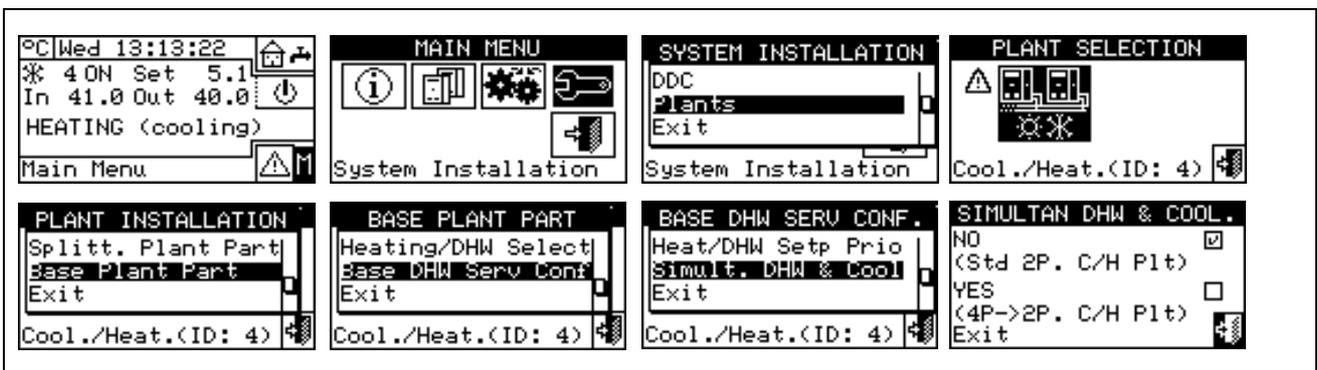
- 1 - Select  from the initial screen to gain access to the main menu.
- 2 - Select  to gain access to the System installation.
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select “Plants” from the drop-down menu.
- 5 - Select the plant type:  for two-line cooling/heating plant;  for the hot water production plant;  for the chilled water production plant.
- 6 - Turn the knob to scroll the cursor downward until highlighting “Base plant part” and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting “Base DHW serv.Conf.” and press the knob
- 8 - Turn the knob to scroll the cursor downward until highlighting “Heat/DHW Setp Prio”.
- 9 - Position the cursor on next to the option that is to be set.
- 10 - Press the knob to activate the option. The symbol indicates that the option has been enabled .
- 11 - To exit, select .



Use of DHW in cooling mode

This setting permits to produce base DHW on a two-line cooling/heating plant even when it is switched over to cooling. In order to get this functionality the 2-line plant must be of the type with “doubled manifolds”, that is, from the hydraulic point of view, it must be of 4-line type with the addition of three-way centralized valves for the cooling/heating switching-over. These valves are controlled by the RB100 or RB200 device (see Figure 24).

- 1 - Select from the initial screen to gain access to the main menu.
- 2 - Select to gain access to the System installation.
- 3 - Enter the installer password on the numerical keypad that appears on the display.
- 4 - Select “Plants” from the drop-down menu.
- 5 - Select the plant type: for the two-line cooling/heating plants;
- 6 - Turn the knob to scroll the cursor downward until highlighting “Base plant part” and press the knob.
- 7 - Turn the knob to scroll the cursor downward until highlighting “Base DHW serv.Conf.” and press the knob
- 8 - Turn the knob to scroll the cursor downward until highlighting “Simult.DHW & Cool”.
- 9 - Position the cursor on next to the option that is to be set.
- 10 - Press the knob to activate the option. The symbol indicates that the option has been enabled .
- 11 - To exit, select .



NOTE

A standard 2-line plant cannot make use of this option for the base plant units cannot provide hot water while the plant is switched over to cooling.

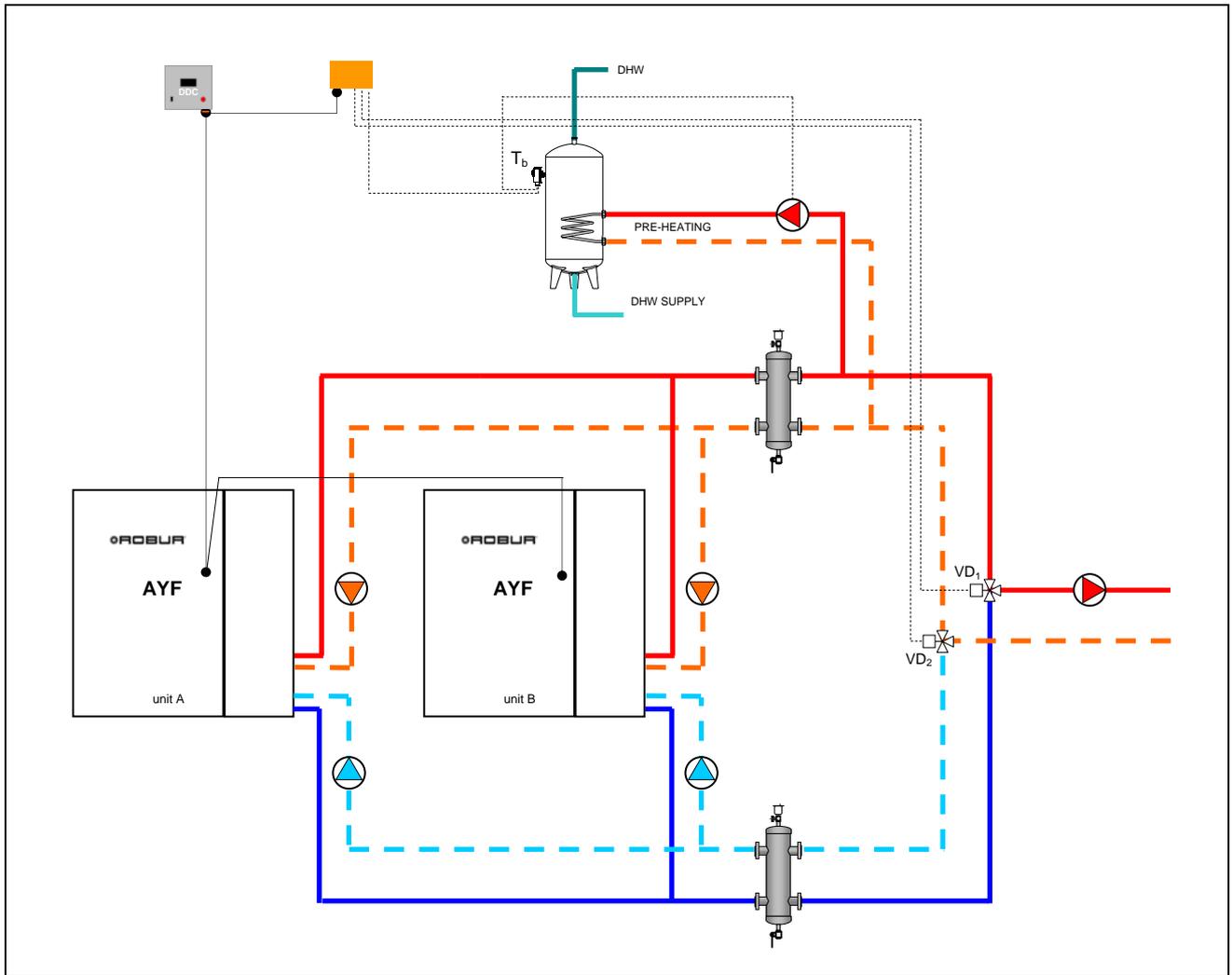


Figure 24 - SE OF DHW IN COOLING MODE

4.5 INSTRUCTIONS FOR DDC-PLANT CONFIGURATION

4.5.1 INTRODUCTION

The DDC has been conceived to control up to a maximum of 96 modules (i.e. a maximum of 48 cold modules and 48 hot modules). In order to obtain this functionality, a modular architecture has been adopted, on the basis of which:

- one DDC is able to control directly up to a maximum of **32** modules (**16** cold modules and **16** hot modules) (see Paragraph **4.5.2.1 – “Single DDC configuration”**);
- two **DDCs** may be coordinated to manage up to 64 modules (32 “cold” modules + 32 “hot” modules) (see Paragraph **4.5.2.2 – “Multi DDC Binding”**);
- three **DDCs** may be coordinated to manage up to 96 modules (48 “cold” modules + 48 “hot” modules);(see Paragraph **4.5.2.2 – “Multi DDC Binding”**).

In addition, each DDC can manage units configured on two different plants, on condition that they are a “hot” plant and a “cold” plant. This functionality is provided to allow a single DDC to manage four-line hot/cold plants.

Alternatively, one DDC can manage a single two-line hot/cold plant (or, naturally, a single hot or cold plant).

Plants are identified by an ID; there may be 6 plant IDs (0-15). These IDs are assigned to the units via the user interface of the S61 board, in a way that is consistent with the water plant to which they are linked. For 4-line machines, two plant IDs must be assigned, one for the cold module and one for the hot module (this applies to AYF 60-119/4 units and GAHP- GS/WS units in a 4-line configuration).

The DDC can support also the domestic hot water control. In particular on a plant the DDC is able to manage the production of domestic hot water with units belonging to the base plant (base DHW: uses the same heating units for the production of domestic hot water at the same time as the production of hot wter for heating), or with units belonging to the separable plant (separable DHW: a part of the plant can be separated from the base plant to product domestic hot water completely independently and not at the same time as the heating system, therefore also when this is working in cooling mode).

To make use of this functionality, the plant shall be provided with an interfacing device called RB100 or RB200 (Robur Box), of which use is made to send to the DDC the switching on/off requests of the configured units.

The Direct Digital Controller can communicate with other Direct Digital Controllers of the same type in order to manage plants with more than 16 units. In addition, it is possible to allow more Direct Digital Controllers to be used also if there are less than 16 units, i.e. if there are several groups of machines serving the same plant but which need to be managed autonomously.

Instructions for carrying out both Single DDC and Multi DDC configurations follow.

NOTE

Before carrying out the DDC-Plant configuration, ensure that all connections have been made correctly and that the machine’s electronic boards have been configured correctly (see S61 electronic board programming sheet).

DDC-Plant configuration is basically carried out in two stages:

- The first stage is represented by the configuration of the DDC/DDCs of the plant. In this stage the DDC/DDCs acquire information about the machine that they must manage or about any other DDCs installed;
- The second stage concerns the configuration of the plant/plants, which must be carried out on each DDC installed. This is the stage during which it is possible to choose the operating mode or modes of the plant or plants.

WARNING

When the DDC and plant configuration stages are finished, the user settings  must still be defined before switching on the plant - i.e. all the plant operating parameters according to the operating mode chosen during the plant configuration stage. At this point, the Plant Control menu  may be used to switch the plant/plants configured on and off.

4.5.2 DDC CONFIGURATION INSTRUCTIONS

To carry out the configuration of the DDC or DDCs, proceed as indicated in Paragraph 4.5.2.1 or Paragraph 4.5.2.2, according to whether the plant is managed by a single DDC or by multiple DDCs.

4.5.2.1 Single DDC configuration

In this stage the DDC identifies the units in order to be able to assign them to the DDC itself. Before carrying out this step, ensure that:

- All the units that the DDC must manage are powered and on;
- The configuration of the electronic board of each unit has been carried out according to the instructions provided in the S61 installation manual;
- The DDC has been correctly connected, following the instructions contained in Paragraph 4.1.2 – “CONNECTING THE DIRECT DIGITAL CONTROLLER”.

To complete this initial configuration stage, follow the instructions provided in the following paragraphs:

- 1 - “**Machine configuration**” - 4.4.1.4;
- 2 - “**Checking machine configuration**” - 4.4.1.5 (optional); verify the outcome of the configuration just carried out.

When this configuration stage is complete, proceed directly to paragraph 4.5.3 - “**PLANT CONFIGURATION INSTRUCTIONS**”, where it is possible to define the operating mode of the plant.

4.5.2.2 Multi DDC Binding

In order to configure a Multi DDC plant, it is necessary to carry out 5 operations, **strictly in the order described**, and following the instructions given in the paragraphs indicated:

- 1 - “**Setting ID**” – 4.4.1.1 each DDC is assigned its own ID (DDC IDs must be assigned so that they are all different from each other);
- 2 - “**Machine configuration**” - 4.4.1.4; each existing DDC is assigned the units that it is to control. For AFY 60-119/4 units, it is possible to assign just one module to a DDC, e.g. the cold module, having the remaining module managed by a different DDC;
- 3 - “**Checking machine configuration**” - 4.4.1.5 (optional); verify the outcome of the configuration just carried out;
- 4 - “**Master DDC Setup (Multi DDC plants only)**” - 4.4.1.6; here, the role of each DDC (Master or Slave) is defined. For a given plant, only one DDC may be configured as the Master DDC, and the others must be configured as Slaves

NOTE

If a DDC manages 2 plants (hot and cold), carry out step 4 for both plants.

- 5 - “**Multi DDC configuration**” – 4.4.1.7 during the execution of this operation, which must be carried out simultaneously on all the DDCs of the plant, and after the first 4 operations on all of them have been carried out, the DDCs exchange information about the machines assigned to them, to determine whether they must be co-ordinated with each other to manage certain units. This occurs when units, or modules of units, have been assigned to more than one DDC, linked to the same plant.

WARNING

If at least one unit belonging to the separable group is present on the plant, the configuration shall be completed following the indications provided in paragraph 4.4.2.5.1 “Heating/DHW Select” on page 87. and in paragraph 4.4.2.6.10 “Heating/DHW select” on page 119 (if at least one hot unit belonging to the base group is present).

When this configuration stage has been completed, proceed to Paragraph 4.5.3– “**PLANT CONFIGURATION INSTRUCTIONS**”, where the operating mode of the plant can be defined.

4.5.3 PLANT CONFIGURATION INSTRUCTIONS

4.5.3.1 Configuring operating mode

The first operation to carry out is the selection of the operating mode described in Paragraph “**On/off command configuration**” on page 103.

