

Regulation



# EASY CLIMA

VERSION

1.8



# TECHNICAL MANUAL





## WARNINGS

### SAFETY WARNINGS

Read this manual carefully before installation and/or use of the equipment and keep it in an accessible place.

The Manufacturer's Technical Dept. is available at the numbers indicated on the back cover of this manual, for consultancy or particular technical requests.



#### CAUTION

**Installation and maintenance must only be performed by qualified staff; if this is not the case the warranty will become null and void**

• Only use original spare parts: failure to comply with this norm can make the warranty null and void.

### DISPOSAL



*In accordance with the provisions of the following European directives 2011/65/EU, 2012/19/EU and 2003/108/EC, regarding reducing the use of hazardous substances in electrical and electronic equipment, in addition to waste disposal.*

The crossed out wheeie bins symbol on the equipment indicates that, at the end of its useful life, the product must be collected separately from general waste.

Therefore, at the end of its useful life, the user must take the equipment to a designated electrical and electronic waste collection point, or return it to the dealer that, against the purchase of an equivalent appliance, it is obliged to collect the product for disposal free of charge.

Appropriate differentiated waste collection for subsequent recycling, treatment and environment-friendly disposal of the discarded equipment helps preventing possible negative environmental and health effects and encourages recycling of the component materials of the equipment.

Illegal disposal of the product by the user entails the application of sanctions provided by the regulations in force.

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# WARNINGS

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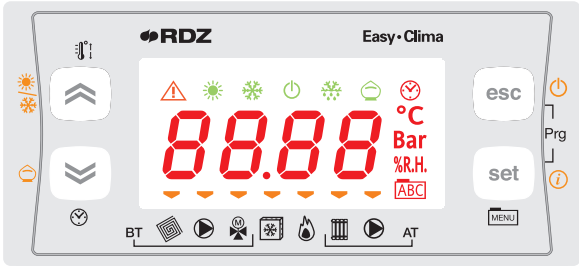
# 1 DESCRIPTION

## GENERAL DESCRIPTION

The "local" user interface of Easy Clima device consists in:

- Display showing temperature/pressure, time, menu/parameters labels and parameter values.
- Icons to display machine status, the unit of measurement of the value displayed and the status of the resources.
- Keys for menu navigation, to set parameters, to silence the alarms, to enter programming, and for the activation of the direct functions.

The display of information and programming of the device via user interface are developed in menus with navigation using the four keys as described in the relevant section.



N.B. Easy Clima Controller can be coupled to hydraulic kit that manages **Low Temperature** and/or **High Temperature** systems such as:  
 Easy Clima Kit, LT only.  
 MTR Easy Clima both LT and HT.  
 This manual refers to complete configuration to manage HT and LT

## DESCRIPTION OF DISPLAY

The display is used to show the following information:

**Main Display:** value that can be set from parameter (as specified further on in this chapter).

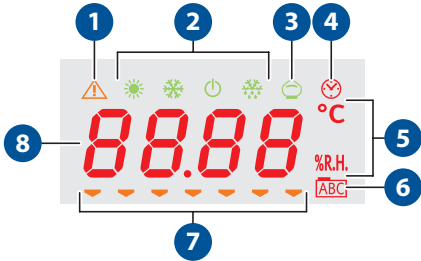
**Menu Navigation:** the status folders, parameters, etc. can be accessed. Within every folder, it is then possible to enter the sub-folders or parameters list

**Alarms Display:** the Alarm icon will switch on in the event of alarms. When accessing the Alarms menu, see the corresponding Alarm Code displayed in alternating mode.

If there are several alarms simultaneously, the one with the lowest index will be displayed: using the and keys it will be possible to display the alarm codes present at the same time.

If the fundamental value is also in error mode, the Alarm icon will be displayed, along with the "Err" string or "Outr".

## DISPLAY KET TO SYMBOLS



Num	Description
1	Alarm icon
2	Mode icon
3	Economy icon
4	Clock icon
5	Unit of measurement of the value displayed
6	Menu navigation icon
7	Resources icon
8	Values display












Display icons table			
Icon	Description	On with fixed light	On flashing
	Cooling icon	SUMMER = ON (Cool)	
	Heating icon	WINTER = ON (Heat)	
	Stand-by icon	STAND-BY = ON	
	Dehumidification icon	DEHUMIDIFIER = ON	
	Economy icon	ECONOMY MODE = ON	
	Alarm icon	One or more alarms active	
	Time band operating icon	Time band operating enabled	
	Values display	values display	
	°C	the value displayed is a temperature value in °C	
%R.H. icon"/>	% R.H.	the value displayed is % relative humidity	
	Menu icon	The menu is shown in the display	
	Low temperature system solenoid valve icon	Low temperature system solenoid valve = ON	POST-CIRCULATION in progress, after the COOLING or HEATING request has stopped
	Low temperature system pump icon	Low temperature system pump = ON	POST-CIRCULATION in progress, after the COOLING or HEATING request has stopped
	Modulating mixing valve	VMIX completely OPEN (Pos.=100%) LED off = VMIX completely CLOSED (Pos.=0%)	VMIX in OPENING or CLOSURE mode, however in position different to 100% or 0% and in movement.
	3 point mixing valve	VMIX in OPENING mode (indicates the opening "direction" of the servomotor, NOT the duration of the impulse towards the actuator)	VMIX in CLOSING mode (indicates the closing "direction" of the servomotor, NOT the duration of the impulse towards the actuator)
	Chiller icon	CHILLER = ON	
	Boiler icon	BOILER = ON	
	High temperature system solenoid valve icon	High temperature system solenoid valve = ON	POST-CIRCULATION in progress, after the COOLING or HEATING request has stopped
	High temperature system pump	High temperature system pump = ON	POST-CIRCULATION in progress, after the COOLING or HEATING request has stopped


It is possible to decide which value to display in normal operating conditions (neither in menu navigation mode, nor in the event of alarm signals) using the **"SET/Info"** key.



## KEYS DESCRIPTION

Key	Description	
 <b>SET key</b> 	Short press	<ul style="list-style-type: none"> <li>From the main display, access is given to the user set-point menu.</li> <li>From the operational parameters menu, the <b>SET</b> key allows you to               <ul style="list-style-type: none"> <li>- Access the menu sub-folders</li> <li>- Access the value of any parameter of one of the menu sub-folders</li> <li>- Confirm the parameter and/or output value</li> </ul> </li> </ul>
	Long press	From the main display, access is given to the selection of the fundamental value to be displayed.
 <b>ESC key</b> 	Short press	<ul style="list-style-type: none"> <li>With display off, the same is reactivated.</li> <li>Exit menus, list of parameters and parameter value (without saving the value) and go back to the previous level</li> </ul>
	Long press	From main display, the operating STATUS is changed from ON to STAND-BY and vice versa
 <b>UP key</b> 	Short press	<ul style="list-style-type: none"> <li>Scrolling the folders and parameters display upwards</li> <li>Parameter value increase</li> <li>From the main display, the room set adjustment is activated at the current time (heating or cooling, comfort or economy) with flashing set value to be adjusted.</li> </ul>
	Long press	From main display, the operating condition is changed from heating to cooling and vice versa.
 <b>DOWN key</b> 	Short press	<ul style="list-style-type: none"> <li>Scrolling the folders and parameters display downwards</li> <li>Parameter value decrease (if in parameter value modification mode)</li> <li>From the main display, the system date and time adjustment is activated.</li> </ul>
	Long press	From the main display, if enabled, the operating MODE from ON-Comfort to ON-Economy and vice versa.
	Access is given to the parameter and machine status menus folders.	

## 2 TECHNICAL MENU SUMMARY TABLE

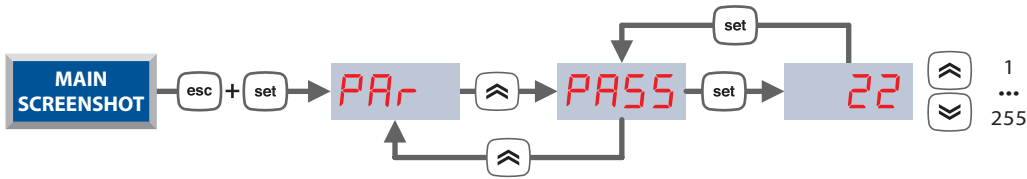
 Attention: to access the following menu, the “Technical” password must be entered, as with the “User” access it will not be possible to display all parameters.

First level	Second level	Description of parameters
<b>1</b>	<b>1</b> <i>St</i>	Parameters for operating mode management
	<b>2</b> <i>tr</i>	Parameters for management of set-points and room probes configuration
	<b>3</b> <i>dh</i>	Parameters for management of the dehumidifier
	<b>4</b> <i>P<sub>i</sub></i>	Parameters for management of pump 1 and pump 2
	<b>5</b> <i>L<sub>i</sub></i>	Parameters for the management of area 1 valve, area 2 valve and anti-freeze
	<b>6</b> <i>r<sub>i</sub></i>	Parameters for management of the flow set-point calculation in heating and cooling mode
	<b>7</b> <i>P<sub>i</sub> d</i>	Parameters for management of the PID
	<b>8</b> <i>EE</i>	Parameters for management of the LT system time band
	<b>9</b> <i>Ft</i>	Parameters for management of the humidity probe and the external probe
	<b>10</b> <i>tEst</i>	Controller synoptic. (Activation of controller test)



### 3 PASSWORD INTRODUCTION

In order to access the controller technical parameters, the **PASS** parameter must be set at "22" as in the following screen. This operation must be performed every time returning to the main screen.



### 4 START-UP

As for factory setting Easy Clima operation is coupled just with the external probe (Conf. TYPE=1). If the control is to be set with a different configuration, proceed with quick configuration using the **TYPE** menu.

This parameter has the purpose of allowing the installer to set an Easy Clima device configuration quickly and easily. To access the **TYPE** parameter, introduce the password for the technical menu according to the following pathway:



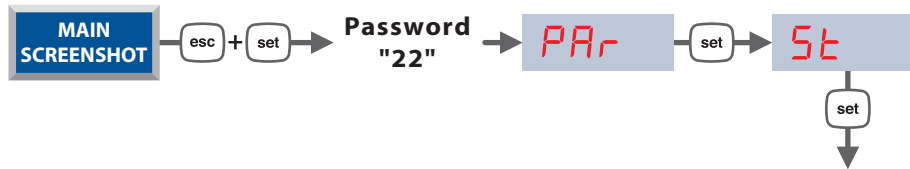
### PARAMETER SETTING LAYOUT ACCORDING TO ELECTRIC CONFIGURATION

	INSTALLED COMPONENTS	PRESET OPTIONAL DIGITAL INPUTS
<b>TYPE = 0</b>	<p>Easy Clima Control Unit</p>	<p><b>LT room thermostat</b> Room temperature request digital input for low temperature.</p> <p><i>N.B. Mandatory component if TYPE = 0</i></p>
<b>TYPE = 1</b>	<p>Easy Clima Control Unit</p> <p>External probe</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>CONFIGURAZIONE DI DEFAULT</b></p>	<p><b>HT room thermostat</b> Room temperature request digital input for high temperature.</p>
<b>TYPE = 2</b>	<p>Easy Clima Control Unit</p> <p>Humidity probe 4-20mA</p> <p>External probe</p>	<p><i>NB: it is included only in MTR versions with circulation pump for teh high-temperature circuit</i></p>
<b>TYPE = 3</b>	<p>Easy Clima Control Unit</p> <p>External probe</p> <p>Easy Clima Controller</p>	<p><b>Room humidistat</b> Digital input of the room dehumidification request for low temperature LT system or high temperature HT system according to operation settings.</p>





## 5 OPERATING MODE



**Operating mode parameters table**

Label	Description of parameters	Min	Max	Default	U.M.
5t00	Setting LT area operating mode. 1 = heating only 2 = cooling only 3 = heating and cooling	1	3	<b>3</b>	num
5t08	Setting HT area operating mode. 1 = heating only 2 = cooling only 3 = heating and cooling	1	3	<b>3</b>	num
5t01	Enabling of remote ON-OFF digital input. ON = enabled OFF = disabled	OFF	ON	<b>OFF</b>	bool
5t10	Digital input value setting for the controller to be at ON: ON = Contact open OFF = Contact closed	OFF	ON	<b>OFF</b>	bool
5t11	Value that the Mode parameter must have for the instrument to be OFF.	OFF	ON	<b>ON</b>	bool
5t04	Automatic stand-by enabling	OFF	ON	<b>OFF</b>	bool
5t05	Reference probe for management of the automatic stand-by: 0 = external probe, 1 = LT area room probe, HT area room probe.	0	1	<b>0</b>	num
5t06	Set-point for the automatic stand-by in winter (heating)	-50.0	99.9	<b>23.0</b>	°C
5t07	Set-point for the automatic stand-by in summer (cooling)	-50.0	99.9	<b>23.0</b>	°C
5t02	Automatic stand-by activation delay time	1	255	<b>1</b>	min
5t20	Enabling of the digital input for the remote stand-by	OFF	ON	<b>OFF</b>	bool
5t21	Digital input value setting for the controller to be at Stand-by: ON = Contact open OFF = Contact closed	OFF	ON	<b>OFF</b>	bool
5t22	Value that the Stdb parameter must have for the instrument to be in Stand-by.	OFF	ON	<b>OFF</b>	bool
5t30	Enabling of digital input for remote summer/winter control.	OFF	ON	<b>OFF</b>	bool
5t31	Digital input value setting for the controller to be in Summer mode (cooling): ON = Contact open OFF = Contact closed	OFF	ON	<b>OFF</b>	bool
5t32	Value that the COOL parameter must have for the instrument to be in Summer mode (cooling)	OFF	ON	<b>OFF</b>	bool
5t40	Enabling of digital input for management of the Comfort/Economy status from remote. Contact closed = Economy Contact open = Comfort	OFF	ON	<b>OFF</b>	bool
5t09	Digital outputs configuration: 0 = BOILER on-off CHILLER on-off 1 = Heat pump on-off summer/winter switch	0	1	<b>0</b>	bool
5t03	not used	0	1	<b>1</b>	bool




## SELECTION OF THE OPERATING MODE

The controller is set-up to work in 4 main operating modes:

- **Off:** The controller is off, every utility is off and alarms management is disabled.
- **Stand by:** Rest mode that is activated when the heating and cooling radiant system modes are not requested, but the system must be managed in terms of alarms and anti-freeze.
- **Summer:** Operating condition like radiant system in cooling mode.
- **Winter:** Operating condition like radiant system in heating mode.