The Direct Digital Controller allows 6 management modes regarding operation of the units, as indicated in the table below.

OPERATING MODE	MANUAL (MAN)	RYWm	RYWa	ExtT	AmbT	WCmp	MON	CUST
Global On-Off	X			X	X	X		X*
<i>Partial On-Off</i>	X			X	X	X		X*
Global water T timer	X	X	X	X				X*
<i>Partial water T timer</i>	X	X	X	X				X*
External Temperature				X		X		X*
Chronothermostat					X			X*
Climatic curve						X		X*
RY-RW		X	X					X*
AutoYW			X					X*

X*	In CUSTOM operating mode it is possible to select freely the ON/OFF commands that determine the activation of the plant. It is not possible to select the "WeComp" function at the same time as the "GenTmr" or "ChronT" consent..
<input type="checkbox"/>	Multi DDC plants only.
<input type="checkbox"/>	Two-line hot/cold plants only.

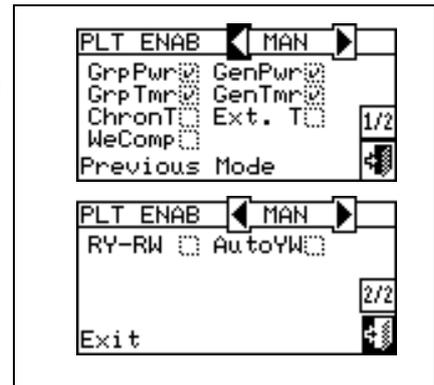
4.5.3.1.1 Instructions for operation in MAN mode

In MAN mode, activation and deactivation of the plants, switching from COOLING to HEATING mode and vice versa for two-line plants is performed manually by the user via the Direct Digital Controller that can in addition attend to the management of switch-on and switch-off times, the regulation of the water temperature, the management of timer operating cycles and diagnostics of the units connected.

Consent for the activation or deactivation of the plant is provided manually through configuration of the “**Plant control**” menu .

The figure on the right shows the on/off commands active for MAN operating mode. The  symbol, next to the text description of the command, indicates that the command is enabled. The MAN operating mode allows 4 commands to be enabled:

- GenPwr Plant master switch for switch-on and switch-off
- GrpPwr Partial plant on/off switch (Multi DDC plants only);
- GenTmr General water T timer on/off command;
- GrpTmr Partial water T timer on switch (Multi DDC plants only);



The on/off commands present in MAN operating mode are predefined and may not be modified. In any case, it is possible to exclude some of them via the buttons contained in the **“Plant control”** menu.

When plant configuration is complete, it is always necessary to set the following parameters:

- **Default set point** see paragraph 3.4.1.1.1.1 on page 31;
- **Water Differential** see paragraph 4.4.2.6.1 on page 93 and, for separable plants, paragraph 4.4.2.5.3 on page 88;
- **Regulation parameters** see paragraph 4.4.2.6.4 on page 96 and, for separable plants, paragraph 4.4.2.5.4 on page 89;

In the presence of third party boilers:

- **Auxiliary boiler operation** see paragraph 4.4.2.6.2 on page 94;
- **Rated plant power** see paragraph 4.4.2.6.3 on page 95;

In the case of common water pumps managed by RoburBox:

- **RoburBox water pump delay** see paragraph 4.4.2.6.5 on page 98 and, for separable plants, paragraph 4.4.2.5.5 on page 90;
- **General water T timer** see paragraph 3.4.1.1.1.3 on page 34 (optional);
- **Partial water T timer** see paragraph 3.4.1.1.1.4 on page 35 (optional, Multi - DDC plants only).

WARNING

Enabling the General water T timer substitutes the default water setpoint value set as per Paragraph 3.4.1.1.1.1 with the specific value for the timer cycle active at any given moment.

Once user settings have been programmed, it is possible to proceed to switch-on via the **“Plant control”**  menu.

Activating the plant in MAN mode: Plant control .

Before carrying out the activation of the plant, ensure that all operating parameters have been correctly configured (water setpoint, differential, thermostating etc.).

Figure 25 illustrates the initial screen for a two-line COOLING/HEATING plant.

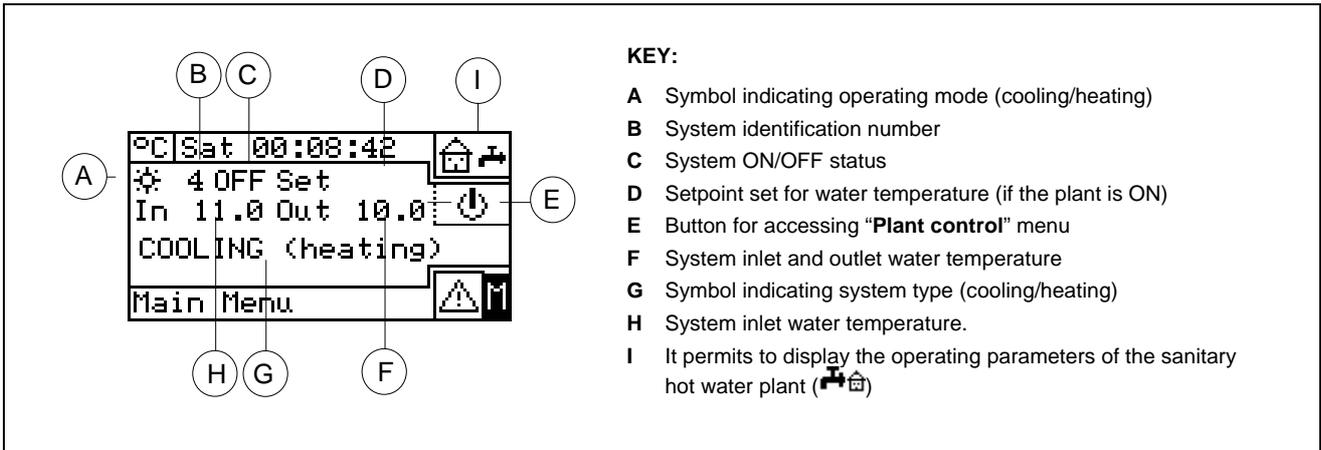
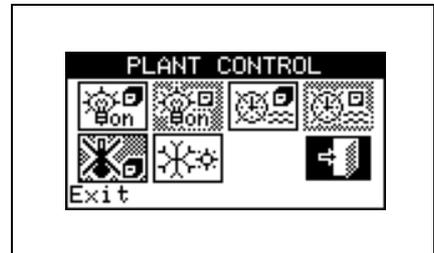


Figure 25 – EXAMPLE OF INITIAL SCREEN FOR CONTROLLING TWO-LINE COOLING/HEATING PLANTS

To access the "Heating/Cooling Plant Control" menu select  from the initial screen.

The figure on the right shows the "Plant control" menu screen and the relative buttons/commands described below.



	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position ). In case of Multi-DDC plant, it is ON only on the Master DDC; on the Slave DDC(s) it reflects the ON/OFF status set on the Master.
	Group ON/OFF switch. Button disabled (always ON) for plants managed by a single DDC. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position ). If in the OFF position, it allows all the machines managed by the specific DDC to be switched off.
	Button for enabling/disabling General water T timer. To disable the General water T timer, i.e. not use general timer programming (relative on/off command always ON and default setpoint in use), position the cursor on the button and press the knob (General water T timer command symbol  not active). WARNING: DISABLING THE GENERAL WATER T TIMER ENTAILS AUTOMATICALLY DISABLING THE PARTIAL WATER T TIMER ().
	Button for enabling/disabling Partial water T timer (disabled for plants managed by a single DDC). If enabled, the specific DDC uses also the partial timer programming (see Paragraph 3.4.1.1.1.4 – "Partial water T timer");
	Chronothermostat button disabled (on/off command not enabled in MAN operating mode).
	COOLING/HEATING switching button - two-line hot/cold plants only ( COOLING,  HEATING).

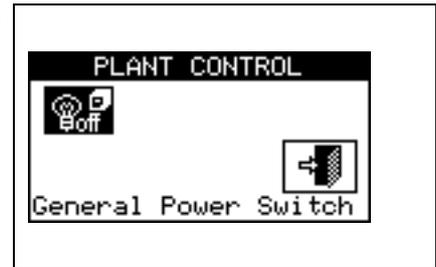
If the plant is ON, cooling/heating switching or vice versa lasts 10 minutes.

If the plant is OFF (for more than 10 minutes), cooling/heating switching is instantaneous.

To access the “DHW Plant control” menu, follow the indications given below:

- 1 - Select the icon from the initial screen and press the knob to gain access to the screen displaying the operating parameters of base and separable DHW plant.
- 2 - Select the symbol positioned above to gain access to the “**Base DHW plant control**” menu”.
- 3 - Select the symbol positioned below to gain access to the “**Separable DHW plant control**” menu”.
- 4 - In both cases (“Base DHW plant control” and “Separable DHW plant control”) the screen shown in the figure below will be displayed on the screen.

The figure shows the screen of the “DHW plant control” menu and the relevant button described below.



	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position). In case of Multi-DDC plant, it is ON only on the Master DDC; on the Slave DDC(s) it reflects the ON/OFF status set on the Master.
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4.5.3.1.2 Instructions for operation in mRYW mode

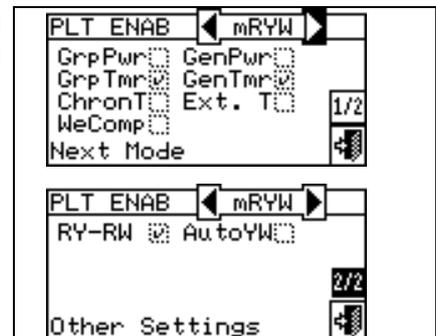
In RYWm operating mode, the ON – OFF commands of the units are managed by external contacts (such as in a building automation plant); the selection of COOLING or HEATING mode for two-line hot/cold plants is carried out manually by the user via the Direct Digital Controller (“**Plant control**” menu).

Closing the R - Y and/or R - W contacts on connector D located on the rear of the Direct Digital Controller (see Figure 13 on page 54) determines the activation of the corresponding plant:

- Closing R-Y activates the cooling plant or the two-line cooling/heating plant, if it is in COOLING mode;
- Closing R-W activates the heating plant or the two-line cooling/heating plant, if it is in HEATING mode.

If for two-line hot/cold plants the simultaneous closure of the R - Y and R – W contacts is permitted, the setting of the units in COOLING or HEATING mode, in fact, does not depend on external inputs but must instead be selected manually by selecting the icon contained in the “**Plant control**” menu.

The figure on the right shows the commands active for RWYm operating mode. The symbol located next to the text description of the command indicates that the command is enabled. RWYm operating mode allows 3 on/off commands to be enabled:



- RY-RW Command for external RY-RW contacts
- GenTrm **General water T timer** on/off command;
- GrpTmr Command for **Partial water T timer** (Multi DDC plants only).

The commands available in RYWm operating mode are predefined and may not be modified. It is however possible to exclude some of them by means of the buttons contained in the “**Plant control**” menu.

When plant configuration is complete, it is always necessary to set the following parameters:

- **Default set point** see paragraph 3.4.1.1.1.1 on page 31;
- **Water Differential** see paragraph 4.4.2.6.1 on page 93 and, for separable plants, paragraph 4.4.2.5.3 on page 88;

- **Regulation parameters** see paragraph 4.4.2.6.4 on page 96 and, for separable plants, paragraph 4.4.2.5.4 on page 89;

In the presence of third party boilers:

- **Auxiliary boiler operation** see paragraph 4.4.2.6.2 on page 94;
- **Rated plant power** see paragraph 4.4.2.6.3 on page 95;

In the case of common water pumps managed by RoburBox:

- **RoburBox water pump delay** see paragraph 4.4.2.6.5 on page 98 and, for separable plants, paragraph 4.4.2.5.5 on page 90;
- **General water T timer** see paragraph 3.4.1.1.1.3 on page 34 (optional);
- **Partial water T timer** see paragraph 3.4.1.1.1.4 on page 35 (optional, Multi - DDC plants only).

WARNING

Enabling the General water T timer substitutes the default water setpoint value set as per Paragraph 3.4.1.1.1 with the specific value for the timer cycle active at any given moment.

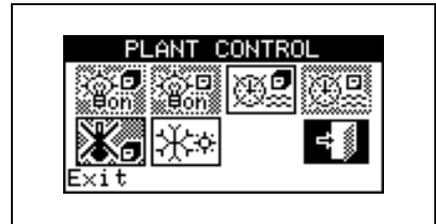
Once user settings have been programmed, it is possible to proceed to switch-on via the “Plant control” menu.

Switching on plant in mRYW operating mode: Plant control .

Before switching on the plant, ensure that all the operating parameters have been correctly configured.

To access the “Heating/Cooling Plant Control” menu select  from the initial screen.

The figure on the right shows the screen of the “Plant control” menu and the relative buttons/commands described below.

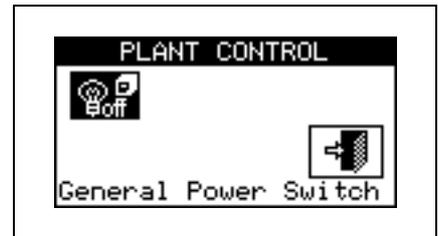


	Main ON/OFF switch; the switch is disabled in this operating mode.
	Group ON/OFF switch; the switch is disabled in this operating mode.
	Button for enabling/disabling General water T timer. To disable the General water T timer, i.e. not use general timer programming (relative command always ON and default setpoint used), position the cursor on the button and press the knob (“General water T timer” command symbol  not enabled). WARNING: DISABLING THE GENERAL WATER T TIMER ENTAILS AUTOMATICALLY DISABLING THE PARTIAL WATER T TIMER ( .
	Partial Water Bands activation/deactivation button (button disabled for plants managed by a unique DDC) If the specific DDC is activated, also use the partial hourly programming (see paragraph 3.4.1.1.1.4 – “Partial water T timer”).
	Chronothermostat button disabled (command disabled in RYWm operating mode).
	COOLING/HEATING switching button - two-line hot/cold plants only ( COOLING,  HEATING).