The SUMMER and WINTER modes are in turn divided into another two modes

- **Comfort:** consists in running the system in a way to obtain the best room comfort.
- **Economy:** consists in running the system in energy saving mode at the expense of comfort. In this mode, the controller acts exactly as if in SUMMER or WINTER mode, except for the flow temperature calculation and the set-point in the room. If the mode is active, a dedicated LED symbol appears on the display .

The Comfort/Economy mode can be activated/deactivated from digital input, the relative controller key of from time bands

## OPERATING SEASON

Par.	5t00	Setting LT area operating mode
	5t08	Setting HT area operating mode
Value	Mode	Description
1	Cooling only	Only OFF, STAND-BY and COOLING modes are allowed
2	Heating only	Only OFF, STAND-BY and HEATING modes are allowed
3	Heating and cooling	All modes are allowed

## OPERATING MODE SELECTION DEVICES

The operating mode can be set using the following methods:

- A Key:** the mode can be selected manually from the relevant key on user interface, with long pressing.
- B Digital Input:** the status of the device can be forced via remote STD-BY, remote OFF, remote Summer/Winter digital inputs.
- C Automatic:** the function is called automatic STD-BY and allows automatic ON/STAND-BY/ON mode change on the basis of the external temperature

## ACTIVATION VIA KEYS

- A** Functionality can be activated by long pressing (5 seconds)

Summer / Winter     ON / Stand By

Confort / Economy  



## ACTIVATION VIA DIGITAL INPUT

**B** By enabling the activation modes via digital input, the functionalities can no longer be modified via keys.

Remote mode change priority via digital input

1. The remote Off digital input is that with higher priority. Activating it in any condition forces the “remote Off” status.
2. The stand-by digital input does not have priority over Off, in whichever mode the latter has been set. By activating stand-by from digital input, the “remote stand-by” status is set
3. The Summer/Winter condition digital input does not have priority over the Off and Stand-by status. By activating the Winter/Summer modes from digital input, a “remote winter” or “remote summer” machine status is implemented.

**Note:** If the operating modes selection parameter setting **5E00** does not allow a determined operating mode (Winter or Summer), the activation of a digital input which requests the same, has no effect.

## AUTOMATIC STAND-BY

**C** The automatic stand-by function is enabled by the **5E04** parameter. Enabling of automatic stand-by mode change parameter, allows you to actuate the automatic stand-by on the basis of the external temperature, of the LT area room temperature (Easy Clima Controller).

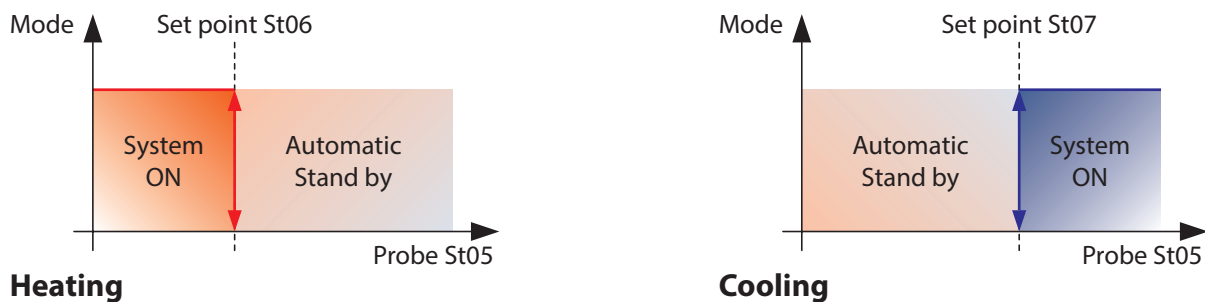
This function allows to “stop” distribution to the system when the reference temperature detected by the probe set in the **5E05** parameter exceeds a determined dedicated set-point value in heating mode or drops below a dedicated set-point in cooling mode. The automatic stand-by is activated whenever the temperature probe is exceeded for a period set by the **5E02** parameter. The intervention of the automatic stand-by mode is signalled by the simultaneous display of the  $\triangle$  symbol (alarm) as well as **5E69** on the display.

<b>5E05</b>	<b>Reference probe for management of the automatic stand-by</b>
<b>Value</b>	<b>Description</b>
<b>0</b>	External probe
<b>1</b>	LT area room probe (with Easy Clima Controller)

**N.B. If the probe set should be missing or in error mode, the “automatic stand-by” function is excluded. We suggest you should set the parameter **5E05** at “0” to control the operation in a more precise way**

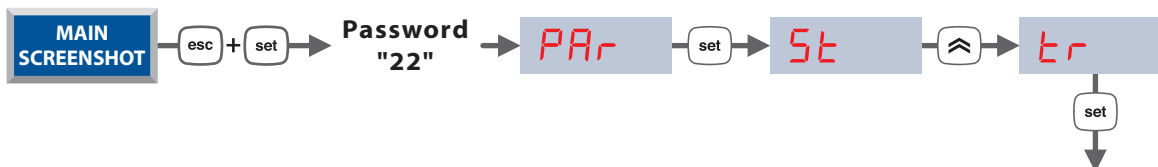
Adjustment is performed on the basis of two set-points **5E06** in the winter season and **5E07** in the summer season.

The operational logic is described in the drawing shown below.





## 6 LT AREA SET-POINT



Label	Description of parameters	Min	Max	Default	U.M.
<b>Main thermoregulation probe selection</b>					
<i>Er02</i>	Probe selection for management of the LT system in summer mode (cooling): 0 = no probe 1 = room probe 2 = external probe	0	2	<b>1</b>	num
<i>Er03</i>	Probe selection for management of the LT system in winter mode (heating): 0 = no probe 1 = room probe 2 = external probe	0	2	<b>1</b>	num
<b>Set-point and hysteresis in cooling mode</b>					
<i>S_Cc</i>	Comfort cooling set-point	<i>Er11</i>	<i>Er12</i>	<b>25.0</b>	°C
<i>Er11</i>	Minimum set -point in cooling mode	-50.0	<i>Er12</i>	<b>16.0</b>	°C
<i>Er12</i>	Maximum set -point in cooling mode	<i>Er11</i>	99.9	<b>30.0</b>	°C
<i>Er13</i>	Cooling hysteresis	0.1	25.5	<b>0.4</b>	°C
<i>S_Cr</i>	Cooling economy set-point	<i>S_Cc</i>	<i>Er12</i>	<b>28.0</b>	°C
<b>Set-point and hysteresis in heating mode</b>					
<i>S_hc</i>	Comfort heating set-point	<i>Er21</i>	<i>Er22</i>	<b>20.0</b>	°C
<i>Er21</i>	Minimum set -point in heating mode	-50.0	<i>Er22</i>	<b>10.0</b>	°C
<i>Er22</i>	Maximum set -point in heating mode	<i>Er21</i>	99.9	<b>30.0</b>	°C
<i>Er23</i>	Heating hysteresis	0.1	25.5	<b>0.4</b>	°C
<i>S_Hr</i>	Heating economy set-point	<i>Er21</i>	<i>S_Hc</i>	<b>17.0</b>	°C
<b>Alarms and others</b>					
<i>Er30</i>	Max temperature for alarm Er09	0.0	60.0	<b>60.0</b>	°C
<i>Er31</i>	Min temperature for alarm Er08	0.0	60.0	<b>6.0</b>	°C
<i>Er32</i>	Delay time for alarms Er08, Er09	0	1000	<b>3</b>	sec x 10
<i>Er00</i>	Activation for Easy Clima Controller	OFF	ON	<b>OFF</b>	bool

### SET-POINT AND HYSTERESIS

There are two parameters to set the work set-point for the LT area:

- **S\_Cc** Comfort cooling set-point
- **S\_Hc** Comfort heating set-point

With the parameters:

- **Er11** Minimum Set -point in cooling mode
- **Er12** Maximum Set -point in cooling mode
- **Er21** Minimum set-point in heating mode
- **Er22** Maximum set-point in heating mode

the minimum and maximum setting values can be limited from the cooling and heating comfort set points menu.

There are two parameters to set the work hysteresis, one for every operating mode:

- **Er13** Cooling hysteresis
- **Er23** Heating hysteresis

### ECONOMY SET-POINT

The following set-points are used in the economy operating mode:

- **S\_Cr** Economy cooling set-point
- **S\_Hr** Economy heating set-point

Moreover, in reduced conditions, the LT area flow temperature calculation methods change.



## MAIN THERMOREGULATION

The thermoregulation control is based on the temperature offset detected with respect to the set-points set.

### REFERENCE PROBE FOR THERMOREGULATION FUNCTION IN LT AREA.

The thermoregulation is normally performed on the basis of the room temperature.

Different thermoregulation probes can be selected for the heating and cooling modes via the following parameters:

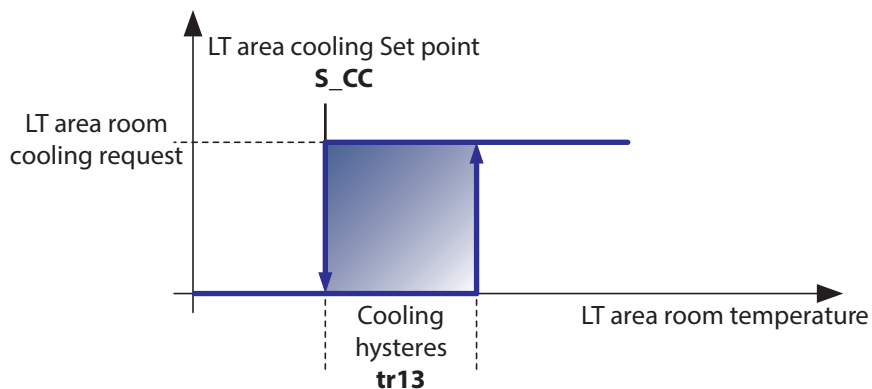
<i>tr02</i>	Probe selection for management of the LT system in cooling mode
<i>tr03</i>	Probe selection for management of the LT system in heating mode
Value	Description
0	No probe
1	Easy Clima Controller
2	External probe

### HEAT REGULATION OF THE LT AREA IN COOLING MODE

Considering the *tr02* parameter set at 1 as per default, the regulation on the LT room set-point takes place as illustrated in the figure below.

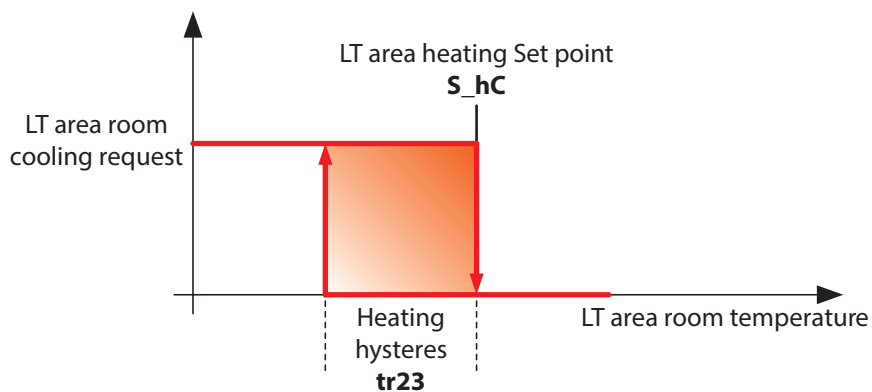
With the presence of the cooling request, it means the activation of the LT area valve and the successive activations of all outputs dedicated to production and the distribution of cold water.

### HEAT REGULATION OF THE LT AREA IN HEATING MODE



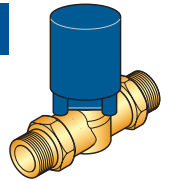
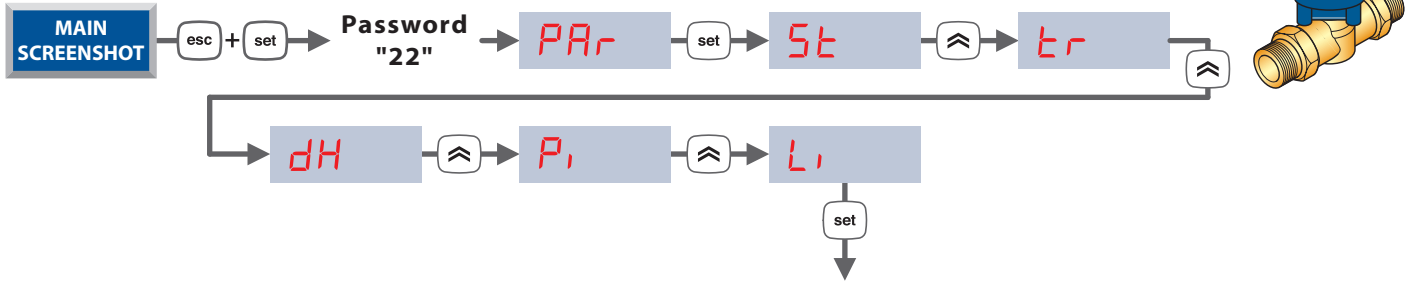
Considering the *tr03* parameter set at 1 as per default, the regulation on the LT room set-point takes place as illustrated in the figure below.

With the presence of the cooling request, it means the activation of the LT area valve and the successive activations of all outputs dedicated to production and the distribution of HOT water





## 7 ZONE VALVES



Label	Description of parameters	Min	Max	Default	U.M.
<b>LT/HT area valves configuration</b>					
<i>Li 01</i>	Parameter for the operation definition of the LT area valve: 0 = disabled 1 = Activated only on digital input request 2 = Activated from set-point and digital input 3 = The request for energy is activated both from set-point and from digital input, but the LT area valve activates only from set-point.	0	3	<b>1</b>	num
<i>Li 17</i>	Enabling of digital input for remote activation request of the LT area valve	OFF	ON	<b>ON</b>	bool
<i>Li 18</i>	Enabling of digital input for remote activation request of the HT area valve	OFF	ON	<b>ON</b>	bool
<i>Li 20</i>	Digital input value setting so that the LT area valve is activated: Open contact = ON Closed Contact = OFF	OFF	ON	<b>ON</b>	bool
<i>Li 21</i>	Digital input value setting so that the HT area valve is activated: Open contact = ON Closed Contact = OFF	OFF	ON	<b>ON</b>	bool
<i>Li 30</i>	LT area valve deactivation delay after energy request stop	0	900	<b>3</b>	sec x 10
<i>Li 31</i>	HT area valve deactivation delay after energy request stop	0	900	<b>3</b>	sec x 10
<b>Anti-freeze</b>					
<i>Li 00</i>	Parameter to define the sensor which will activate the high-temperature zone valve for defrosting running: 0, 1, 3 = anti-freeze function disabled 2 = The anti-freeze function for the HT area activates only if Li02 = 2, in this case, pump operation and of the HT area valve will be in parallel with those of the LT system	0	3	<b>2</b>	num
<i>Li 02</i>	Parameter for the definition of the probe that will activate the LT area valve in anti-freeze mode: 0 = anti-freeze function disabled 1 = room probe, 2 = external probe 3 = flow probe	0	3	<b>3</b>	num
<i>Li 10</i>	Indicates the LT and HT area valve maximum activation time in Anti-freeze mode	0	255	<b>30</b>	sec x 10
<i>Li 11</i>	Set point for the Anti-freeze function for Room Probe	-50.0	99.9	<b>5.0</b>	°C
<i>Li 12</i>	Hysteresis for the Anti-freeze set-point for Room probe	0.1	25.5	<b>1.0</b>	°C
<i>Li 13</i>	Set point for the Anti-freeze function for External Probe	-50.0	99.9	<b>-1.0</b>	°C
<i>Li 14</i>	Hysteresis for the Anti-freeze set-point for External probe	0.1	25.5	<b>2.0</b>	°C
<i>Li 15</i>	Set point for the Anti-freeze function for Flow Probe	-50.0	99.9	<b>5.0</b>	°C
<i>Li 16</i>	Hysteresis for the Anti-freeze set-point for Flow probe	0.1	25.5	<b>2.0</b>	°C



## ZONE VALVES OPERATING MODE

### GENERAL OPERATING CONDITIONS

Two area valves are managed via controller: one for the LT system and one for the HT system. The valves are managed according to 3 main operating modes.

- **Off:** the area valves are switched off immediately and remain off in any case.
- **Stand-By:** the valves are normally closed but can be activated for anti-freeze function.
- **On:** The valves are opened and closed according to the adjustment principle set.

### LT AREA VALVE OPERATING MODE

The LT area valve controls the flow of hot/cold water in the low temperature mixed system. Output enabling is managed by the following parameter:

L, 01 Parameter for the operation definition of the LT area valve	
Value	Description
0	LT area valve disabled
1	LT area valve activated only from LT remote input
2	LT area valve activated from LT remote input and from set-point (in presence of Easy Clima Controller)
3	Area valve only activated from set-point (in presence of Easy Clima Controller)

For values 2 and 3, the remote input must be enabled by operating on the **L, 17** parameter (Enabling of digital input for the remote request for activation of the LT area valve).

The activation of the LT area valve coincides with the heating and cooling request; on termination of the request, effective switch-off of the output takes place after the time set in the **L, 30** parameter has expired.

### HT AREA VALVE OPERATING MODE

The HT area valve controls the flow of hot/cold water in the high temperature system.

The enabling of the output is managed by the **L, 18** parameter (Enabling digital input for the remote activation request of the HT area valve).

The HT area valve is only activated with closure of the HT digital input, if enabled, and coincides with the request for heating cooling on the basis of the setting off the following parameter:

5t08 HT area valve operating setting	
Value	Description
1	HT area valve enabled only in heating mode
2	HT area valve enabled only in cooling mode
3	HT area valve enabled in heating and in cooling mode



## ANTI-FREEZE OPERATING MODE

The anti-freeze function is enabled by setting the **L, 00** (parameter for the definition of the probe that will activate the HT area valve in anti-freeze conditions) and **L, 02** parameters (parameter for the definition of the probe that will activate the LT area valve in anti-freeze conditions) at a value higher than "0"h.

Using the two parameters it is also possible to select the type of probe that will be for reference for the activation (or not) of the functionality.

<b>L, 00 Parameter for the definition of the probe that will activate the HT area valve in anti-freeze mode</b>	
<b>Value</b>	<b>Description</b>
<b>0</b>	No probe (anti-freeze function disabled)
<b>1</b>	Room probe (anti-freeze function disabled)
<b>2</b>	External probe
<b>3</b>	Flow probe (anti-freeze function disabled)

<b>L, 02 Parameter for the definition of the probe that will activate the LT area valve in anti-freeze mode</b>	
<b>Value</b>	<b>Description</b>
<b>0</b>	No probe (anti-freeze function disabled)
<b>1</b>	Room probe referring to LT area
<b>2</b>	External probe
<b>3</b>	LT system flow probe

The relative anti-freeze set-point and the relative hysteresis can be set for every probe by setting the following parameters. Parameters in the event of use of the room probe:

- **L, 11** Set point for the Anti-freeze function for Room Probe
- **L, 12** Hysteresis for the Anti-freeze set-point for Room probe

Parameters in the event of use of the external probe:

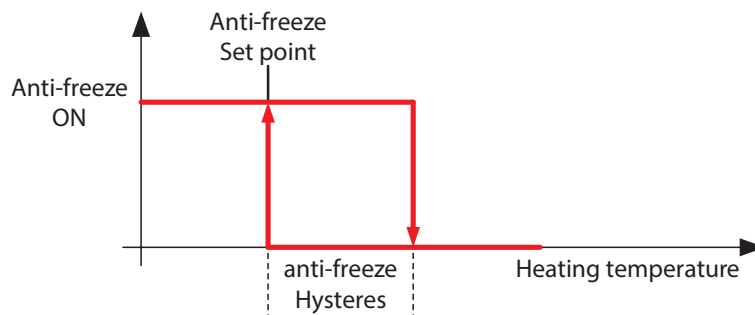
- **L, 13** Set point for the Anti-freeze function for External Probe
- **L, 14** Hysteresis for the Anti-freeze set-point for External probe

Parameters in the event of use of the flow probe:

- **L, 15** Set point for the Anti-freeze function for Flow Probe
- **L, 16** Hysteresis for the Anti-freeze set-point for Flow probe

**N.B. the anti-freeze function is only active in the heating mode in Comfort, Economy and Stand-by conditions. The anti-freeze mode is not active in the OFF state and whenever alarms are present that block the outputs (valves, pumps etc)**

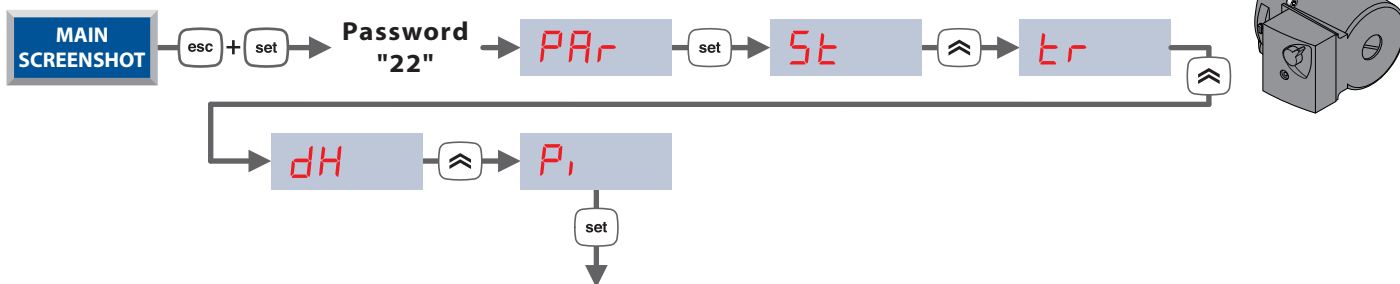
The anti-freeze function is adjusted as illustrated in the figure below.







## 8 LT/HT AREA CIRCULATION PUMP



Easy Clima system controls a pump for the LT area and a pump for the HT area independently.

Label	Description of parameters	Min	Max	Default	U.M.
<b>LT area circuit water pump</b>					
P, 01	LT area pump switch-on delay time	0	255	1	sec x 10
P, 02	LT area pump switch-off delay time	0	255	3	sec x 10
P, 03	Minimum time between one switch-on and successive LT area pump switch-off	0	255	1	sec x 10
P, 04	Minimum time between one switch-off and successive LT area pump switch-on	0	30	1	sec x 10
P, 10	LT area pump inactivity time due to anti-sticking cycle	0	255	72	ore
P, 11	Enabling of LT area pump operation: 0 = disabled 1 = enabled	0	1	1	bool
<b>HT area circuit water pump (Only for modules with optional high-temperature pump)</b>					
P, 12	HT area pump switch-on delay time	0	255	3	sec x 10
P, 13	HT area pump switch-off delay time	0	255	3	sec x 10
P, 07	Minimum time between one switch-on and successive HT area pump switch-off	0	255	1	sec x 10
P, 08	Minimum time between one switch-off and successive HT area pump switch-on	0	30	1	sec x 10
P, 06	HT area pump inactivity time due to anti-sticking cycle	0	255	72	ore
P, 05	Enabling of HT area pump operation: 0 = disabled 1 = enabled	0	1	1	bool
<b>LT and HT area circuit water pump</b>					
P, 09	Pumps switch-on duration due to anti-seizure cycle	0	255	10	sec

### SYSTEM PUMP CONFIGURATION

#### ENABLING

The pumps controlled by Easy Clima control unit are enabled respectively with the following parameters:

- **P, 05** Enabling of LT area pump operation
- **P, 11** Enabling of HT area pump operation

#### GENERAL OPERATING CONDITIONS

Below find the list of operating modes of the circulation pumps on the basis of control unit status:

- **Off:** the area pumps are switched off immediately
- **Stand by:** the area pumps have the same behaviour as operation in on mode
- **On:** as well as the main adjustment specified in the following paragraphs, it is also possible to have the following conditions with higher priority:
  - The LT area pump is forced on by any dehumidification request with **dh01** parameter set at "3"
  - The HT area pump is forced on by any dehumidification request with **dh01** parameter set at "2"

The last two conditions just described are only normally generated after the temperature is detected over the limits set for a time period set in the **Er32** parameter.