To access the “DHW Plant control” menu, follow the indications given below:

- 1 - Select the  icon from the initial screen and press the knob to gain access to the screen displaying the operating parameters of base and separable DHW plant.
- 2 - Select the  symbol positioned above to gain access to the “**Base DHW plant control**” menu”.
- 3 - Select the  symbol positioned below to gain access to the “**Separable DHW plant control**” menu”.
- 4 - In both cases (“Base DHW plant control” and “Separable DHW plant control”) the screen shown in the figure below will be displayed on the screen.

The figure shows the screen of the “DHW plant control” menu and the relevant button described below.



	<p>Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position ). In case of Multi-DDC plant, it is ON only on the Master DDC; on the Slave DDC(s) it reflects the ON/OFF status set on the Master.</p>
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The plant may be activated only if either of the following conditions applies:

- The water T timer cycles are disabled and the RY contact (cooling plant) or RW contact (heating plant) is closed;
- If water T timer cycles are enabled, the plant may only be switched on if the corresponding external contact is closed and if the water T timer is programmed to be on at the time.

Figure 26 shows the DDC connection diagram for the RYWm operating mode. EXTERNAL ON/OFF COMMAND.

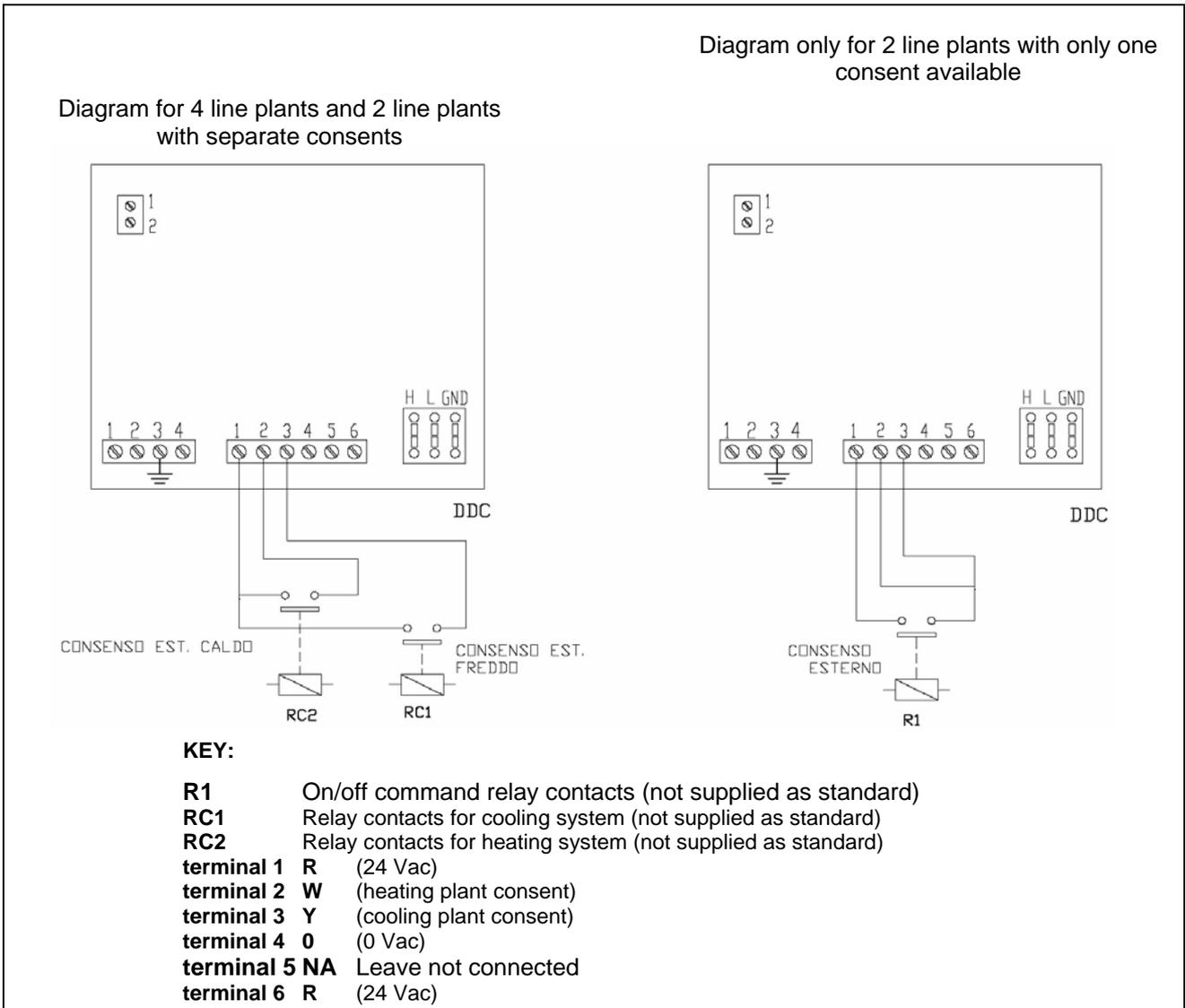


Figure 26 – EXAMPLE OF EXTERNAL CONTROL PLANT CONNECTIONS FOR RYW_m MODE

4.5.3.1.3 Instructions for operation in aRYW mode

In RYW_a operating mode (**two-line hot/cold plants** only), selection of COOLING or HEATING operation is managed by the external contacts RY and RW.

Closing the contacts R - Y of connector D located on the rear of the Direct Digital Controller (see Figure 13 on page 54) entails:

- Switching on the plant;
- Passing to COOLING mode, if currently in heating mode;
- Activation of the units.

Closing the contacts R - W of connector D located on the rear of the Direct Digital Controller (see Figure 13 on page 54) entails:

- Switching on the plant;
- Passing to HEATING, mode, if currently in cooling mode;
- Activation of the units.

Opening the R - Y or R - W contacts entails:

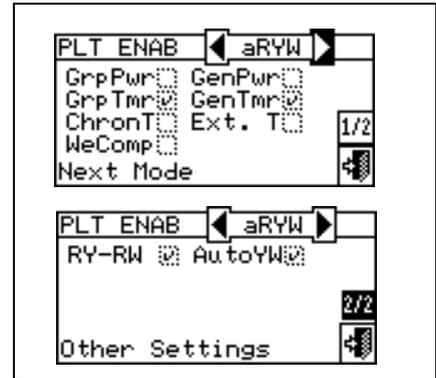
- Maintaining the cooling or heating operating mode in use;
- Switching off the plant.

In RYWa operating mode, the simultaneous closure of the R -Y and R – W contacts is not permitted. If this should happen accidentally, the Direct Digital Controller signals the anomaly “E1005 RY and RW both ON”.

Furthermore, in RYWa operating mode, the  icon of the “Plant control” menu is disabled.

The figure on the right shows the commands that are enabled for RWYa operating mode. The  symbol next to the text description of the command, indicates that the command is enabled.

- RY - RW External RY-RW on/off commands;
- AutoYW Automatic switching from COOLING operating mode to HEATING operating mode or vice versa;
- GenTmr **General water T timer** on/off command;
- GrpTmr GrpTmr **Partial water T timer** on/off command (Multi DDC plants only).



The on-off commands present in RWYa operating mode are predefined and may not be modified. It is, in any case, possible to exclude some of them via the buttons contained in the “Plant control” menu.

When plant configuration is complete, it is always necessary to set the following parameters:

- **Default set point** see paragraph 3.4.1.1.1.1 on page 31;
- **Water Differential** see paragraph 4.4.2.6.1 on page 93 and, for separable plants, paragraph 4.4.2.5.3 on page 88;
- **Regulation parameters** see paragraph 4.4.2.6.4 on page 96 and, for separable plants, paragraph 4.4.2.5.4 on page 89;

In the presence of third party boilers:

- **Auxiliary boiler operation** see paragraph 4.4.2.6.2 on page 94;
- **Rated plant power** see paragraph 4.4.2.6.3 on page 95;

In the case of common water pumps managed by RoburBox:

- **RoburBox water pump delay** see paragraph 4.4.2.6.5 on page 98 and, for separable plants, paragraph 4.4.2.5.5 on page 90;
- **General water T timer** see paragraph 3.4.1.1.1.3 on page 34 (optional);
- **Partial water T timer** see paragraph 3.4.1.1.1.4 on page 35 (optional, Multi-DDC plants only).

WARNING

Enabling the General water T timer substitutes the default water setpoint value set as per Paragraph 3.4.1.1.1.1 with the specific value for the timer cycle active at any given moment.

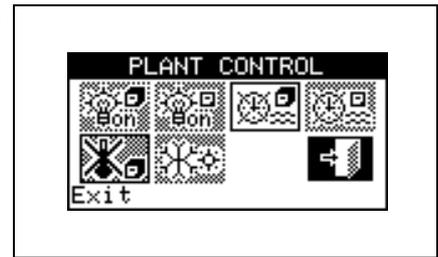
Once user settings have been programmed, it is possible to proceed to switch-on via the “Plant control” menu.

Switching on plant in aRYW mode: Plant control  .

Before switching on the plant, ensure that all operating parameters have been correctly configured (temperature set point, thermostating, differential, regulation parameters).

To access the “Heating/Cooling Plant control” menu, select  from the main menu.

The figure on the right shows the activation screen and the relative buttons and commands that are described below.

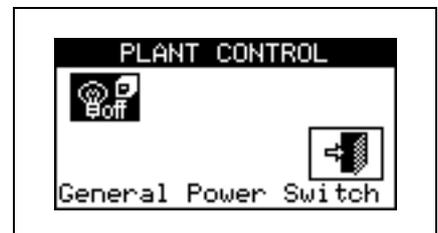


	Main ON/OFF switch; the switch is disabled in this operating mode.
	Group ON/OFF switch; the switch is disabled in this operating mode.
	Button for enabling/disabling General water T timer. To disable the General water T timer, i.e. not use general timer programming (relative command always ON and default setpoint used), position the cursor on the button and press the knob ("General water T timer" command symbol not enabled). WARNING: DISABLING THE GENERAL WATER T TIMER ENTAILS AUTOMATICALLY DISABLING THE PARTIAL WATER T TIMER ().
	Button for enabling/disabling Partial water T timer (button disabled for plants managed by a single DDC). If enabled, the specific DDC uses also the partial timer programming (see Paragraph 3.4.1.1.1.4- "Partial water T <i>timer</i> ").
	Chronothermostat button disabled (on/off command disabled in RYWa operating mode).
	COOLING/HEATING switching button; the switch is disabled in this operating mode. The symbol indicates the current operating mode in any case.

To access the "DHW Plant control" menu, follow the indications given below:

- 1 - Select the icon from the initial screen and press the knob to gain access to the screen displaying the operating parameters of base and separable DHW plant.
- 2 - Select the symbol positioned above to gain access to the "Base DHW plant control" menu".
- 3 - Select the symbol positioned below to gain access to the "Separable DHW plant control" menu".
- 4 - In both cases ("Base DHW plant control" and "Separable DHW plant control") the screen shown in the figure below will be displayed on the screen.

The figure shows the screen of the "DHW plant control" menu and the relevant button described below.



	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position). In case of Multi-DDC plant, it is ON only on the Master DDC; on the Slave DDC(s) it reflects the ON/OFF status set on the Master.
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The plant is switched on only if:

- The water time segments are enabled and the external on/off command is present on the RY or RW contacts;
- If the water time segments are enabled, the plant will be activated only if an external on/off command is present on the RY or RW contacts and if the water T timer is active at that moment.

Figure 27 shows the DDC connection diagram for aRYW operating mode.