The minimum time between one switch-on and the successive switch-off can be set by the following parameters:

- **Pi 03** Minimum time between one switch-on and successive LT area pump switch-off
- **Pi 07** Minimum time between one switch-on and successive HT area pump switch-off

The minimum time between one switch-off and successive switch-on of the pumps can be set by the following parameters:

- **Pi 04** Minimum time between one switch-off and successive LT area pump switch-on
- **Pi 08** Minimum time between one switch-off and successive HT area pump switch-on

## PUMP CONTROL

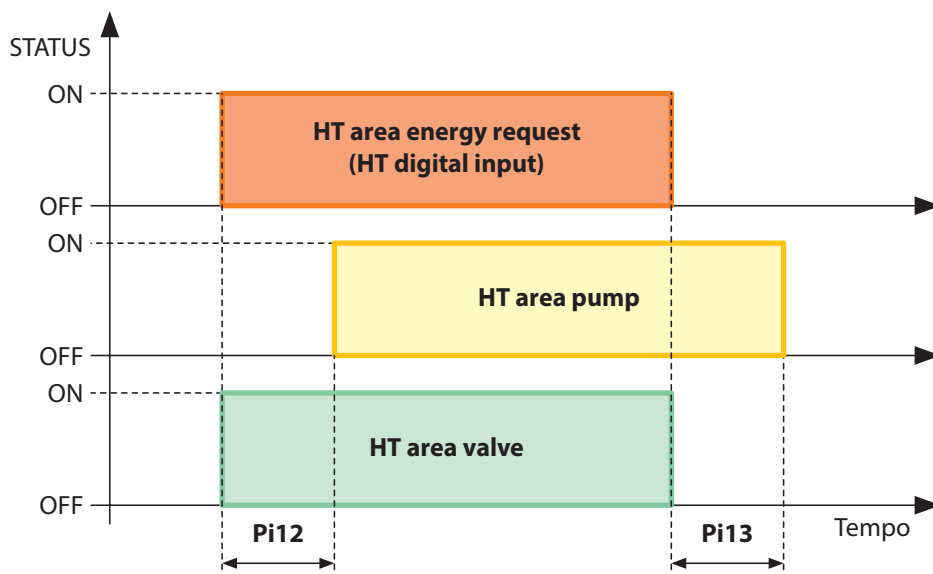
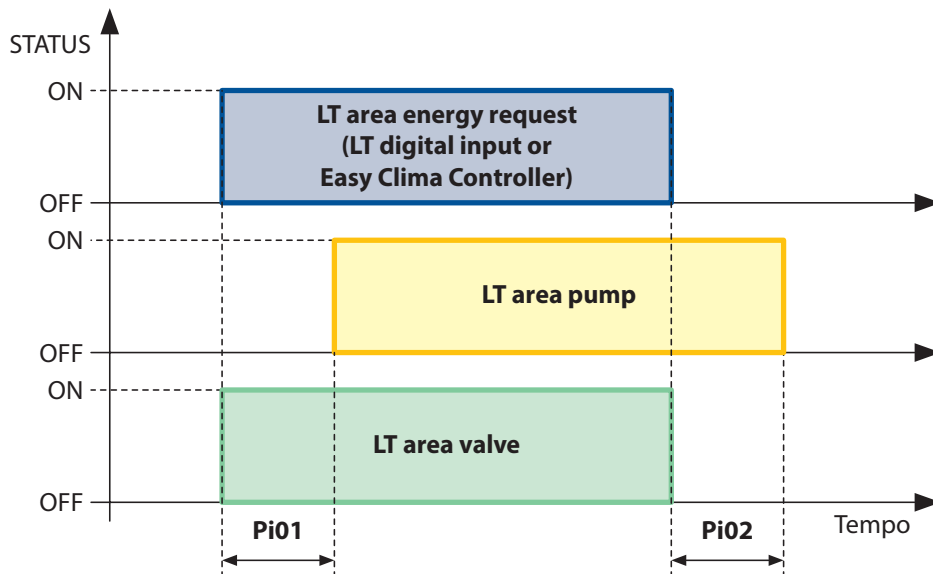
The area pumps are switched on a certain time after the activation of the relative area valves. These delays are set by the following parameters:

- **Pi 01** LT area pump switch-on delay time
- **Pi 12** HT area pump switch-on delay time

The area pumps are switched off in the same way a certain time after the deactivation of the relative area valves. These delays are set by the following parameters:

- **Pi 02** LT area pump switch-off delay time (Post-circulation)
- **Pi 13** HT area pump switch-off delay time (Post-circulation)

Post-circulation in switch-off mode is also performed in stand-by mode.





## PUMPS ANTI-STICKING FUNCTION

The anti-sticking function is enabled by setting the following parameters

- **Pi 10** LT area pump inactivity time due to anti-sticking cycle
- **Pi 06** HT area pump inactivity time due to anti-sticking cycle
- **Pi 09** Pumps switch-on duration due to anti-seizure cycle

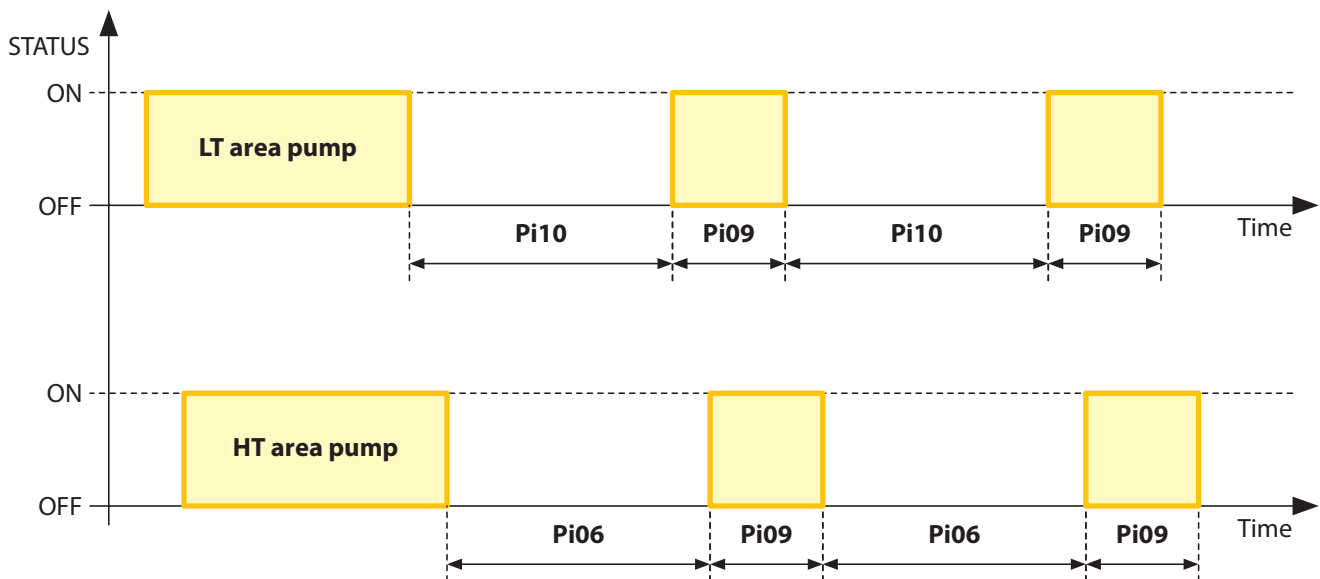
This function prevents mechanical anomalies due to long inactivity of the HT/LT pumps.

If a pump (independent management for pump 1 and pump 2) remains off for a time equal to or over the value set in the **Pi 10** or **Pi 06** parameters (area water pump inactivity time due to anti-sticking), the device forces its switch-on for the time defined with the **Pi 09** parameter (pumps 1 and 2 activation duration due to anti-sticking), valid for both pumps.

The function is always active in any control operating status, except off.

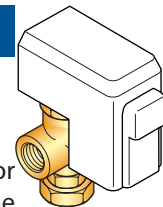
The pump general operating conditions are valid. In the presence of alarms that block the pump, this will not be activated due to anti-sticking.

Note: every time an area pump is activated due to the effect of "anti-sticking", the HT/LT area valve is activated in parallel





## 9 LT SYSTEM MIXING VALVE



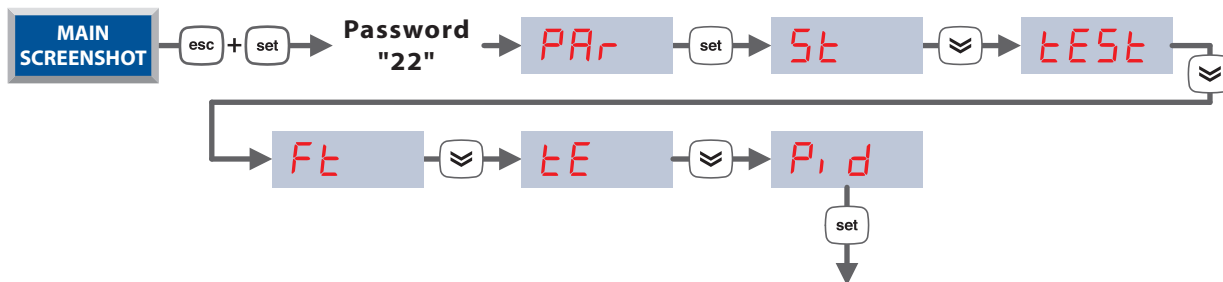
**Easy Clima** device controls a mixing valve for the low temperature LT system.

The mixing valve is adjusted in opening/closing in association with the activation of the LT system pump. Easy Clima device allows to control a modulating mixing valve at - VDC, with analogue output for servomotor controlled in direct current and with 24 Vac primary power supply (this voltage is supplied by a transformer on the electric control board that “receives” in Easy Clima control).

The presence of the mixing valve is always enabled.

In Off mode, the mixing valve is in closed condition, meaning analogue piloting signal = 0 V, recirculation position.

The mixing valve closes immediately in the event of block alarms **E<sub>r</sub>00**, general (digital) alarm (refer to the alarms table).



### MODULATING SERVOMOTOR OPERATION (PID PARAMETERS)

With LT system pump off, the mixing valve is completely closed.

With exception to specific cases (e.g. anti-sticking, anti-freeze, etc.), with LT system pump on, the LT system mixing valve is modulated depending on the system flow temperature, in away to reach the set-point calculated (see relevant chapter).

PID type regulation is applied, considering the difference between flow set-point and flow temperature as error (only probe that must always be present).

Practically, mixing valve opening (0-100%) is determined by a PID regulator

Label	Description of parameters	Min	Max	Default	U.M.
<b>Type of modulating mixing valve for PID function in heating and cooling mode</b>					
r, 20	Mixing valve period	1	999	<b>120</b>	sec
<b>Type of modulating mixing valve for PID function in heating and cooling mode</b>					
r, 60	Cooling proportional band	0.1	99.9	<b>6.0</b>	°C
r, 61	Integral cooling time	0	9999	<b>1800</b>	sec / 10
r, 62	Derived cooling time	0	999	<b>0</b>	sec / 10
r, 64	Do not change	0	999	<b>10</b>	sec / 10
r, 66	Dead band in cooling mode	0.0	10.0	<b>0.3</b>	°C
r, 71	Updating period of the PID cooling	2	999	<b>20</b>	sec / 10
<b>Type of modulating mixing valve for PID function in heating and cooling mode</b>					
r, 80	Heating proportional band	0.1	99.9	<b>6.0</b>	°C
r, 81	Integral heating time	0	9999	<b>1800</b>	sec / 10
r, 82	Derived heating time	0	999	<b>0</b>	sec / 10
r, 84	Do not change	0	999	<b>10</b>	sec / 10
r, 86	Dead band in heating mode	0.0	100	<b>0.3</b>	°C
r, 91	Updating period of the PID heating	2	999	<b>100</b>	sec / 10



**N.B.**

- On the basis of the current heating or cooling condition, the mixing valve will always be modulated depending on the offset verified between the set-point calculated and flow probe, but with the following distinctions:  
 In Heating mode:
  - if the flow probe detects a temperature higher than the set-point, the mixing valve closes
  - if the flow probe detects a temperature lower than the set-point, the mixing valve opens
 In Cooling mode:
  - if the flow probe detects a temperature higher than the set-point, the mixing valve opens
  - if the flow probe detects a temperature lower than the set-point, the mixing valve closes
- The increase in value of the 0-10 Vdc analogue output due to LT mixing valve can take place until the maximum value of 100% is reached, corresponding to 10 Volts: both in heating mode and in cooling mode.
- The decrease in value of the 0-10 Vdc analogue output due to LT mixing valve can take place until the value of 0% is reached, corresponding to 0 Volts: both in heating mode and in cooling mode.

**SET-POINT CALCULATION FOR THE LT SYSTEM FLOW TEMPERATURE**

The flow temperature of the LT system is the main value on which the radiant system is regulated.

The set-point is the temperature that must be reached downstream from the mixing valve, on the basis of the real situation of the internal environment (reference area temperature/humidity) and of the external environment (external temperature). The set-point calculation is obtained differently and with different variables depending whether the system is in heating or in cooling mode.

Moreover, the calculation result is different depending on whether the controller is in comfort or reduced mode.

The "reduced set" has the aim of saving energy and is typically used in situations where maximum comfort can be renounced (e.g. no-one lives in the rooms in the period the reduced set and/or night time period etc. is adopted).

Label	Description of parameters	Min	Max	Default	U.M.
<b>Parameters for the set-point calculation in heating mode</b>					
<i>r<sub>h</sub>00</i>	Enabling of boiler consent digital output	OFF	ON	<b>ON</b>	bool
<i>r<sub>h</sub>10</i>	Boiler consent digital output activation minimum time	0	255	<b>1</b>	sec x 10
<i>r<sub>h</sub>11</i>	Boiler consent digital output activation delay time	0	255	<b>1</b>	sec x 10
<i>r<sub>i</sub>10</i>	Maximum value that the flow set-point can assume for mixing valve	0.0	99.9	<b>45.0</b>	°C
<i>r<sub>i</sub>13</i>	Simulated value of the Comfort room temperature in the event of error or lack of the Easy Clima Controller	5.0	35.0	<b>20.0</b>	°C
<i>r<sub>i</sub>15</i>	Simulated value of the Economy room temperature in the event of error or lack of the Easy Clima Controller	5.0	35.0	<b>16.0</b>	°C
<i>r<sub>i</sub>43</i>	Flow temperature dynamic differential proportional band, for comfort and economy mode	0.0	99.9	<b>2.0</b>	°C
<i>r<sub>i</sub>44</i>	Comfort mode, flow temperature maximum dynamic differential	0.0	99.9	<b>4.0</b>	°C
<i>r<sub>i</sub>45</i>	Comfort mode flow temperature gradient	0	255	<b>10</b>	°C x 10
<i>r<sub>i</sub>47</i>	Comfort mode external temperature set-point	-50.0	99.9	<b>20.0</b>	°C
<i>r<sub>i</sub>50</i>	Comfort mode flow minimum temperature	-50.0	99.9	<b>22.0</b>	°C
<i>r<sub>i</sub>45</i>	Economy mode, flow temperature maximum dynamic differential	0.0	99.9	<b>4.0</b>	°C
<i>r<sub>i</sub>48</i>	Economy mode flow temperature gradient	0	255	<b>10</b>	°C x 10
<i>r<sub>i</sub>49</i>	Economy mode external temperature set-point	-50.0	99.9	<b>16.0</b>	°C
<i>r<sub>i</sub>51</i>	Economy mode flow minimum temperature	-50.0	99.9	<b>22.0</b>	°C



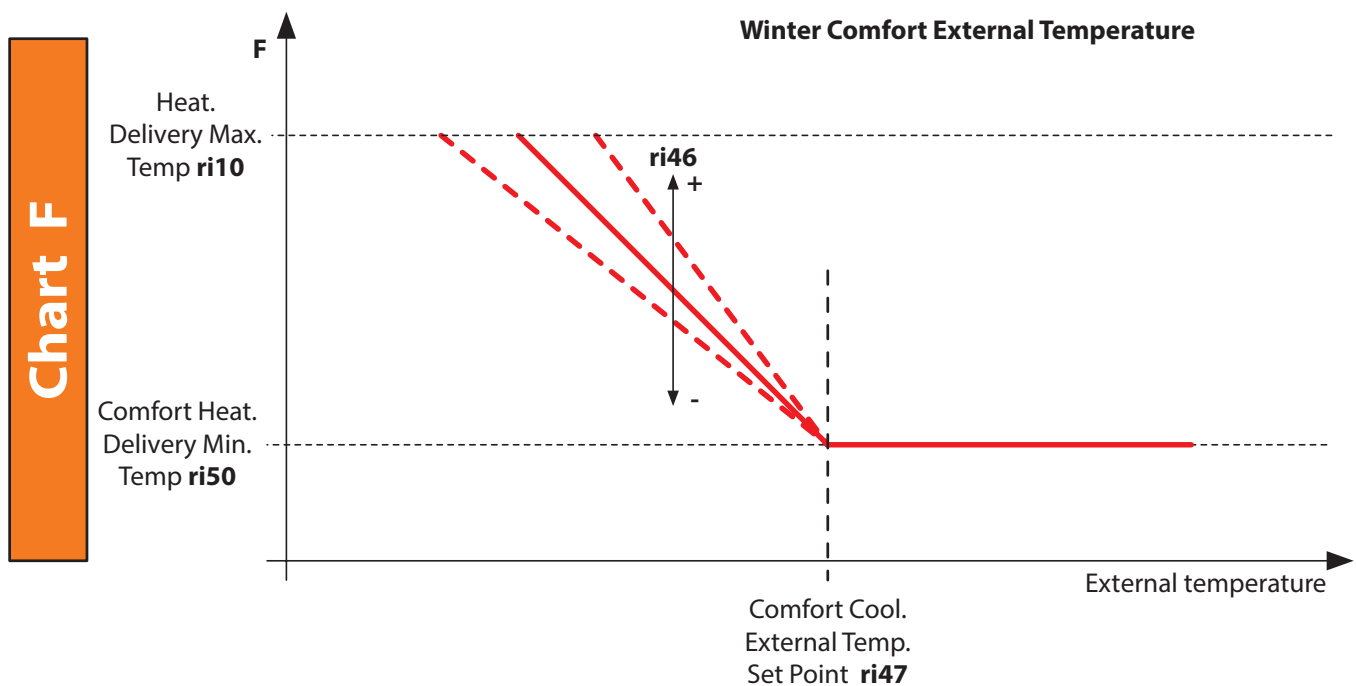
Label	Description of parameters	Min	Max	Default	U.M.
<b>Parameters for the set-point calculation in cooling mode</b>					
rC00	Enabling of chiller consent digital output	OFF	ON	<b>ON</b>	bool
rC10	Boiler consent digital output activation minimum time	0	255	<b>1</b>	sec x 10
rC11	Boiler consent digital output activation delay time	0	255	<b>1</b>	sec x 10
ri12	Maximum value that the flow set-point can assume for mixing valve	0.0	99.9	<b>29.0</b>	°C
ri14	Simulated value of the Comfort room temperature in the event of error or lack of the Easy Clima Controller	5.0	35.0	<b>25.0</b>	°C
ri16	Simulated value of the Economy room temperature in the event of error or lack of the Easy Clima Controller	5.0	35.0	<b>28.0</b>	°C
ri33	Flow temperature dynamic differential proportional band, for comfort and economy mode	0.0	99.9	<b>2.0</b>	°C
ri34	Comfort mode, flow temperature maximum dynamic differential	0.0	99.9	<b>4.0</b>	°C
ri36	Comfort mode flow temperature gradient	0	255	<b>5</b>	°C x 10
ri37	Comfort mode external temperature set-point	-50.0	99.9	<b>32.0</b>	°C
ri35	Economy mode, flow temperature maximum dynamic differential	0.0	99.9	<b>4.0</b>	°C
ri38	Economy mode flow temperature gradient	0	255	<b>5</b>	°C x 10
ri39	Economy mode external temperature set-point	-50.0	99.9	<b>36.0</b>	°C
ri32	Economy mode flow minimum temperature	0.0	20.0	<b>15.0</b>	°C
ri11	Minimum calculation temperature of the dew point	0.1	20.0	<b>5.0</b>	°C
ri01	Enabling of components N and G for the flow set-point calculation for mixing valve	OFF	ON	<b>OFF</b>	bool
ri02	Delta structure for the calculation of the flow set-point for mixing valve	0.1	10.0	<b>4.0</b>	°C

### WINTER COMFORT LT SYSTEM FLOW TEMPERATURE SET-POINT

With system in heating mode, the set-point is calculated on the basis of the following parameters:

- **F**: External climate (linear relation, mainly for compensation in order to adapt the supply of heat depending on the potential heat loss of the building, which changes on variation of the external temperature to different degrees and depending on the structure of the building, etc.);
- **G**: Room Correction Factor (optional) (difference between room temperature and the heating set-point regulated for the room itself, via EASY CLIMA CONTROLLER).

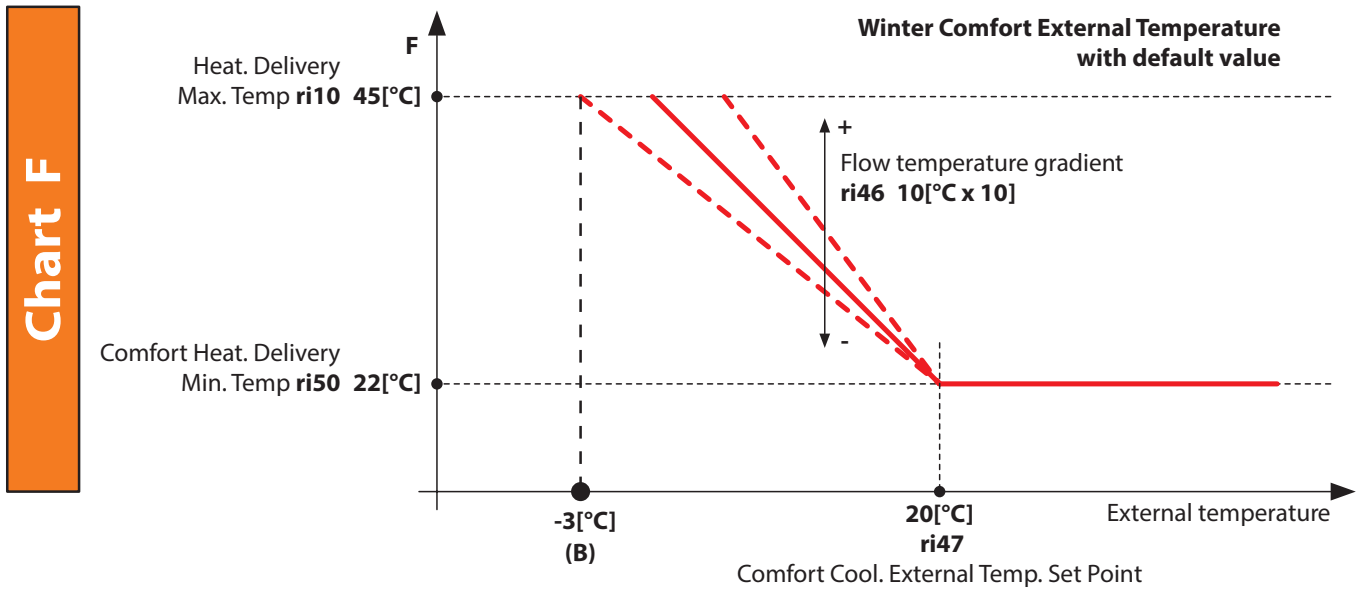
Practically, the winter comfort flow set-point is equal to **F + G**.



**N.B.:** if the external temperature probe is not configured or in error mode, the component F assumes value **ri50** + 15 °C. If the EXTERNAL temperature probe is configured but in error mode, as well as that described above for the calculation of the factor F, an ALARM signal is also determined.



## EXAMPLE OF FLOW TEMPERATURE REGULATION



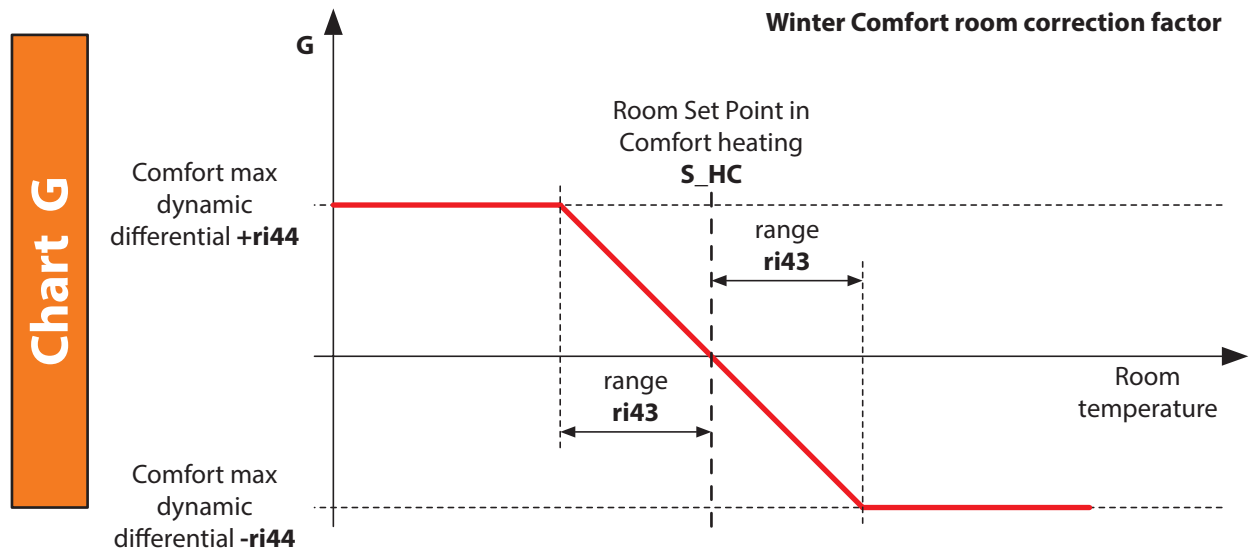
(B) calculation with default values:

$$(B) = ri47 - [(ri10 - ri50) : ri46] \quad | \quad (B) = 20 - [(45 - 22) : 1] = -3$$

**(B) value setting example = -5 °C** (change ri46 value)

$$-5 = 20 - [(45 - 22) : ri46] \quad | \quad ri46 = (45 - 22) : (20 + 5) \quad | \quad ri46 = 0.9 \quad | \quad ri46 = 0.9 \times 10 = 9 \text{ (°C X 10)}$$

**ri46 = 9**



The "Room Correction in heating mode" factor G can be enabled or not using a dedicated parameter **ri01**.