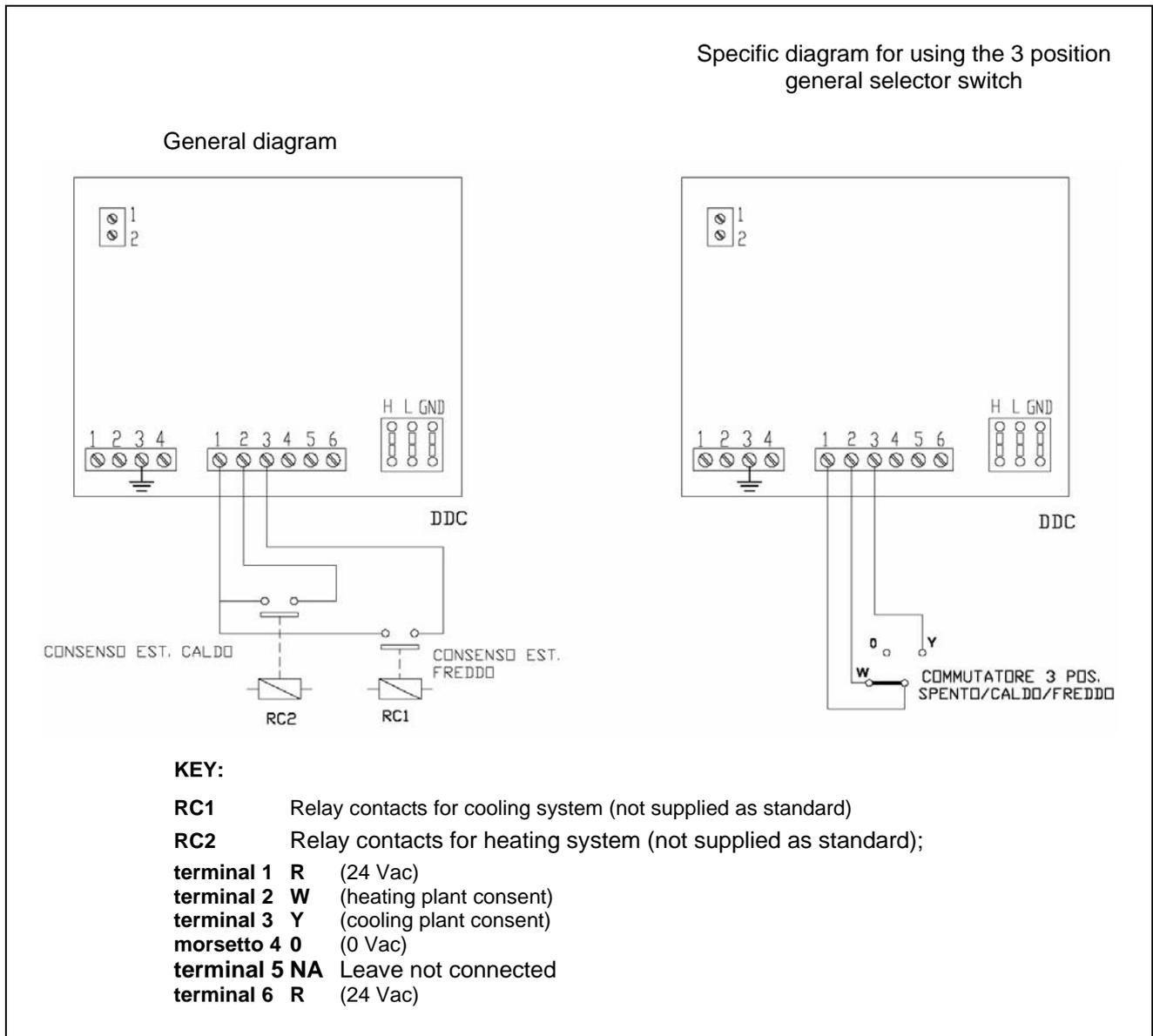


Figure 27 – EXAMPLE OF CONNECTION OF EXTERNAL PLANT CONTROLS FOR aRYW MODE (2 LINE PLANTS ONLY)

4.5.3.1.4 Instructions for operation in AmbT mode

In AmbT operating mode, the ON – OFF command of the units is managed by a temperature sensor supplied as an optional extra [operating range -29.9°C $+109.9^{\circ}\text{C}$ ($-21,8^{\circ}\text{F}$ $+229,8^{\circ}\text{F}$)] located in the environment to be cooled or heated (see example of sensor connection in Figure 28). For two-line hot/cold plants, the selection of COOLING or HEATING mode is carried out manually by the user via the “Plant control” menu  on the Digital Controller.

The temperature sensor must be connected to the terminals provided for this purpose on the rear of the Direct Digital Controller (see detail E in Figure 13 on page 54).

In AmbT operating mode with two-line hot/cold plants, the  icon in the “Plant control” menu allows COOLING or HEATING mode to be selected respectively.

In cooling mode (see Figure 29), the plant is on until the ambient temperature value set (T) is reached; when the ambient temperature value set (T) is reached, the plant switches off and switches on again if, subsequently, the ambient temperature value set + the differential value set (T + Diff) is reached.

In heating mode (see Figure 30), the units start until the temperature value set (T) is reached; when the ambient temperature value set (T) is reached, the plant switches off and switches on again if, subsequently, the ambient temperature value set – the differential value set (T – Diff) is reached.

NOTE

For operation with an ambient temperature sensor, it is necessary to programme the ambient chronothermostat (see Paragraph 3.4.1.2.3 - “Chronothermostat” on page 43).

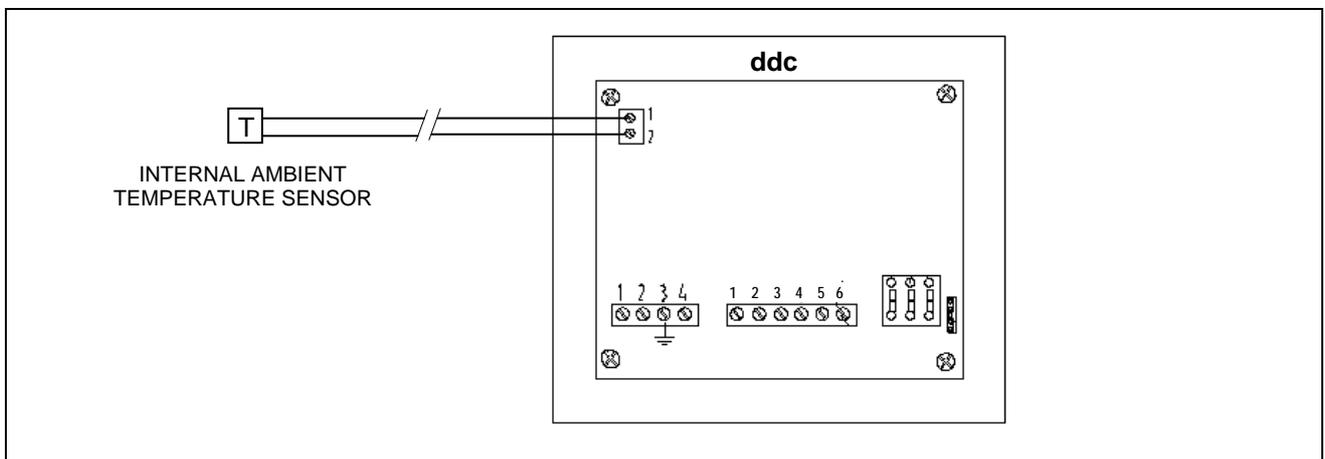


Figure 28 – EXAMPLE OF AMBIENT TEMPERATURE SENSOR CONNECTION FOR AmbT MODE

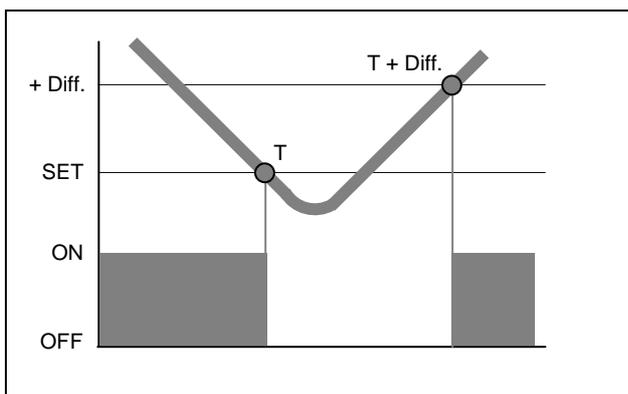


Figure 29 - OPERATING PRINCIPLE IN AmbT/ExtT MODE (COOLING)

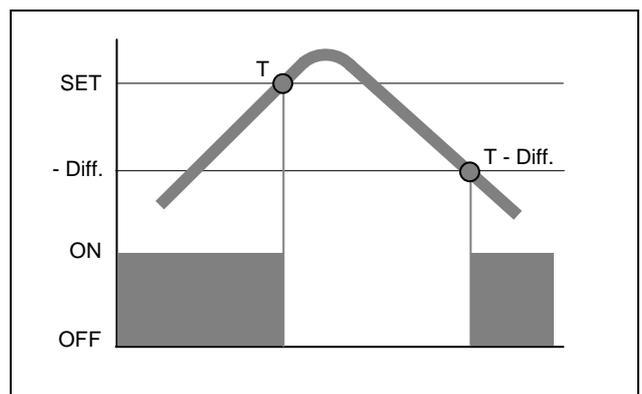
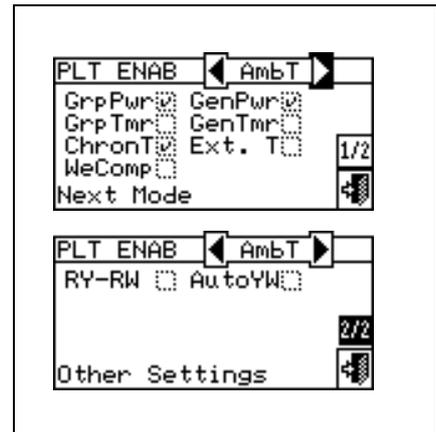


Figure 30 - OPERATING PRINCIPLE IN AmbT/ExtT MODE (HEATING)

The figure on the right shows the on/off commands active for AmbT operating mode. The  symbol, next to the text description of the command, indicates that the command is enabled. AmbT operating mode allows 3 commands to be enabled:

- GenPwr Plant master switch for switch-on and switch-off;
- GrpPwr Plant partial switch for switch-on and switch-off;
- ChronT **Chronothermostat** on/off command; the command enables the  button in the “Plant control” menu.



The on/off commands present in AmbT operating mode are predefined and may not be modified. It is, however, possible to exclude some of them by configuration of the “Plant control” menu. Configuration of AmbT operating mode is then completed with the user settings described in “Water Setup” (Paragraph 3.4.1.1).

- **Default set point** see paragraph 3.4.1.1.1 on page 31;
- **Water Differential** see paragraph 4.4.2.6.1 on page 93 and, for separable plants, paragraph 4.4.2.5.3 on page 88;
- **Regulation parameters** see paragraph 4.4.2.6.4 on page 96 and, for separable plants, paragraph 4.4.2.5.4 on page 89;
- **Differential** see paragraph 3.4.1.2.1 on page 41;
- **Chronothermostat set points** see paragraph 3.4.1.2.2 on page 42;
- **Chronothermostat** see paragraph 3.4.1.2.3 on page 43.

In the presence of third party boilers:

- **Auxiliary boiler operation** see paragraph 4.4.2.6.2 on page 94;
- **Rated plant power** see paragraph 4.4.2.6.3 on page 95;

In the case of common water pumps managed by RoburBox:

- **RoburBox water pump delay** see paragraph 4.4.2.6.5 on page 98 and, for separable plants, paragraph 4.4.2.5.5 on page 90;

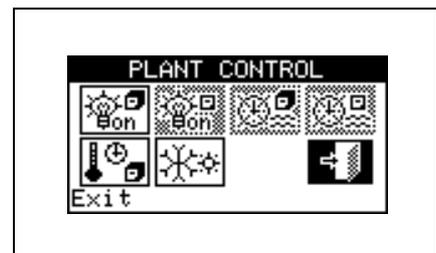
Once user settings have been programmed, it is possible to proceed to activation via the “Plant control” menu.

Activation of the plant in AmbT mode: Plant control .

Before switching on the system, ensure that all operating parameters have been correctly configured (temperature set point, thermostating, differential, regulation parameters, etc).

To access the “Heating/Cooling Plant control” menu, select  from the main menu.

The figure on the right shows the Plant control menu screen and the relative buttons/commands that are described below.



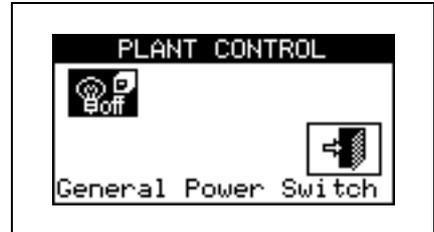
	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position ).
---	---

	Group ON/OFF switch. Button disabled (always ON) for plants managed by a single DDC. Turn the knob to position the cursor on the button and press the knob to enable it (ON/OFF button symbol in the ON position ). If in the OFF position, it allows all the machines managed by the specific DDC to be switched off.
	Button for enabling/disabling General water T timer (the command is disabled in AmbT operating mode).
	Button for enabling/disabling Partial water T timer. (the consent is disable din the AmbT operating mode).
	Chronothermostat activation/deactivation button. To activate the chronothermostat, position the cursor on the button and press the knob (symbol of the “Chronothermostat” consent active ).
	COOLING/HEATING switching button - two-line hot/cold plants only ( COOLING,  HEATING).

To access the “DHW Plant control” menu, follow the indications given below:

- 1 - Select the  icon from the initial screen and press the knob to gain access to the screen displaying the operating parameters of base and separable DHW plant.
- 2 - Select the  symbol positioned above to gain access to the “**Base DHW plant control**” menu”.
- 3 - Select the  symbol positioned below to gain access to the “**Separable DHW plant control**” menu”.
- 4 - In both cases (“Base DHW plant control” and “Separable DHW plant control”) the screen shown in the figure below will be displayed on the screen.

The figure shows the screen of the “DHW plant control” menu and the relevant button described below.



	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position ). In case of Multi-DDC plant, it is ON only on the Master DDC; on the Slave DDC(s) it reflects the ON/OFF status set on the Master.
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The plant may be activated only if either of the following conditions applies:

- The main ON/OFF switch and at least one of the partial ON/OFF switches are in the ON position, the chronothermostat is active and the ambient temperature does not correspond to that set;
- OR the main ON/OFF switch and at least one of the partial ON/OFF switches are in the ON position, and the chronothermostat is not active. In this operating mode, activation and deactivation are performed manually, i.e. not automatically via ambient thermostating.

4.5.3.1.5 Instructions for operation in ExtT mode

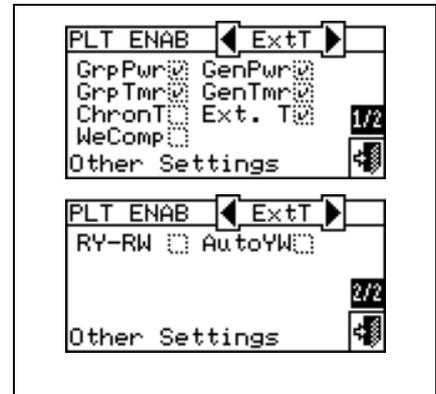
In the “ExtT” operating mode, the ON – OFF operating command of the units is determined by comparing the average external ambient temperatures (calculated by means of the temperature sensors present on all units) with the external temperature value set; for two-line hot/cold plants COOLING or HEATING mode are selected manually by the user via the “Plant Control” menu  on the Digital Controller using the icon  in the menu.

In cooling mode, the plant switches on if the external air temperature is higher than the external air temperature value set + the differential set; when the external air temperature value set (T) is reached, the plant switches off if, subsequently, the external temperature set + the differential (T + Diff.) is reached.