**N.B.** The maximum value of the flow temperature set-point is however limited to the value of the **ri10** parameter (maximum value of the flow set-point due to mixing valve), in order to comply with the EN 1264 Standard. The component G is useful for accelerating the heating process in particular situations: system start-up after a long pause, excessive room temperature drop with respect to the set-point, etc....

If Easy Clima Controller is not configured or is in error mode, the component G is calculated by replacing the temperature value detected with the **ri13** parameter (adjustable from 5.0° to 35.0°C, with 0.1 °C resolution and Default value =20.0°C).

If the room temperature probe is configured but in error mode, as well as that described above for the calculation of the factor G, an ALARM signal is also determined.

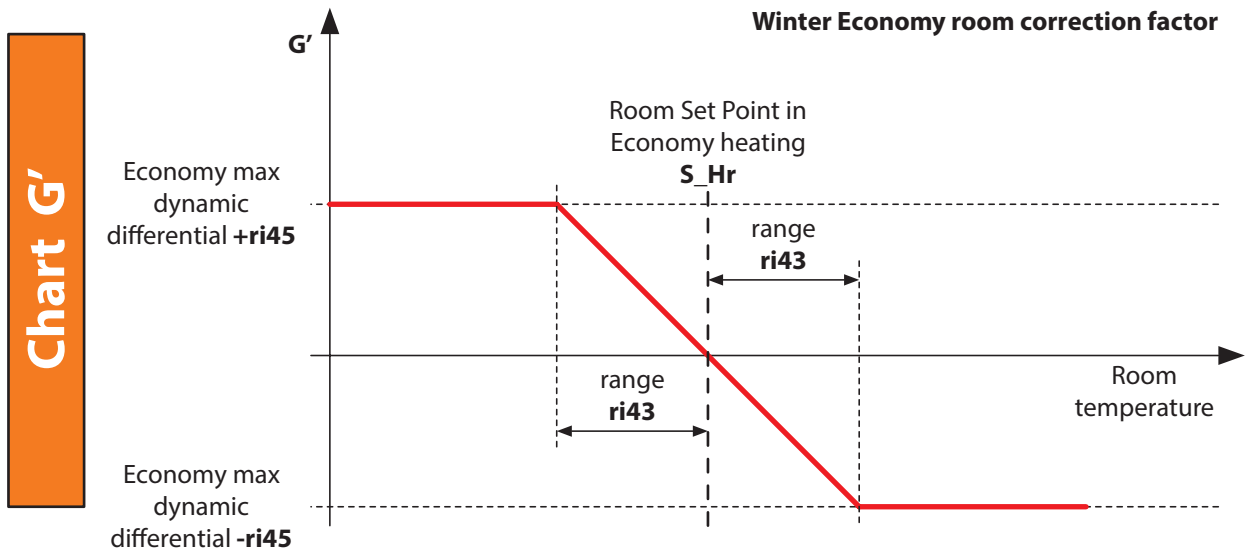
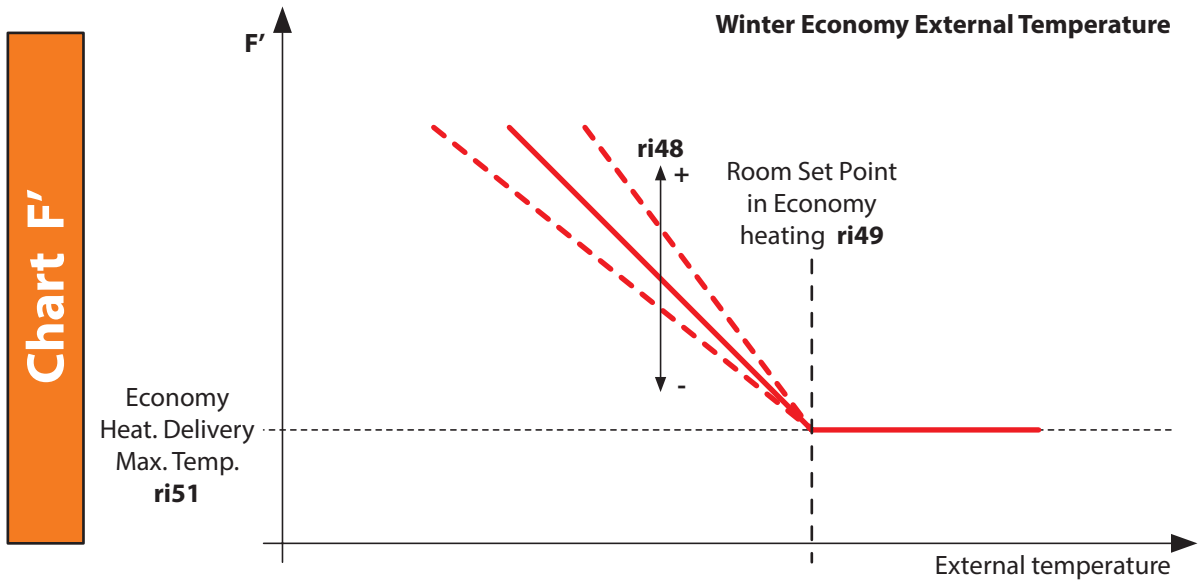
If it is true that on adding the factor G to F (max = **ri44**), the value of **ri10** must not be exceeded, the same must apply if the factor F is subtracted from the factor F (min = **ri44**), which in this case, MUST NOT result lower than the value of **ri50**. If the external temperature probe is not configured and the temperature probe in the room is also not configured or in error mode, the heating flow set-point becomes the only correct value **ri50** ONLY upwards, from the G factor calculated "without Room Temperature Probe": The system becomes a Comfort "Fixed Point" adjustment.



## WINTER ECONOMY LT SYSTEM FLOW TEMPERATURE SET-POINT

The flow set-point in economy heating mode is calculated in the presence of a heating request in the Economy status (from keyboard or from digital input).  
The calculation procedure is the same as the comfort flow set-point, but using the Economy parameters.

$$\text{Winter economy flow set-point} = F' + G'$$







## SUMMER COMFORT LT SYSTEM FLOW TEMPERATURE SET-POINT

With the system in cooling mode, the set-point is calculated on the basis of:

- Value **H**, i.e. the dew point calculated on the basis of the room humidity temperature conditions;
- Value **DST**, i.e. the delta structure value set via **ri 02** parameter);
- Value **L**, i.e. the minimum flow temperature in cooling mode (value set via **ri 32** parameter);
- Value **M**, i.e. on the basis of the external temperature, it is the value obtained from the climatic curve. (Useful component in the event of systems without room temperature and humidity probe).
- Value **N**, i.e. the summer room correction factor calculated on the basis of the difference between the room temperature and the set-point value in cooling mode.

The calculation formula is the following:

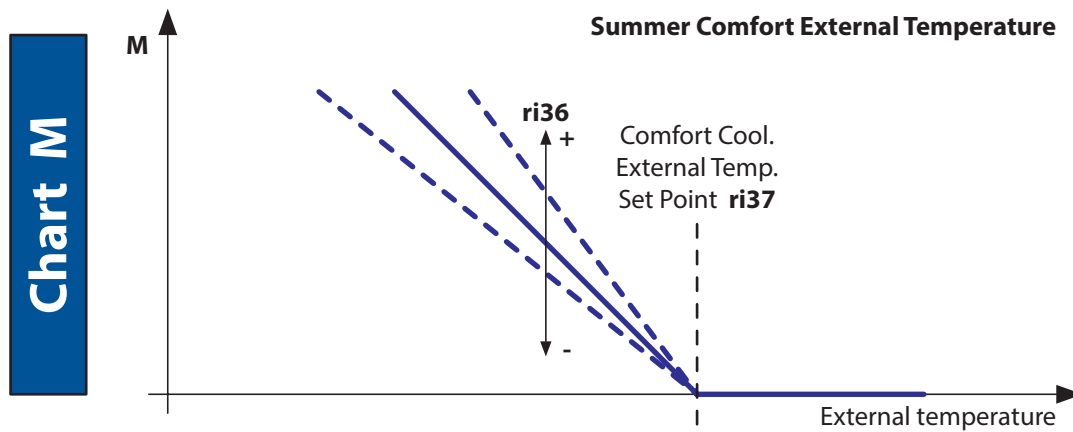
$$\text{Summer comfort flow set-point} = \text{Max} (L + M + N; H - \text{DST})$$

### Notes

The "DST-Delta Structure" factor is generally set depending on the type of radiating surface (floor, ceiling, wall...), as each type is characterised by a different structure and heat inertia.

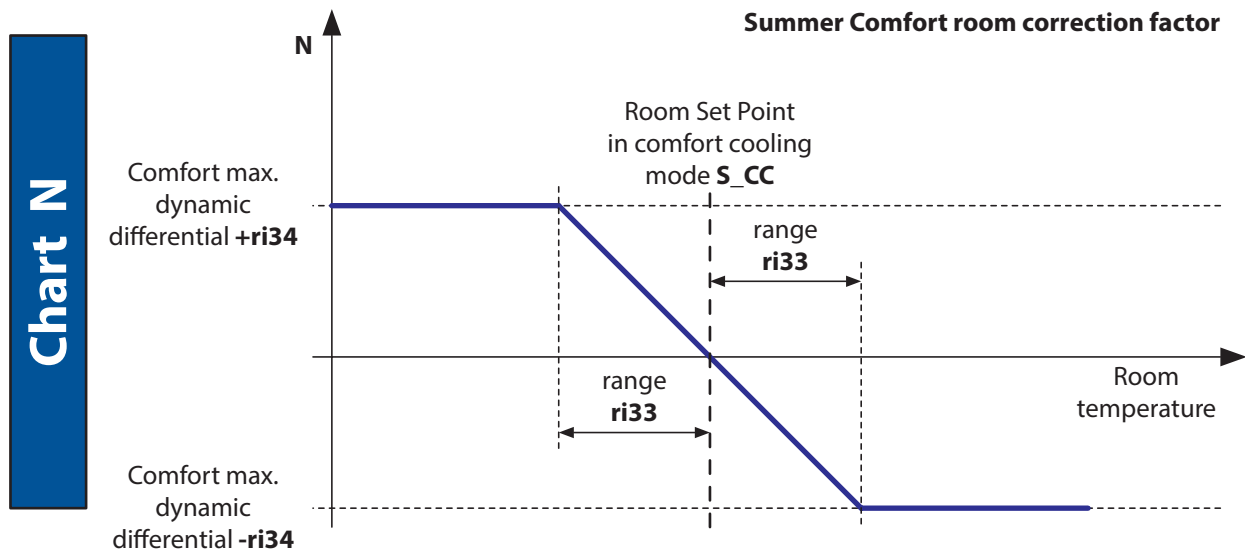
If the room temperature probe and/or room humidity probe are not configured or in error mode, the component formed from "H - DST", assumes value of 0.

Note: the minimum value that the H factor can assume is 5 U%



**Note:** if the external temperature probe is not configured or in error mode, the component M assumes value 0.

If the EXTERNAL temperature probe is configured but in error mode, as well as that described above for the calculation of the factor M, an ALARM signal is also determined.