In heating mode, the plant switches on if the external air temperature is lower than the external air temperature value set + the differential set; when the external air temperature value set (T) is reached, the plant switches off and switches on if, subsequently, the external temperature set - the differential (T - Diff.) is reached.

The figure on the right shows the on/off commands active for ExtT operating mode. The  symbol, next to the text description of the command, indicates that the command is enabled. AmbT operating mode allows 5 commands to be enabled:

- GenPwr Plant **master** switch for switch-on and switch-off;
- GrpPwr Plant **partial** switch for switch-on and switch-off;
- GenTmr **General water** T timer on/off command;
- GrpTmr GrpTmr **Partial water** T timer command (Multi DDC plants only);
- Ext.T Consent for switch-on and switch-off depending on the External Temperature;



The on/off commands in ExtT operating mode are predefined and may not be modified. It is, however, possible to exclude some of them by configuration of the “**Plant control**” menu.

When plant configuration is complete, it is always necessary to set the following parameters:

- **Default set point** see paragraph 3.4.1.1.1.1 on page 31;
- **Water Differential** see paragraph 4.4.2.6.1 on page 93 and, for separable plants, paragraph 4.4.2.5.3 on page 88;
- **Regulation parameters** see paragraph 4.4.2.6.4 on page 96 and, for separable plants, paragraph 4.4.2.5.4 on page 89;
- **Building time constant** see paragraph 4.4.1.10 on page 77;
- **ExecutionReset external temperature filter** see paragraph 4.4.1.11 on page 77;
- **Set point external temperature** see paragraph 3.4.1.3.1 on page 46;
- **Differential external temperature** see paragraph 3.4.1.3.2 on page 47.

In the presence of third party boilers:

- **Auxiliary boiler operation** see paragraph 4.4.2.6.2 on page 94;
- **Rated plant power** see paragraph 4.4.2.6.3 on page 95;

In the case of common water pumps managed by RoburBox:

- **RoburBox water pump delay** see paragraph 4.4.2.6.5 on page 98 and, for separable plants, paragraph 4.4.2.5.5 on page 90;

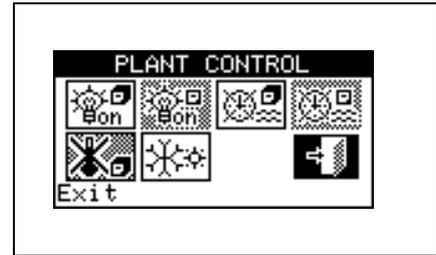
Once the above-mentioned items have been set, switch-on can take place via the Plant Control menu.

Activating the plant in Test mode: Plant control  .

Before switching on the system, ensure that all operating parameters have been correctly configured (temperature set point, thermostating, differential, regulation parameters, alarms etc).

To access the “**Heating/Cooling Plant control**” menu, select  from the main menu.

The figure on the right shows the activation screen and the relative buttons and commands that are described below.

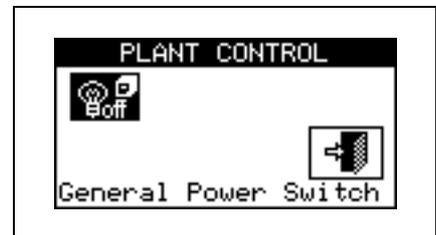


	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position).
	Partial ON/OFF switch; The consent is active for Multi-DDC plants (symbol of the ON/OFF button in the ON position).
	Button for enabling/disabling General water T timer. To disable the General water T timer, i.e. not use general timer programming (relative command always ON and default setpoint used), position the cursor on the button and press the knob ("General water T timer" command symbol not enabled). WARNING: DISABLING THE GENERAL WATER T TIMER ENTAILS AUTOMATICALLY DISABLING THE PARTIAL WATER T TIMER ().
	Partial Water Bands activation/deactivation button (button disabled for plants managed by a unique DDC) If the specific DDC is activated, also use the partial hourly programming (see paragraph 3.4.1.1.1.4 – "Partial water T timer").
	Chronothermostat button disabled (command not available in ExtT operating mode).
	COOLING/HEATING switching button (two-line hot/cold plants only - COOLING, HEATING).

To access the "DHW Plant control" menu, follow the indications given below:

- 1 - Select the icon from the initial screen and press the knob to gain access to the screen displaying the operating parameters of base and separable DHW plant.
- 2 - Select the symbol positioned above to gain access to the "Base DHW plant control" menu".
- 3 - Select the symbol positioned below to gain access to the "Separable DHW plant control" menu".
- 4 - In both cases ("Base DHW plant control" and "Separable DHW plant control") the screen shown in the figure below will be displayed on the screen.

The figure shows the screen of the "DHW plant control" menu and the relevant button described below.



	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position). In case of Multi-DDC plant, it is ON only on the Master DDC; on the Slave DDC(s) it reflects the ON/OFF status set on the Master.
--	---

The plant may be activated only if either of the following conditions applies:

- The main ON/OFF switch and at least one of the partial ON/OFF switches are in the ON position, the water T timer is enabled, the water T timer cycle is active at that moment and the external ambient temperature does not correspond to the temperature set is lower (heating) or higher (cooling) than the external environment set-point set (see paragraph 3.4.1.3.1 *Set point* on page 46).
- The main ON/OFF switch and at least one of the partial ON/OFF switches are in the ON position, the water T timer is disabled and the external ambient temperature does not correspond to the temperature set is lower (heating) or higher (cooling) than the external environment set-point set (see paragraph 3.4.1.3.1 *Set point* on page 46).

4.5.3.1.6 Instructions for operation in WCmp mode

In the “WCmp” operating mode, the water temperature is determined depending on the external temperature and the climatic curve; for 2 pipe hot/cold plants the functioning selection in COOLING MODE or HEATING MODE is carried out manually by the user via the “Heating/Cooling Plant Control”  menu of the Digital Panel via the icon  present within the same menu.

In cooling mode, the temperature of the water lowers on increase of the external temperature and rises when the same falls.

In heating conditioning mode, the temperature of the water rises on decrease of the external temperature and lowers when the same rises.

For functioning in WCmp mode, the connection of a temperature probe to the outside of the environment to be heated and/or cooled is recommended.

The external temperature probe must be connected to the relevant clamps present in the rear part of the Digital Panel (see).Figure 31

NOTE

If an external temperature probe is not installed, the functioning of the machines will be managed depending on the average of the temperatures detected by the machine probes.

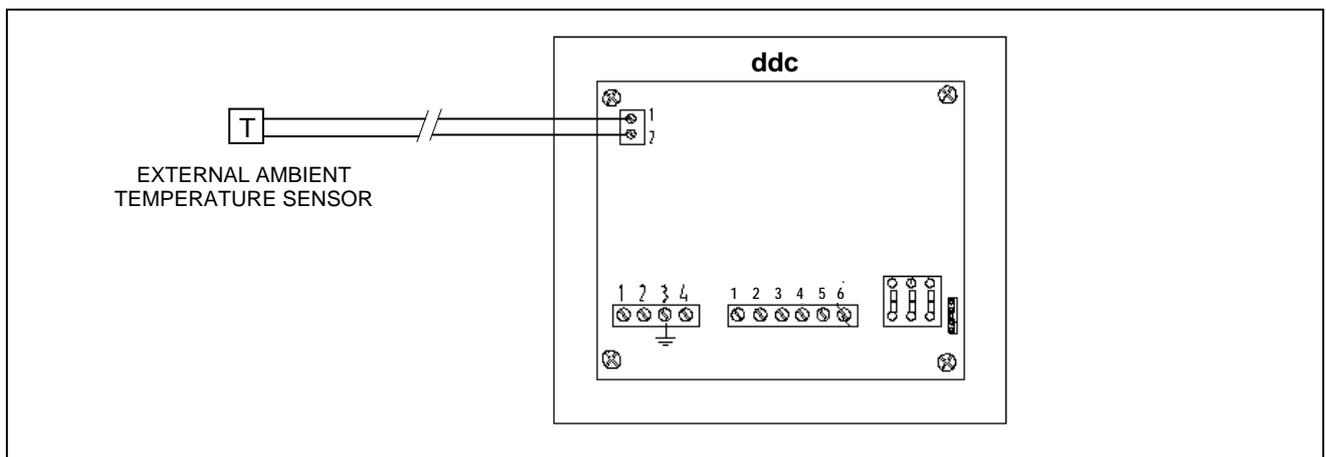
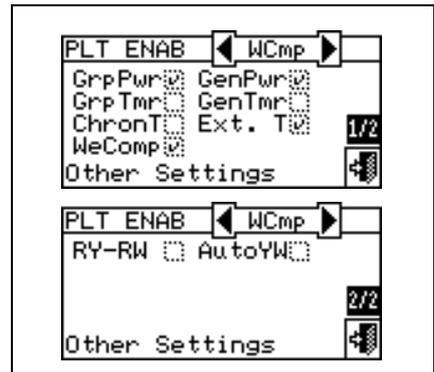


Figure 31 – EXAMPLE OF EXTERNAL TEMPERATURE PROBE CONNECTION FOR WCmp MODE

The figure at the side shows the active consents for the WCmp functioning mode. The  symbol, next to the text description of the command, indicates that the command is enabled. AmbT operating mode allows 4 commands to be enabled: GenPwr

- GenPwr Plant master switch for switch-on and switch-off;;
- GrpPwr Plant partial switch for switch-on and switch-off;;
- WeComp Climatic curve function;
- ExtT Consent for switch-on and switch-off depending on the External Temperature;



The consents present in the WCmp functioning mode are defined as non modifiable. It is, however, possible to exclude some of them by configuration of the “**Plant control**” menu.

When plant configuration is complete, it is always necessary to set the following parameters:

- **Default set point** see paragraph 3.4.1.1.1.1 on page 31;
- **Water Differential** see paragraph 4.4.2.6.1 on page 93 and, for separable plants, paragraph 4.4.2.5.3 on page 88;
- **Regulation parameters** see paragraph 4.4.2.6.4 on page 96 and, for separable plants, paragraph 4.4.2.5.4 on page 89;
- **Set point 3.4.1.3.1** on page 46;
- **Differential** see paragraph 3.4.1.3.2 on page 47.
- **Climatic curve parameters** on page 110
- **Building time constant** see paragraph 4.4.1.10 on page 77;
- **ExecutionReset external temperature filter** see paragraph 4.4.1.11 on page 77;
- **Enabling of climatic curve** see paragraph 3.4.1.1.1.2 on page 33;
- **Chronothermostat set points** see paragraph 3.4.1.2.2 on page 42;
- **Chronothermostat** see paragraph 3.4.1.2.3 on page 43.

In the presence of third party boilers:

- **Auxiliary boiler operation** see paragraph 4.4.2.6.2 on page 94;
- **Rated plant power** see paragraph 4.4.2.6.3 on page 95;

In the case of common water pumps managed by RoburBox:

- **RoburBox water pump delay** see paragraph 4.4.2.6.5 on page 98 and, for separable plants, paragraph 4.4.2.5.5 on page 90;

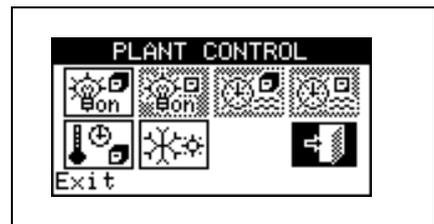
Once the above-mentioned items have been set, switch-on can take place via the Plant Control menu.

Switching the system on in WCmp mode: Plant control  .

Before switching on the system, ensure that all operating parameters have been correctly configured (temperature set point, thermostating, differential, regulation parameters, climatic curve parameters, alarms etc).

To access the “**Heating/Cooling Plant control**” menu, select  from the main menu.

The figure on the right shows the activation screen and the relative buttons and commands that are described below.

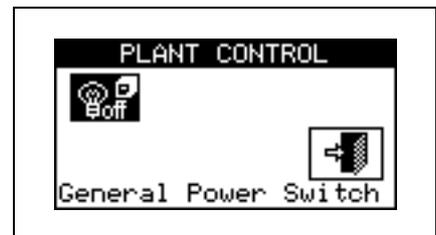


	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position).
	Partial ON/OFF switch; The consent is active for Multi-DDC plants (symbol of the ON/OFF button in the ON position).
	General Water Bands activation/deactivation button (the consent is disabled in the WCmp functioning mode).
	Partial Water Bands activation/deactivation button (button disabled for plants managed by a unique DDC) If the specific DDC is activated, also use the partial hourly programming (see paragraph 3.4.1.1.1.4 – “ Partial water T timer ”).
	<p>Repeatedly pressing the key causes the variation of the symbol given on it and the setting in the following way:</p> <ul style="list-style-type: none"> the room temperature set-point is that active on the bases of the programming set on the chronothermostat. or : the room temperature set-point is always T3 (maximum level of the heating or cooling service). the room temperature set-point is always T2 (average level of the heating or cooling service). or : the room temperature set-point is always T1 (minimum level of the heating or cooling service). <p>NOTE: continuing to press the knob, the sequence is repeated.</p> <p>NOTE: the climatic curve function remains active in all modes stated above.</p> <p>NOTE: if the symbol on the button is , it means that the climatic curve function has been disabled by the menu Enabling of climatic curve (paragraph 3.4.1.1.2 on page 33).</p>
	COOLING/HEATING switching button (two-line hot/cold plants only - COOLING, HEATING).

To access the “DHW Plant control” menu, follow the indications given below:

- 1 - Select the icon from the initial screen and press the knob to gain access to the screen displaying the operating parameters of base and separable DHW plant.
- 2 - Select the symbol positioned above to gain access to the “**Base DHW plant control**” menu”.
- 3 - Select the symbol positioned below to gain access to the “**Separable DHW plant control**” menu”.
- 4 - In both cases (“Base DHW plant control” and “Separable DHW plant control”) the screen shown in the figure below will be displayed on the screen.

The figure shows the screen of the “DHW plant control” menu and the relevant button described below.



	Main ON/OFF switch. Turn the knob to position the cursor on the button and press the same to activate it (symbol of the ON/OFF button in the ON position). In case of Multi-DDC plant, it is ON only on the Master DDC; on the Slave DDC(s) it reflects the ON/OFF status set on the Master.
--	---

The plant may be activated only if either of the following conditions applies:

- The ON/OFF master switch and at least one of the partial ON/OFF switches are in ON position and the temperature of the external environment is lower (heating) or higher (cooling) than the external environment set-point set (see paragraph 3.4.1.3.1 *Set point* on page 46); moreover the system uses the water set-point calculated on the basis of the climatic curve.

4.5.3.1.7 Instructions for operation in MONITOR mode

In Monitor operating mode the DDC does not switch on the machine, which is done using the contacts in the electronic board on the machine: in this case the switch on/off logic is defined by the user.

The other functions of the DDC are fully usable and therefore allow the viewing of the operating data and specific data concerning the units, as well as any warnings or alarms (also shown in the event history). It is also possible to reset any anomalies or flame arrests, and view and if required edit the machine parameters (authorised Technical Assistance Centres only). Per further information contact ROBUR's Technical Support Centre (CST).

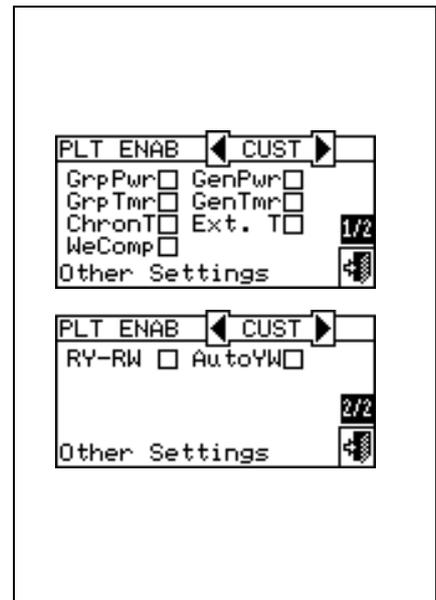
4.5.3.1.8 Instructions for operation in CUSTOM mode

In CUSTOM operating mode, the user may choose freely the on/off commands that determine the switching on and off of the machines.

The figure on the right shows the on/off commands available in CUSTOM operating mode. The symbol located next to the text description of the command indicates that the command is disabled. To enable the command, position the cursor on and press the knob. The symbol indicates that the command has been enabled.

The on/off commands available in CUSTOM mode are:

- GenPwr Plant **master** switch for switch-on and switch-off;
- GrpPwr **Partial** plant on/off switch (Multi DDC plants only);
- GenTmr **General water** T timer on switch;
- GrpTmr **Partial water** T timer on switch (Multi DDC plants only);
- ChronT Chronothermostat;
- WeComp Climatic curve function
- ExtT Consent for switch-on and switch-off depending on the External Temperature;
- RY-RW External RY-RW on/off commands;
- AutoYW Automatic COOLING/HEATING mode switching (two-line hot/cold plants only).



Thus it is possible to combine even all of the on/off commands available (e.g. chronothermostat, water T timers and external contacts) or to exclude some of them selectively (e.g. general water T timers enabled, partial water T timers not enabled, etc.).

It is not however possible to select the "WeComp" function at the same time as the "GenTmr" or "ChronT" consent.

When plant configuration is complete, it is always necessary to set the following parameters:

- **Default set point** see paragraph 3.4.1.1.1.1 on page 31;
- **Water Differential** see paragraph 4.4.2.6.1 on page 93 and, for separable plants, paragraph 4.4.2.5.3 on page 88;
- **Regulation parameters** see paragraph 4.4.2.6.4 on page 96 and, for separable plants, paragraph 4.4.2.5.4 on page 89;
- **General water T timer** see paragraph 3.4.1.1.1.3 on page 34 (if enabled);
- **Partial water T timer** (Multi-DDC plants only) see paragraph 3.4.1.1.1.4 on page 35 (if enabled);

In the presence of third party boilers:

- **Auxiliary boiler operation** see paragraph 4.4.2.6.2 on page 94;

- **Rated plant power** see paragraph 4.4.2.6.3 on page 95;

In the case of common water pumps managed by RoburBox:

- **RoburBox water pump delay** see paragraph 4.4.2.6.5 on page 98 and, for separable plants, paragraph 4.4.2.5.5 on page 90;

If ChronT is enabled, it is necessary to define the "Ambient Setup" indicated in Paragraph 3.4.1.2 and listed below: for internal ambient temperature:

- **Differential** internal ambient temperature: see paragraph 3.4.1.2.1 on page 41;
- **Chronothermostat set points** see paragraph 3.4.1.2.2 on page 42;
- **Chronothermostat** see paragraph 3.4.1.2.3 on page 43.

If ExtT is enabled, it is necessary to define the "" indicated in paragraph and listed below:

- **Building time constant:** see paragraph 4.4.1.10 page 77
- **Execution Reset external temperature filter:** see paragraph 4.4.1.11 page 77
- **Set point** external ambient temperature: see paragraph 3.4.1.3.1 on page 46;
- **Differential** external ambient temperature: see paragraph 3.4.1.3.2 on page 47.

If the WeComp function is activated, the following must be defined:

- **Climatic curve parameters** on page 110
- **Building time constant:** see paragraph 4.4.1.10 page 77
- **Execution Reset external temperature filter:** see paragraph 4.4.1.11 page 77
- **Enabling of climatic curve** see paragraph 3.4.1.1.1.2 on page 33
- **Chronothermostat set points** see paragraph 3.4.1.2.2 on page 42;
- **Chronothermostat** see paragraph 3.4.1.2.3 on page 43.

Once the user settings required have been programmed, it is possible to proceed with switch-on via the **Plant control** menu.

Switching on the plant in CUSTOM mode: Plant control .

Before switching on the plant, ensure that all the operating parameters have been correctly configured.

To access the "Plant control" menu, select "**COOLING/HEATING SERVICE CONTROL MENU**" see page 11.

The number of buttons enabled in the Plant control menu depends on the choice of the consents.

To gain access to the "**Base and separable DHW service control menu**" see page 15.

Per further information contact ROBUR's Technical Support Centre (CST).

4.5.3.2 OTHER CONFIGURATIONS

Once the operating mode has been selected, set the options listed below:

- **Maximum water setpoint** on page 116, **Min water set-point** on page 117, **Set-point limit base DHW** on page 120 and, for separable plants, paragraph 4.4.2.5.2 **Set point range** on page 87;
- **Setting the water thermostating mode** see page 110 (Master DDC only);
- **Units use priority (Master DDC of plants with GAHP- GS/WS only)** see paragraph 4.4.2.6.5 on page 98;
- **Chronothermostat mode (Master DDC of Multi DDC plants only)** see on page 118.

4.5.3.3 WATER PUMP MODE (Master DDC only)

- **Water pump mode (Master DDC only)** see paragraph 4.4.2.2 on page 84;
- **Partial operation mode (Master DDC of Multi DDC plants only)** see paragraph 4.4.2.3 on page 85;
- **Temperature Alarm Setup (Master DDC only)** see paragraph 4.4.2.6.7 on page 100;
- **Alarm output setup** see paragraph 4.4.2.4 on page 86.

Once **DDC and Plant** configuration have been carried out, to switch on the plants follow the indications regarding the user settings  and the Plant control menu  according to the operating mode selected, as described in the previous paragraphs.

4.6 MANAGEMENT AND DISPLAY OF WARNINGS AND ANOMALIES

Any operating anomalies of the GA High Efficiency and GAHP units linked to the Direct Digital Controller are signalled and displayed on it via the following:

- **Error menu;**
- **Event history** (see Paragraph 3.2.5 on page 26);
- **Machine status** (see Paragraph 0 on page 21).

To access the error menu, select  from the main screen. Figure 32 shows the alerts menu screen.

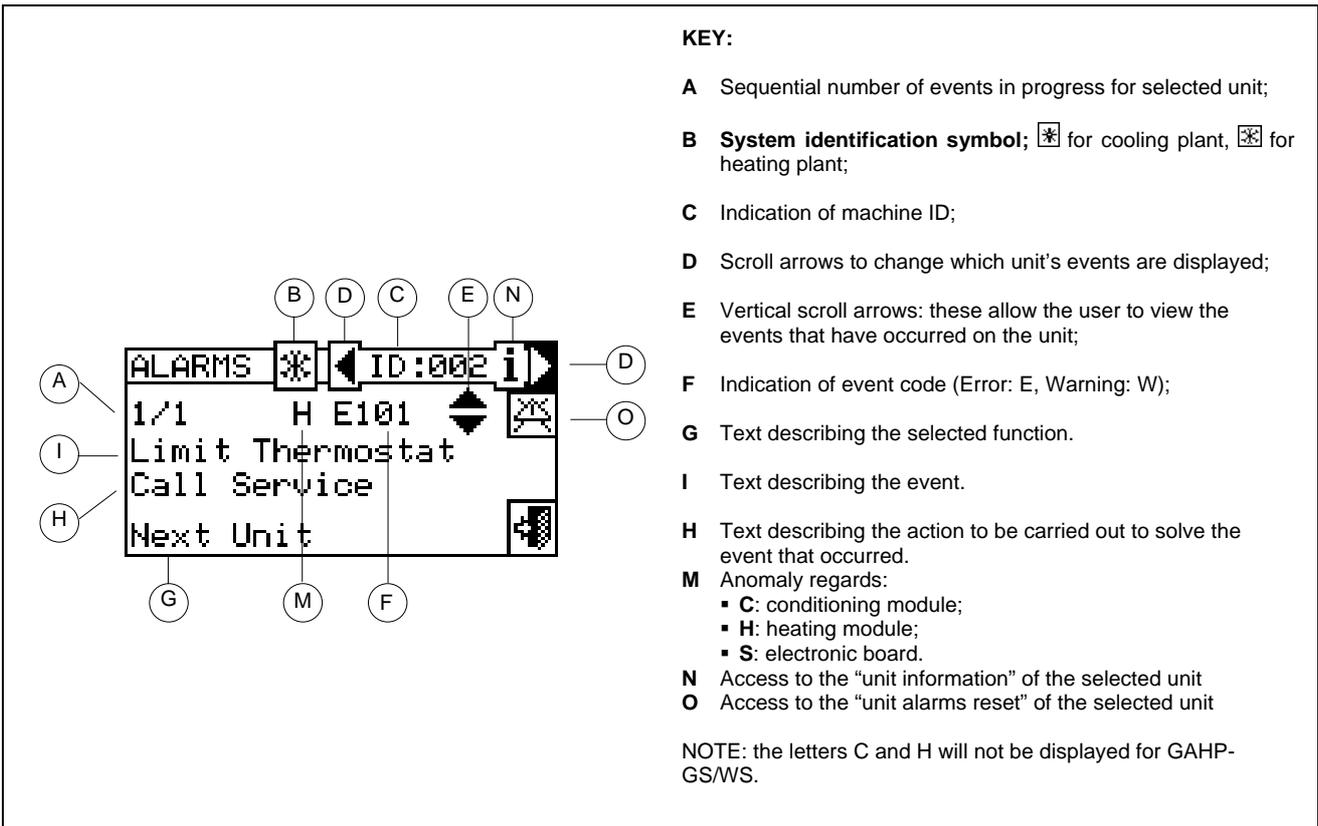


Figure 32 – EXAMPLE OF ERROR MENU SCREEN

The errors menu shows the **events underway**: it is possible to view the type of event (warning or error) for each machine type.

Instructions to access the alerts menu:

- 1 - Select  from the main screen.
- 2 - Select the plant in which the events occurred:  for two-line cooling/heating plants,  for hot water production plants, or  for chilled water production plants. The  symbol that appears next to the plant icon indicates that an anomaly is present.
- 3 - To locate the unit where the error has occurred, select . If no error has occurred, the message "No error" appears.
- 4 - Use the vertical scroll arrows  to view all the events present on the unit.

The  key gives access to the "Units management" menu, should it be necessary to perform an error reset or reset of the "Flame control unit".

The button  allows to access the "INFORMATION MENU" related with the selected unit.

Events that occur are memorised in the “Event history” menu.
 The figure below shows the screen of the Event history menu.