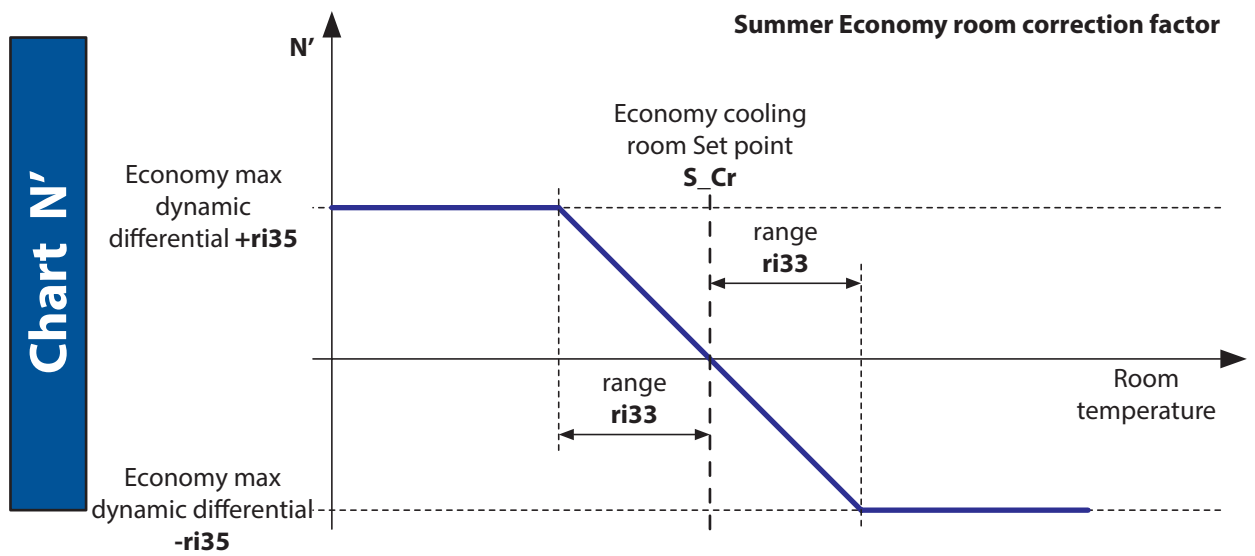
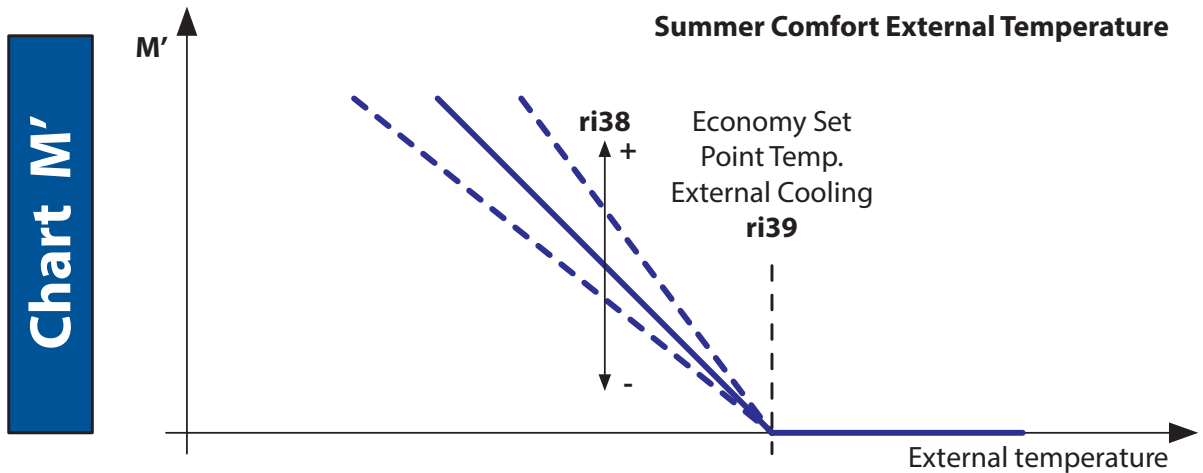
If Easy Clima Controller is not configured or is in error mode, the component N is calculated by replacing the temperature value detected with the **r14** parameter (adjustable from 5.0° to 35.0°C, with 0.1 °C resolution and Default value =20.0°C). If the room temperature probe is configured but in error mode, as well as that described above for the calculation of the factor N, an ALARM signal is also determined.

**N.B.** The result of the L+M+N calculation is limited to the **r12** and **r32** jobs

**SUMMER ECONOMY LT SYSTEM FLOW TEMPERATURE SET-POINT**

The flow set-point in economy cooling mode is calculated in the presence of a cooling request in the Economy status (from key or from digital input). The calculation procedure is the same as the comfort flow set-point, but using the economy parameters.

The calculation formula is the following:  
 Summer economy flow set-point = Max (L + M' + N'; H - DST)





## 10 CHECK HEATING AND COOLING REQUEST

### LT AREA HEATING AND COOLING REQUEST

The control of the energy request from LT area allows to produce and introduce water heated in winter and cooled in the summer into the low temperature radiating system, mixed according to a flow set calculated in order to reach the room temperature desired by the final user.

All this safeguarding the safety of the system itself from water temperatures that are too high or too low, environment freezing etc.

The LT area system heating request check takes place:

- Via the LT room thermostat digital input
- Via the room temperature(Easy Clima Controller)/room temperature set-point comparison

The call of a LT area leads to:

- Switch-on of the LT system pump
- Switch-on of the LT area valve
- Switch-on of boiler or chiller
- Modulation of the 0-10 V analogue servomotor.

### PARTICULAR OPERATION OF THE LT AREA INPUT REQUEST

Using the **L01** parameter, it is possible to set the activation of the LT system in heating and in cooling mode from LT digital input, from set-point (in presence of Easy Clima Controller) or from both in parallel

Label	Description of parameters	Min	Max	Default	U.M.
<b>System configuration</b>					
<b>L01</b>	Parameter for the operation definition of the LT area valve: 0 = disabled 1 = Activated only on digital input request 2 = Activated from set-point and digital input 3 = The request for energy is activated both from set-point and from digital input, but the LT area valve activates only from set-point.	0	3	<b>3</b>	num

### HT AREA HEATING AND COOLING REQUEST

The control of the energy request from HT area allows to produce and introduce heated water in winter and cooled water in summer into the high temperature system (radiators, fan coils, etc.) This is regulated by sets defined directly on the boiler/chiller, in order to reach the room temperature desired by the final user.

When managing the HT system heating request, safety controls of the system itself are not envisioned regarding temperatures that are too high or too low. The environment anti-freeze control can be activated.

The HT area system heating request check takes place:

- detecting the request via the HT room thermostat digital input

The call of a HT area leads to:

- switch-on of the HT system pump
- boiler switch-on.

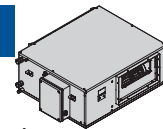
### PARTICULAR OPERATION OF THE REQUEST FROM THE HT THERMOSTAT INPUT

Via the **5t08** parameter, HT system operation can be set in heating mode only, in cooling mode only or in both.

Label	Description of parameters	Min	Max	Default	U.M.
<b>5t08</b>	Setting HT area operating mode. 1 = heating only, 2 = cooling only, 3 = heating and cooling	1	3	<b>3</b>	num

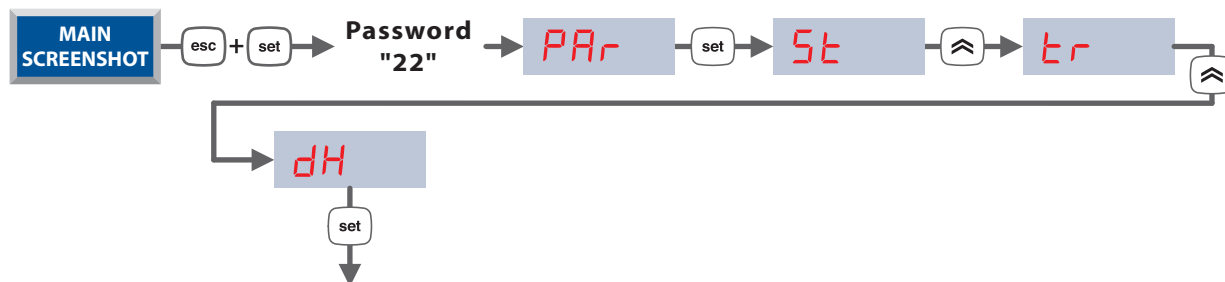


# 11 DEHUMIDIFICATION CONTROL



The dehumidification is controlled via:

- Room probe (Easy Clima Controller or alternatively humidity sensor with 4-20 mA analogue input) /humidity set-point comparison
- Digital input (hygrostat).



Label	Description of parameters	Min	Max	Default	U.M.
<b>Enabling</b>					
<i>dh01</i>	Enabling of dehumidifier output: 0 = disabled 1 = enabled 2 = enabled with HT system 3 = enabled with LT system	0	3	2	num
<b>Operation</b>					
<i>dh02</i>	LT area with dehumidifier flow set-point (dH01=3)	0.0	99.9	15.0	°C
<i>dh03</i>	Enabling of dehumidification digital input	0	2	1	num
<i>dh04</i>	Dehumidification digital input value setting: ON = Contact closed OFF = Contact open	OFF	ON	ON	num
<i>S_U01</i>	Room humidity set-point	0.0	99.9	55.0	% (RH)
<i>dh11</i>	Room humidity hysteresis	0.1	25.5	5.0	% (RH)
<i>dh12</i>	Dehumidifier output activation delay time	0	255	1	sec x 10
<i>dh13</i>	Dehumidifier output activation minimum time	0	255	18	sec x 10
<i>dh14</i>	Maximum limit for activation of the dehumidifier output	0.0	99.9	95.0	% (RH)
<i>dh15</i>	Dehumidifier maximum operating time	1	255	255	min
<i>dh16</i>	Dehumidifier switch-off minimum time after the maximum switch-on time has expired	1	255	1	sec x 10

## ENABLING

Dehumidifier management is enabled with the **dh01** parameter (enabling of dehumidifier output), by setting it different to 0.

## GENERAL OPERATING CONDITIONS

The dehumidification control will never be activated in the heating OFF, Stand-by and ON modes.

In cooling ON mode, as well as the main adjustment (compare room probe/humidity set-point), the following situations are also possible:

- the dehumidifier control output is forced on if the dehumidification request digital input is activated.
- the dehumidification control digital output is switched off immediately if the humidity detected by the relevant probe exceeds the value set in the **dh14** parameter (maximum limit for activation of the dehumidifier output). In this case, the relative alarm is also generated (**Er05**, with automatic rearm when the humidity drops below the threshold);
- the dehumidification control digital output is off for a minimum time set in the **dh16** OFF dehumidifier parameter, if the dehumidifier is running for a period of time longer than the value set in the **dh15** parameter;
- the output is switched off immediately in the event of block alarms of the output itself.



## DEHUMIDIFICATION OPERATING MODE

The dehumidification operating mode is managed by the **dh01** parameter.

<b>dh01</b>	<b>Enabling of dehumidifier output</b>
<b>Value</b>	<b>Description</b>
<b>0</b>	Dehumidifier output disabled
<b>1</b>	Dehumidifier output enabled
<b>2</b>	Dehumidifier output enabled with HT system
<b>3</b>	Dehumidifier output enabled with LT system

### Parameter **dh01** = 0

Dehumidification management is not envisioned.

### Parameter **dh01** = 1

When the room relative humidity exceeds the set-point value added to the hysteresis value and after a set delay, the control unit activates:

- the chiller
- the dehumidifier

### Parameter **dh01** = 2

In this case, the dehumidification phase of the room depends on the HT system as the dehumidifier cooling water is withdrawn "downstream" from the HT pump. Therefore, for correct operation, the switch-on of the relative HT pump must be forced, however keeping the HT area valve off.

When the room relative humidity exceeds the set-point value added to the hysteresis value and after a set delay, the control unit activates:

- the chiller
- the HT system pump
- the dehumidifier

### Parameter **dh01** = 3

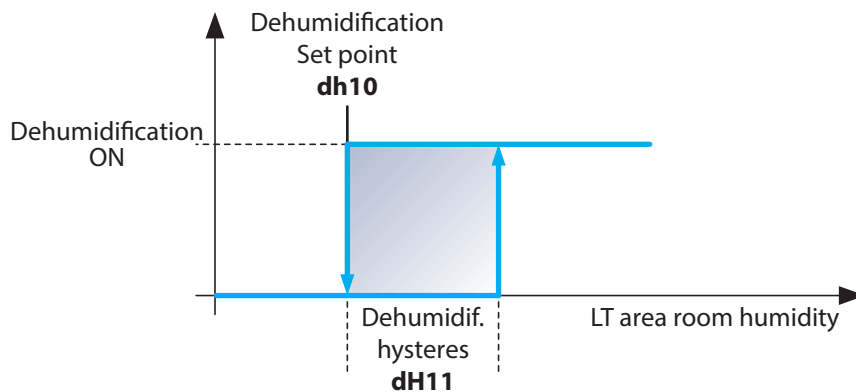
In this case, the room dehumidification phase depends on the LT system as the dehumidifier cooling water is withdrawn downstream from the LT pump mixer;

When the room relative humidity exceeds the set-point value added to the hysteresis value and after a set delay, the control unit activates:

- the chiller
- the LT system pump
- the mixing valve (must maintain a flow temperature equal to the **dh02** parameter)
- the dehumidifier

The value of **dh02** cannot exceed the value of **FT10** (LT system flow temperature upper limit).

In the event of simultaneous activation of dehumidification and cooling in the LT system, the flow temperature set will be equal to that calculated for the LT system.