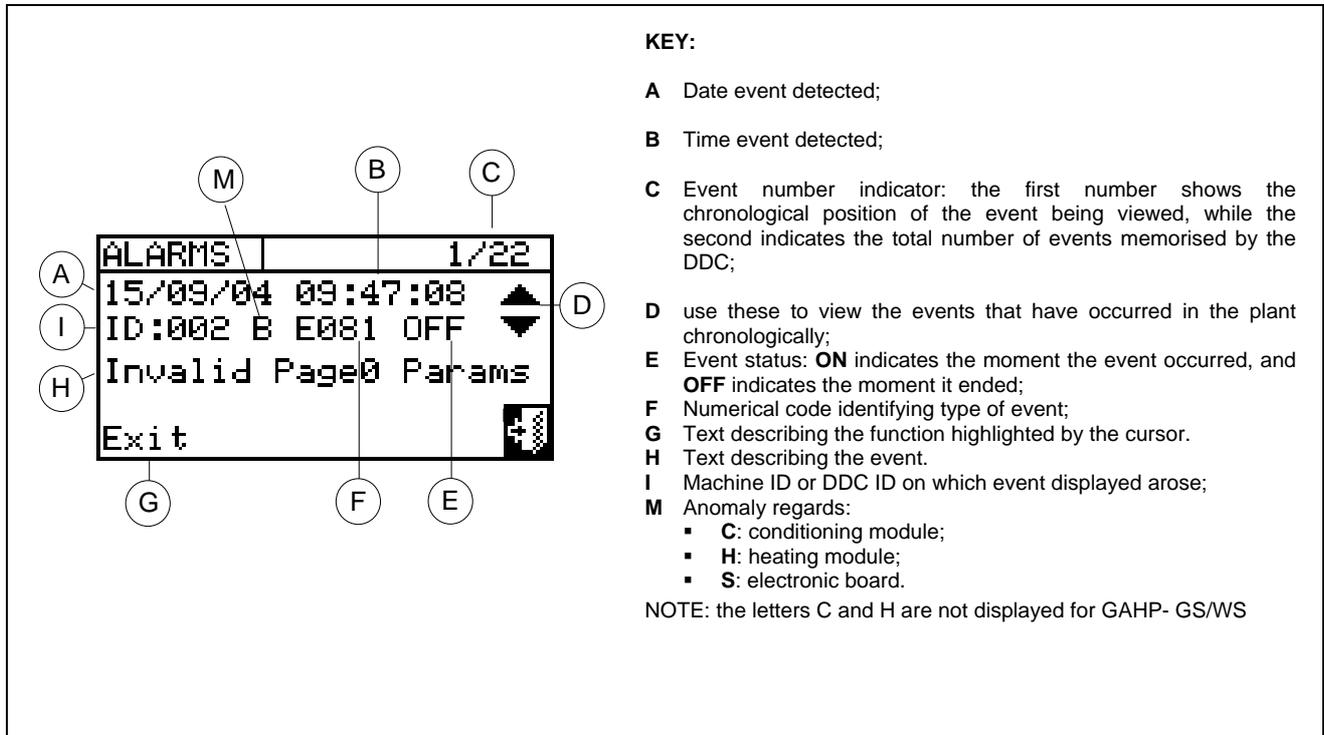


Figure 33 – EXAMPLE OF EVENT HISTORY MENU SCREEN

Instructions for accessing the “Event history” menu follow.

- 1 - Select from the main screen.
- 2 - Select to access the “Functional data” menu.
- 3 - Turn the knob to select the “Event history” menu, and press the knob to access the menu.
- 4 - Position the cursor on the vertical scroll arrows (see detail “D” in Figure 33) to scroll through the events, from latest to earliest.
- 5 - To exit, select .

Via the “Machine status” menu, it is possible to have a general overview of which units are operating correctly and in which units errors have arisen.

Two screens are present: “ACTIVATION” and “ERRORS”. Next to the machine ID, in the “ACTIVATION” screen, the following symbols appear:

	If the machine is on
	If the unit is off, no symbol appears next to the machine ID.
—	If the machine has been excluded from the plant via the option in the “Units management” menu.
D	If the unit is performing a defrosting cycle. Option only for GAHP-A and GAHP-AR units.
T	If the unit is off because the limit thermostating temperature value has been reached.

Select  to view which units are the subject of errors or warnings.
 In the “Error” screen next to the machine ID, the following symbols appear:

E	If an error has occurred in the machine.
O	“Off-line”. If there are connection problems between the machine and the DDC (the off-line may be due to various causes: the machine is not powered, there are problems on the connection cable, the machine board is malfunctioning and cannot communicate with the DDC).
W	If a warning has occurred for the machine.
	If no error is present (no symbol appears next to the machine ID).

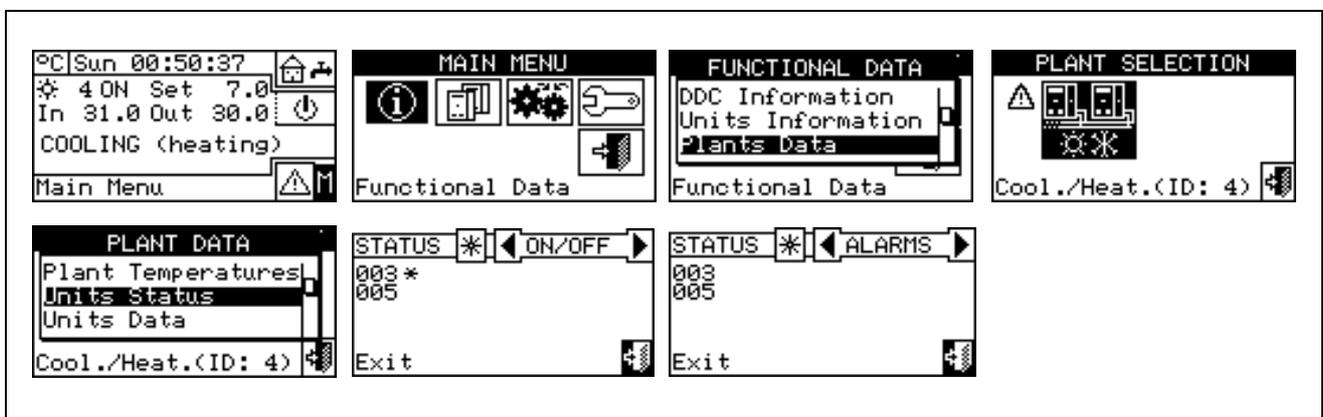
For two-line hot/cold plants, i.e. for the alternate production of hot/chilled water, the  or  symbols are active.

Select  to pass to the screens for the modules dedicated to the production of chilled water (.

Select  to pass to the screens for the modules dedicated to the production of hot water (.

To access the menu, follow the instructions below:

- 1 - Select  from the main screen.
- 2 - Select  to access the “**Functional data**” menu.
- 3 - Turn the knob to select the “Plants” menu, and press the knob to access the menu.
- 4 - Select the plant for which to view the machine status:  for two-line cooling/heating plants,  for hot water production plants, or  for chilled water production plants. The  symbol that appears next to the plant icon indicates that an anomaly is present.
- 5 - Turn the knob to select the “**Machine status**” menu and press the knob to access the menu.
- 6 - Select  to move to the Errors screen: next to the identification number of each unit (ID = machine), the letter E indicates that an error is present.
- 7 - From either of the two screens a machine ID can be selected by turning the knob and pressing it, access is gained to the “Machine Information” menu.
- 8 - To exit, select .



Operating anomalies may be of two types: warnings or errors.

If a **WARNING** event arises, the following occurs:

- The warning is signalled in the **“Error menu”** (to access the menu, select  from the main screen);
- The warning is signalled in the **“Event history”** menu;
- The relative “warning ON” is memorised in the event history list..

When the warning event is reset, the following occurs:

- The warning signals (see above) are reset;
- The relative “warning OFF” is memorised in the event history list.

If an **ERROR** event arises, the following occurs:

- The event is shown in the “Error menu” (to access the menu, select  from the main screen);
- The display's backlight and the  icon flash;
- A beeper sounds, if programmed in the **“Alarm beeper”** menu(see paragraph 3.4.2.4 on page 49);
- The signal relay switches, if programmed in the **“Configuring alarm output”** menu (see paragraph 4.4.2.4 on page 86);
- The error status is signalled in the **“Machine status”** menu;
- The error is signalled in the **“Event history”** menu;
- The relative “error ON” is memorised in the event history list.

When the event is reset, the following occurs:

- The display and signalling of the error are reset;
- The alarm beep is reset;
- The flashing signal of the display is reset;
- The signal relay is reset;
- The relative “error OFF” is memorised in the event history list.

The codes that identify the anomalies are divided on the basis of the type of machine from which they originate, according to the indications provided in the table below.

UNIT	ERROR	WARNING	NOTE
DDC	10--	10--	The code for errors generated by the DDC is composed of four digits: the first two indicate the type of unit in error status(10 for the DDC), the other two the error type
ACF 60	0--	0--	The error code for the DHW module is composed of 3 digits: the first defines the machine type (0 for DHW), the other two the error type. (*)
AY 00-120	1--	1--	The error code for the AY module is composed of 3 digits: the first defines the machine type (1 for AY), the other two the error type.(**)
GAHP-W GAHP-GS/WS	2--	2--	The error code for the GAHP-GS/WS module is composed of 3 digits: the first defines the machine type (2 for GAHP-GS/WS), the other two the error type.
GAHP-AR	6--	6--	The error code for the GAHP-AR module is composed of 3 digits: the first defines the machine type (6 for GAHP-AR), the other two the error type.
GAHP-A	4--	4--	The error code for the GAHP-A module is composed of 3 digits: the first defines the machine type (4 for GAHP-A), the other two the error type.

(*) Valid also for the ACF 60 module of AYF 60-119/2, AYF 60-119/4, Prontoclima C and Prontoclima CR units.

(**) Valid also for the AY 00-119 module of AYF 60-119/2, AYF 60-119/4, Prontoclima C and Prontoclima CR units.

WARNING

Consult the installation manual of the individual units for a detailed list of anomalies.

The table below indicates the main anomalies, as well as possible intervention to carry out.

CODE	ALARM DESCRIPTION
W 1000	“New configuration”- New local configuration This warning signals that a new local configuration has been carried out. It is never shown in the “Alerts

	menu"  , but only in "Event history", where it constitutes a kind of "divider" between events prior to it (which belong to a previous configuration, now modified, of the DDC) and those following it. It is possible that certain "ON" events which preceded a W1000 warning, and which still have such status at the moment that the new configuration is carried out, may not have a corresponding "OFF" event.
W 1001	<p>"Off-line" – Module off-line</p> <p>This warning occurs for a specific module if communication between it and the DDC is interrupted (connection problems, electric current not present for the module, etc.).</p> <p>This warning is signalled in the "Alerts menu" , by the message "off-line", while in the event history it is indicated in a very similar way to a module error.</p>
E 1002	<p>"All mod. off-line" – All plant modules off-line</p> <p>This error occurs if communication is interrupted between the DDC and all plant modules. It can be generated only on the Master DDC (for Multi DDC plants).</p>
E 1003	<p>"High cooling temp." – Cooling temperature above limit</p> <p>This error only occurs for a cold plant (or for a two-line hot/cold plant currently in cooling mode), if the average water temperature is higher than a settable limit (or if the average cannot be calculated for unforeseen reasons). It may only be generated on a Master DDC. Naturally, the machines are not switched off when this error occurs.</p>
E 1004	<p>"Low heating temp." – Heating temperature below limit</p> <p>This error only occurs for a hot plant (or for a two-line hot/cold plant currently in heating mode), if the average water temperature is lower than a settable level (or if the average cannot be calculated for unforeseen reasons). It may only be generated on a Master DDC. Naturally, the machines are not switched off when this error occurs.</p>
E 1005	<p>"RY and RW both ON" – RY and RW contacts both closed</p> <p>This error occurs only for two-line hot/cold plants whose on/off command configuration allows the RY/RW contacts to be used to determine the cooling/heating operating mode of the plant, if both contacts are closed. This condition, if detected, is tolerated for a short period. It may only be generated on a Master DDC.</p>
E 1006	<p>"AmbT sensor fault" – DDC ambient temperature sensor fault</p> <p>This error occurs solo for plants whose on/off command configuration allows the chronothermostat to be used (independently of possible exclusion of the chronothermostat on the part of the user), if the ambient temperature sensor of the DDC is faulty or not present (or returns values outside the operating range).</p>
E 1007	<p>"Config. conflict" – Configuration conflict on one module</p> <p>This error is signalled for a specific machine module if a board with a known network ID is present on the communication bus, among those under the control of the DDC, but with a configuration that is different from that expected.</p> <p>This may be caused by an S61 board-side modification to the configuration of a machine module assigned to the DDC in question (without a machine configuration having been performed on the DDC itself), or by the introduction on the communication bus of a new board whose ID conflicts with one that is already present. The latter case does not compromise the operation of the existing board. Relevant elements, given a board ID, for identifying the conflict are: machine type, major firmware version of board, module type major, and plant ID.</p> <p>In the "Alerts Menu", this error is indicated in the DDC's own section, with the ID of the module in question shown in the second line of the description; in the event history it is shown in a very similar way to a module error.</p>
E 1008	<p>Master DDC off-line ("Master DDC off-line")</p> <p>This error is signalled if communication between the Slave DDC and its Master DDC is interrupted. It may only be generated on a Slave DDC.</p>

E 1009	<p>Slave DDC off-line (“Slave DDC off-line”)</p> <p>This error is signalled if communication between the Master DDC and at least one of its Slave DDCs is interrupted, in any case only if the “Partial operation” option is <u>not</u> enabled (i.e. if the plant is <u>not</u> configured to continue to function if any Slave DDCs are “not present”). It may only be generated on a Master DDC.</p>
W 1010	<p>Event history cancelled</p> <p>This event indicates that the event history has been cancelled on the user’s request. The event is instantaneous and single in two-line C/H plants.</p>
W 1011	<p>DDC activated</p> <p>This event indicates that the DDC has been powered on electrically. The event is instantaneous and single in two-line C/H plants.</p>
W 1012	<p>Event history restarted</p> <p>This event indicates that the event history has been restarted. This currently occurs after the DDC is powered on electrically, and therefore is always accompanied by a W1011 code.</p> <p>The purpose of this event is to act as a “divider” in the event history analysis.</p> <ul style="list-style-type: none"> • In fact, it should be noted that: OFF entries, corresponding to ON entries contained in the event history before the restart, may have been “lost” (those that occurred logically while the DDC was off); • ON entries contained in the event history before the restart may have been “duplicated” immediately after the restart, if the event is still present. <p>In other words, if the event history is used to determine the <u>current status</u> of the plant, the analysis must begin from the last W1012 code, ignoring events prior to this.</p> <p>The event is instantaneous and single in two-line C/H plants.</p>
E 1013	<p>Modules separated Off-line</p> <p>This error occurs in case of interruption of the communication between the DDC and all the machine modules that are part of the separable plant. It can be generated only on the Master DDC (for Multi DDC plants).</p>
E 1014	<p>C/H valve mismatch (configuration mismatch on RB100 (or RB200) dedicated to the C/H valve)</p> <p>The error is generated in the event that another device with the same ID is configured on the communication network.</p> <p>This error does not halt the system</p>
E 1015	<p>C/H valve off-line (RB100 or RB200 dedicated to the C/H valve is off-line)</p> <p>This error occurs if the communication between the DDC and the C/H Valve RB100/RB200 is interrupted (connection problems, power supply not present for the RB100/RB200, etc.). This error halts the system, and if it occurs during a C/H Inversion, this phase is prolonged until the error clears off.</p> <p>The error may also be generated when updating the RB100/RB200 and/or reconfiguring the module managing the C/H valve, not followed by a new "machine configuration" on the DDC.</p> <p>This error halts the system (the generators are switched off), and if it occurs during a C/H Inversion, this phase is prolonged until the error clears off. The error clears off in the event of a communication reset or completion of the configuration, depending on the cause which generated it.</p>
E 1016	<p>Timeout of C/H valve</p> <p>To be generated, this error required that a valve making use of auxiliary limit switch contacts is configured. The error appears when the time taken by the valve to switch over from one operating mode to the other exceeds the “Max. switching-over time” set in the “C/H Inv.valve parameter” menu.</p>
E 1017	<p>C/H valve position error</p> <p>This error appears in at least one of the following conditions: limit switch contacts closed on the opposite side to the position they should have; both limit switches are closed; both limit switches are open.</p>
E 1018	<p>C/H valve unknown error</p> <p>The trouble occurs, for instance, when the DDC is removed from the plant and it is replaced with a new one, having the same CAN ID and the same configuration but it is switched to the opposite operating mode.</p>