## DEHUMIDIFICATION DIGITAL INPUT MANAGEMENT

The operating mode of the dehumidification call via digital input is managed by the **dh03** parameter.

<b>dh03</b>	<b>Enabling of dehumidification digital input</b>
<b>Value</b>	<b>Description</b>
<b>0</b>	Digital input disabled
<b>1</b>	Digital input enabled and dehumidification output active
<b>2</b>	Digital input enabled and dehumidification output not active

**Parameter **dh03** = 0**  
Digital input disabled

**Parameter **dh03** = 1**  
Dehumidification activation request from dehumidification digital input and from set-point/room humidity comparison. Both requests activate the dehumidifier output.

**Parameter **dh03** = 2**  
Dehumidification activation request from dehumidification digital input and from set-point/room humidity comparison. The digital input does not activate the dehumidifier output.



## 12 PARTICULAR FUNCTIONS

### HEAT PUMP OPERATING MODE

Via the **St09** parameter, it is possible to define the functionality of the controller on the basis of the system installed:

- Hot-cold system that uses a boiler for heating and a chiller for cooling
- Hot-cold system that uses a heat pump for heating and cooling

<b>St09</b>	<b>DOL4 and DOL6 outputs configuration</b>
<b>Value</b>	<b>Description</b>
<b>0</b>	<ul style="list-style-type: none"> <li>• BOILER on-off</li> <li>• CHILLER on-ff</li> </ul>
<b>1</b>	<ul style="list-style-type: none"> <li>• Heat pump on-off</li> <li>• Summer/winter switch</li> </ul>

**Parameter **St09** = 0**

The production digital outputs are coupled respectively to boiler and chiller.

**Parameter **St09** = 1**

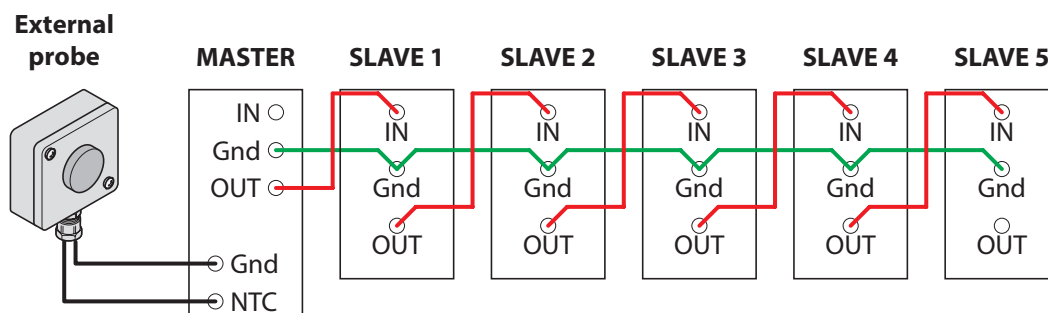
The boiler output is activated from the heating request and the cooling request, while the chiller output will function as summer/winter switch (Summer contact closed/Winter contact open).

### EXTERNAL PROBE SHARING

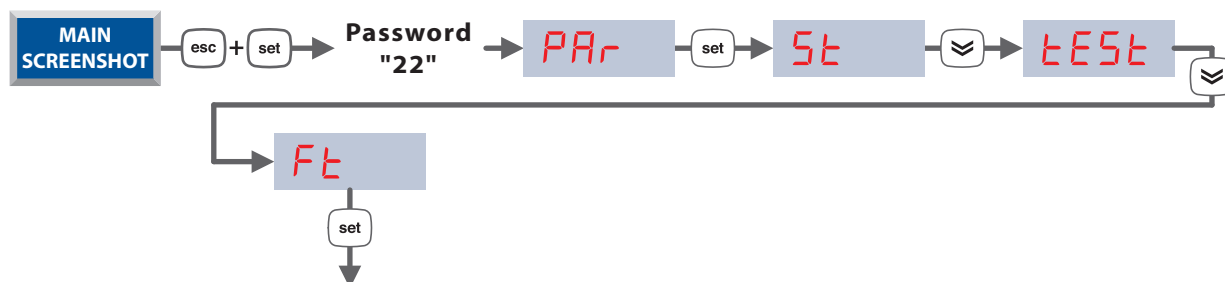
This function has the purpose of allowing the installer to connect just one external probe if there are several controllers present distributed inside the building, to control several areas.

In order to share the external probe, EASY CLIMA controller, which has the external probe connected to its own analogue input for NTC, if enabled, automatically generates a 4-20 mA output proportional to the temperature value read by the NTC probe. Each Easy Clima device then repeats the same signal received at input on its own 4-20mA analogue output, in order to make it available to other Easy Clima devices.

Example electric connection



### REMOTE EXTERNAL PROBE CONFIGURATION





### Remote external probe configuration parameters

Control unit	Label	value to be set
Master	Ft01	1
	Ft02	0
Slave 1 ... Slave 5	Ft01	0
	Ft02	1

any signal conversion errors can be calibrated using the following parameters:

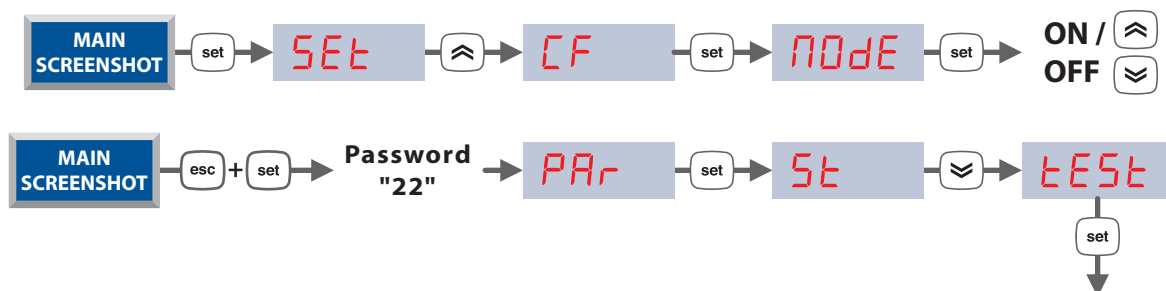
Label	Description of parameters	Min	Max	Default	U.M.
Ft10	Minimum temperature for Current/Temperature transfer function. For 4-20 mA external probe - 4-20 mA output calibration	-50.0	Ft15	<b>-30.0</b>	°C
Ft11	Maximum temperature for Current/Temperature transfer function. For 4-20 mA external probe - 4-20 mA output calibration	Ft14	99.9	<b>50.0</b>	°C
Ft12	Minimum current for Current/Temperature transfer function. For 4-20 mA external probe - 4-20 mA output calibration	4	Ft17	<b>4</b>	mA
Ft13	Maximum current for Current/Temperature transfer function. For 4-20 mA external probe - 4-20 mA output calibration	Ft16	20	<b>20</b>	mA

### SYNOPTIC

This function allows the installer to test operations of the digital and analogue outputs.

The function can only be activated with mode set at OFF (all utilities and regulations are disabled).

A string appears on the display on activation of the function, which identifies the load to activate, according to the table given below:



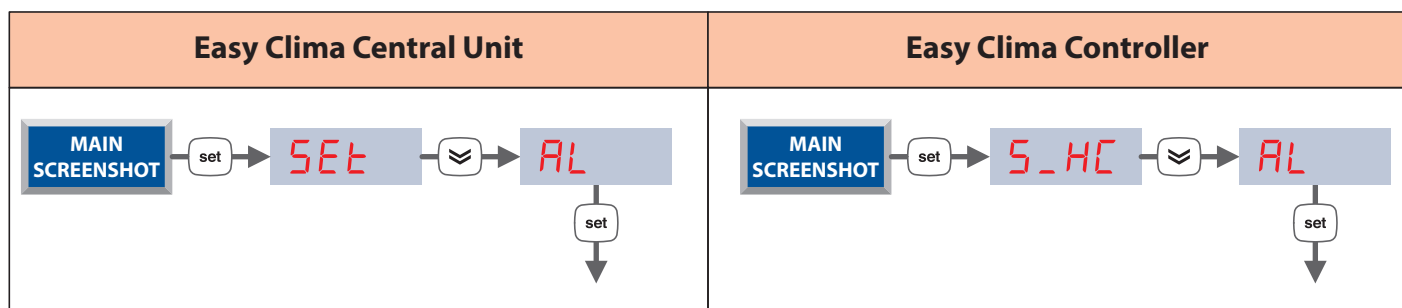
Label	Description of parameters
OUT1	LT pump management
OUT2	LT area valve management
OUT3	HT area pump management
OUT4	Boiler management
OUT5	Dehumidifier management
OUT6	Chiller management
OUT7	Not used
OUT8	Not used
OUT9	HT area valve management
OUT0	Modulating mixing valve management: if ON then OUT 0 = 10volt if OFF then OUT 0 = 0volt





## 13 DIAGNOSTICS

The diagnostics consists in the management of everything that is associated to the alarms.  
For Easy Clima device, all alarms have “automatic rearm”.

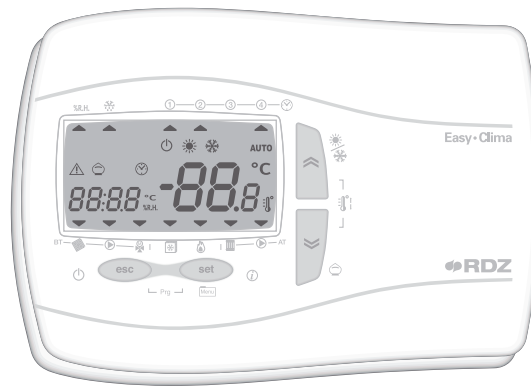


Below find the list of various alarm codes that appear and their diagnostic meaning:

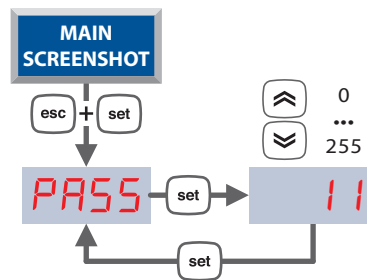
Code	Alarm	Alarm management	Digital/Analogue
Er00	General alarm	All outputs are switched off	Digital
Er01	LT Flow temperature probe error	All outputs are switched off	Analogue
Er02	External Temperature Probe Error	Operation without Ext. probe	Analogue
Er03	Area 1 Room Temperature Probe Error	Operation without Room probe	Analogue
Er04	Area 1 Room Humidity Probe Error from AIL2	Operation only with humidistat in DIL5 or with 4-20 mA probe in AIL3	Analogue
Er04	Area 1 Room Humidity Probe Error from AIL3	Operating only with humidistat in DIL5	Analogue
Er05	Clock fault error	Operating without automatism of the time bands (reset date/time)	Digital
Er06	Exceeding humidity maximum threshold in progress	Dehumidifier switch-off with Chiller and system (HT or LT) remaining in operating mode	Digital
Er07	Automatic stand-by in progress	Anti-freeze management only	Digital
Er08	LT system temperature below lower SAFETY limit, parameter <a href="#">Er31</a>	Switch-off of all LT system loads. Manual rearm in main page with long pressure of the "ESC" key until the error disappears	Digital
Er09	LT system higher temperature SAFETY limit exceeded, parameter <a href="#">Er30</a>	Switch-off of all LT system loads. Manual rearm in main page with long pressure of the "ESC" key until the error disappears	Digital
Er46	Clock to adjust error	Operating without automatism of the time bands	Digital



## 14 EASY CLIMA CONTROLLER



It is possible to access some technical parameters via Easy Clima Controller, setting the **PASS** parameter at "11" as in the following screen. These parameters are however present in the controller menu.



Label	Description of parameters	Min	Max	Default	U.M.
r, 10	Maximum value that the flow set-point can assume for mixing valve	0.0	99.9	<b>45.0</b>	°C
r, 43	Flow temperature dynamic differential proportional band, for comfort and economy mode	0.0	99.9	<b>2.0</b>	°C
r, 46	Comfort mode flow temperature gradient	0	255	<b>10</b>	°C / 10
r, 47	Comfort mode external temperature set-point	-50.0	99.9	<b>20.0</b>	°C
r, 48	Economy mode flow temperature gradient	0	255	<b>10</b>	°C / 10
r, 49	Economy mode external temperature set-point	-50.0	99.9	<b>16.0</b>	°C
r, 50	Comfort mode flow minimum temperature	-50.0	99.9	<b>22.0</b>	°C
r, 51	Economy mode flow minimum temperature	-50.0	99.9	<b>22.0</b>	°C
r, 36	Comfort mode flow temperature gradient	0	255	<b>5</b>	°C / 10
r, 37	Comfort mode external temperature set-point	-50.0	99.9	<b>32.0</b>	°C
r, 32	Economy mode flow minimum temperature	0.0	20.0	<b>15.0</b>	°C
r, 60	Cooling proportional band	0.1	99.9	<b>6.0</b>	°C
r, 80	Heating proportional band	0.1	99.9	<b>6.0</b>	°C



CLICK | SCAN



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