E 1019	<p>DHW valve mismatch (configuration mismatch on DHW valve RB100 (or RB200))</p> <p>The error is generated in the event that another device with the same ID is configured on the communication network.</p> <p>This error does not halt the system</p>
E 1020	<p>DHW Valve off-line (DHW valve RB100 or RB200 is off-line)</p> <p>This error occurs if the communication between the DDC and the DHW Valve RB100/RB200 is interrupted (connection problems, power supply not present for the RB100/RB200, etc.).</p> <p>The error may also be generated when updating the RB100/RB200 and/or reconfiguring the module managing the DHW valve, not followed by a new "machine configuration" on the DDC.</p> <p>The error halts the system (the generators are switched off). The error clears off in the event of a communication reset or completion of the configuration, depending on the cause which generated it.</p>
E 1021	<p>Timeout of DHW valve</p> <p>To be generated, this error required that a valve making use of auxiliary limit switch contacts is configured. The error appears when the time taken by the valve to switch over from one operating mode to the other exceeds the "Max. switching-over time" set in the "Sep. Valve Param.".</p>
E 1022	<p>DHW valve position error</p> <p>This error appears in at least one of the following conditions: limit switch contacts closed on the opposite side to the position they should have; both limit switches are closed; both limit switches are open.</p>
W 1025	<p>External Temperature Probe absent (or broken)</p> <p>This warning is given only for systems whose Consents Configuration envisions the use of Climatic Curve Function and/or the ExtT consent (consent based on the external temperature). If the external environment temperature probe connected to DDC is absent or broken. Because the machine also has an external environment probe, in the presence of this warning the DDC continues to function and also the Climatic Curve Function and/or the ExtT consent remain active. The average values detected by the probes on the machine are used as the external temperature value. However, if an external temperature probe is installed connected to the DDC, it is good practice to intervene to solve the problem, as the detection based on the probes on the machine is normally less accurate (due to exposure to the sun for example and of the same effect of the heat generated by the machines).</p>
E 1026	<p>ID PDC Conflict</p> <p>This error is generated only on systems managed by several DDC, if two or more DDC have been configured on the same ID</p>
W 1027	<p>GAHP water T limit</p> <p>The event indicates that at least one heat pump has reached the maximum temperature, if the delivery temperature is lower than the set threshold.</p> <p>Assuming that the threshold is correctly set, this warning indicates that, in a plant with heat pumps and boilers, the GAHP heat pumps are substituted by the boilers earlier than foreseen.</p>
E 1028	<p>Third P Mach Error (Third Party Machine Error)</p> <p>This error indicates a generic alarm status on a third party unit; it is generated for a specific heating or cooling module ID on a third party unit (boiler or chiller) managed via the RB200 device, if this has an error control function. The error clears when the third party unit alarm condition is reset.</p>
E 1029	<p>OFF: Base Man Prb Er (Base Plant Part Manifold Temperature Probe Error)</p> <p>This error is generated if the manifold probe (delivery or return), used to regulate the base plant part and managed by an RB200 device, is unusable (malfunction or off-line). When using the progressive complement and substitution mode, the error is generated if the problem concerns the other manifold probe or the probe on the GAHP unit return manifold.</p> <p>The error halts the system (the generators are switched off), and clears when the cause generating it has been removed.</p> <p>The error occurs if the off-line or malfunction error on one or more corresponding probes persists for 1 minute. The error clears when the corresponding off-line or malfunction errors are no longer present for at least 1 minute.</p>
E 1030	<p>OFF: Sep Man Prb Er (Separable Plant Part Manifold Temperature Probe Error)</p> <p>This error is generated if the manifold probe (delivery or return), used to regulate the separable plant part and</p>

	<p>managed by an RB200 device, is unusable (malfunction or off-line). The error halts the system (the generators are switched off), and clears when the cause generating it has been removed.</p> <p>The error occurs if the off-line or malfunction error on one or more corresponding probes persists for 1 minute. The error clears when the corresponding off-line or malfunction errors are no longer present for at least 1 minute.</p>
E 1031	<p>C(H) IN T Prb Offlin (2-line Cooling or Cooling/Heating Plant Return Probe Off-line)</p> <p>This error is generated if communication between the DDC and the RB200 managing the probe in question is interrupted.</p> <p>The error may also be generated when updating the RB200 and/or reconfiguring the module managing the probe, not followed by a new "machine configuration" on the DDC.</p> <p>The error halts the system (the generators are switched off) if the DDC uses this probe to regulate the plant; in this case it is present together with error E1029.</p> <p>The error clears off in the event of a communication reset or completion of the configuration, depending on the cause which generated it.</p>
E 1032	<p>C(H) OUT T Prb Offlin (2-line Cooling or Cooling/Heating Plant Delivery Probe Off-line) See description E 1031</p>
E 1033	<p>H IN T Probe Offline (Heating Plant Return Probe Off-line)</p> <p>See description E 1031</p>
E 1034	<p>H OUT T Probe Offline (Heating Plant Delivery Probe Off-line)</p> <p>See description E 1031</p>
E 1035	<p>Sep IN T Probe Offlin (Separable Plant Part Return Probe Off-line)</p> <p>This error is generated if communication between the DDC and the RB200 managing the probe in question is interrupted.</p> <p>The error may also be generated when updating the RB200 and/or reconfiguring the module managing the probe, not followed by a new "machine configuration" on the DDC.</p> <p>The error halts the system (the generators are switched off) if the DDC uses this probe to regulate the plant; in this case it is present together with error E1030.</p> <p>The error clears off in the event of a communication reset or completion of the configuration, depending on the cause which generated it.</p>
E 1036	<p>Sep OUT T Probe Offlin (Separable Plant Part Delivery Probe Off-line)</p> <p>See description E 1035.</p>
E 1037	<p>GAHP IN T Prb Offlin (Heat Pump Return Probe Off-line)</p> <p>See description E 1031.</p>
E 1038	<p>C(H) IN T Prb Conflt (2-line Cooling or Cooling/Heating Plant Return Probe Configuration Conflict)</p> <p>The error is generated in the event that another device with the same ID is configured on the communication network.</p> <p>This error does not halt the system.</p>
E 1039	<p>C(H) OUT T Prb Conflt (2-line Cooling or Cooling/Heating Plant Delivery Probe Configuration Conflict)</p> <p>See description E 1038.</p>
E 1040	<p>H IN T Probe Conflt (Heating Plant Return Probe Configuration Conflict)</p> <p>See description E 1038.</p>
E 1041	<p>H OUT T Probe Conflt (Heating Plant Delivery Probe Configuration Conflict)</p> <p>See description E 1038.</p>
E 1042	<p>Sep IN T Prb Conflt (Separable Plant Part Return Probe Configuration Conflict)</p> <p>See description E 1038.</p>
E 1043	<p>Sep OUT T Prb Conflt (Separable Plant Part Delivery Probe Configuration Conflict) See description E 1038</p>
E 1044	<p>GAHP IN T Prb Conflt (Heat Pump Return Probe Configuration Conflict)</p> <p>See description E 1038.</p>
E 1045	<p>C(H) IN T Prb Malf (2-line Cooling or Cooling/Heating Plant Return Probe Malfunction) This error is generated in the event of an error or absence on the probe in question. The error halts the system (the generators are switched off) if the DDC uses this probe to regulate the plant; in this case it is present together</p>

	with error E1029. The error clears when the cause generating it is removed.
E1046	C(H) OUT T Prb Malf (2-line Cooling or Cooling/Heating Plant Delivery Probe Malfunction) See description E 1045
E1047	H IN T Probe Malf (Heating Plant Return Probe Malfunction) See description E 1045.
E1048	H OUT T Probe Malf (Heating Plant Delivery Probe Malfunction) See description E 1045.
E1049	Sep IN T Prb Malf (Separable Plant Part Return Probe Malfunction) This error is generated in the event of an error or absence on the probe in question. The error halts the system (the generators are switched off) if the DDC uses this probe to regulate the plant; in this case it is present together with error E1030. The error clears when the cause generating it is removed.
E1050	Sep OUT T Prb Malf (Separable Plant Part Delivery Probe Malfunction) See description E 1049.
E1051	GAHP IN T Prb Malf (Heat Pump Return Probe Malfunction) See description E 1045.
E1052	Pri W Pump C® Offlin (2 line Cooling or Cooling/Heating Plant Primary Water pump Offline) This error is generated if communication between the DDC and the RB200 managing the water pump in question is interrupted. The error may also be generated when updating the RB200 and/or reconfiguring the module managing the water pump, not followed by a new "machine configuration" on the DDC. The error halts the system (the generators are switched off). The error clears off in the event of a communication reset or completion of the configuration, depending on the cause which generated it.
E1053	H Prim W Pump Offline (Heating Plant Primary Water pump Offline) See description E 1052.
E1054	Sep Pri W Pump Offline (Separable Plant Part Primary Water pump Offline) See description E 1052.
E1055	C(H) Pri W Pump Conflt (2-line Cooling or Cooling/Heating Plant Primary Water pump Configuration Conflict) The error is generated in the event that another device with the same ID is configured on the communication network. This error does not halt the system.
E1056	H Prim W Pump Conflt (Heating Plant Primary Water pump Configuration Conflict) See description E 1055.
E1057	Sep Prim W Pump Conflt (Separable Plant Part Primary Water pump Configuration Conflict) See description E 1055.
E1058	Base Man Prb not cfg (Base Plant Part Manifold Probes not Configured) This error is generated if the base plant part manifold probes have not been configured on an RB200 device, and these probes are required by the DDC to regulate the plant (i.e. presence of third party modules on the base plant part). When using the progressive complement and substitution mode, the error is also generated if the probe on the GAHP unit return manifold has not been configured. The error halts the system (the generators are switched off). The error clears when the configuration is corrected.
E1059	Sep Man Prb not cfg (Separable Plant Part Manifold Probes not Configured) This error is generated if the separable plant part probes have not been configured on an RB200 device, and these probes are required by the DDC to regulate the plant (i.e. presence of third party modules on the separable plant part). The error halts the system (the generators are switched off). The error clears when the configuration is corrected.
E1060	Base W Pump not config (Base Plant Part Water pump not Configured) This error is generated if the base plant part water pump has not been configured on an RB200 device, and this water pump is required to operate the plant (i.e. third party modules without water pump control on the base plant part, with the exception of the case below for managing independent water pumps and manifold

	<p>probes on the secondary circuit, which does not require this water pump).</p> <p>The error halts the system (the generators are switched off). The error clears when the configuration is corrected.</p>
E1061	<p>Sep W Pump not config (Separable Plant Part Water pump not Configured)</p> <p>This error is generated if the separable plant part water pump has not been configured on an RB200 device, and this water pump is required to operate the plant (i.e. third party modules without water pump control on the separable plant part).</p> <p>The error halts the system (the generators are switched off). The error clears when the configuration is corrected.</p>
E1062	<p>C(H) Sec W Pump Offlin (2 line Cooling or Cooling/Heating Plant Secondary Water pump Offline)</p> <p>This error is generated if communication between the DDC and the RB200 managing the water pump in question is interrupted.</p> <p>The error may also be generated when updating the RB200 and/or reconfiguring the module managing the water pump, not followed by a new "machine configuration" on the DDC.</p> <p>The error halts the system (the generators are switched off). The error clears off in the event of a communication reset or completion of the configuration, depending on the cause which generated it.</p>
E1063	<p>H Sec W Pump Offline (Heating Plant Secondary Water pump Offline)</p> <p>See description E 1062.</p>
E1064	<p>C(H) Sec W Pump Conflt (2-line Cooling or Cooling/Heating Plant Secondary Water pump Configuration Conflict)</p> <p>The error is generated in the event that another device with the same ID is configured on the communication network.</p> <p>This error does not halt the system.</p>
E1065	<p>H Sec W Pump Conflt (Heating Plant Secondary Water pump Configuration Conflict)</p> <p>See description E 1064.</p>

Table 7— OPERATING ANOMALY CODES

To carry out an error reset consult Paragraph 2.7 "Error reset" on Page 17 and Paragraph 2.8 "FLAME CONTROL UNIT **RESET**" on Page 18.

NOTE

It is not possible to Reset Errors or Reset the Flame Unit on third party modules.

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With the aim of continuously improving the quality of its products, Robur S.p.A. reserves the right to modify the data and contents of this manual without prior notice.

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Robur is dedicated to dynamic progression in research, development and promotion of safe, environmentally-friendly, energy-efficiency products, through the commitment and caring of its employees and partners.

Robur Mission



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