

TOUCH WiFi THERMOSTAT



INSTALLATION AND USER MANUAL **EN**



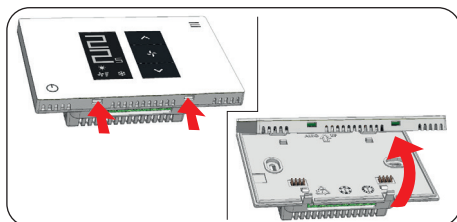
INSTALLATION

WARNING!

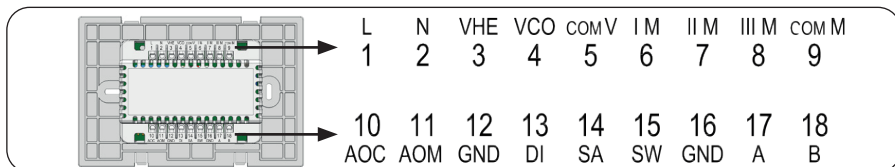
- **Make sure the mains power is off before wiring the appliance.**
- **This appliance must be installed and wired by qualified technicians and in compliance with the current standards.**
- **Use cable ties to group the SELV low-voltage cables (terminals 10 to 18) and high-voltage cables (terminals 1 to 9), so that the two groups of cables are kept separate from each other. Securing the cables separately should prevent accidentally disconnecting a wire from reducing the double insulation of the SELV low-voltage part.**

1. DISCONNECT THE ELECTRICAL POWER SUPPLY.

2. Detach and remove the faceplate by pressing on the two clips at the bottom of the thermostat and lifting it up from the base.



3. Connect the cables, inserting them into the corresponding terminals, as shown in the examples below. Refer to the adjacent wiring diagrams for the configuration that corresponds to the specific application.

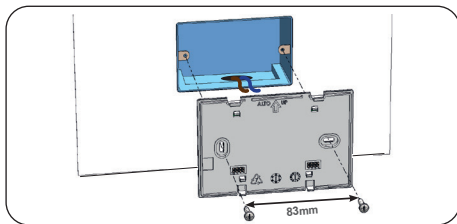


LEGEND

VHE:	Heating valve on/off output
VCO:	Cooling valve on/off output
COM V:	Valve common
I M:	AC fan motor speed 1
II M:	AC fan motor speed 2
III M:	AC fan motor speed 3
COM M:	Fan motor common
DI:	Digital input
AOC:	Cooling valve 0..10 V output

AOM:	Heating valve or EC fan motor 0..10 V output
SA:	Remote room temperature air probe
SW:	Supply water probe
A, B:	RS485 Modbus® port
ECM:	EC motor 0..10V
M:	Three-speed AC motor
Sc:	Actuator 0..10 V
CF:	Window contact

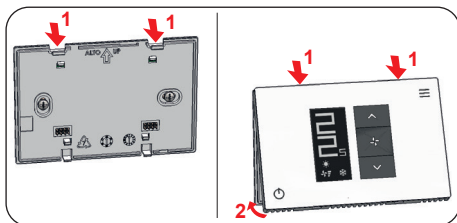
4. Fasten the Smart Fan chrono-thermostat to the wall using the screws provided.



WARNING!

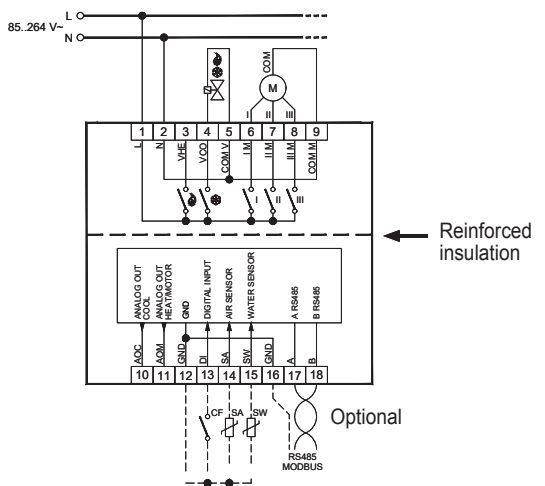
Smart Fan must be installed inside a wall box (e.g. 503) so that the terminals are inaccessible to the user for electrical safety reasons.

5. Optional: Set the dip switches on the rear of the faceplate. See the Dip Switches section (optional). If it is not necessary to set the dip switches, proceed to the next step.
6. Refit the faceplate by first inserting it on the hooks at the top of the base (1) and then hooking it onto the clips at the bottom (2). Remove the protective film from the faceplate once installation is complete.



2-PIPE SYSTEM WIRING DIAGRAM

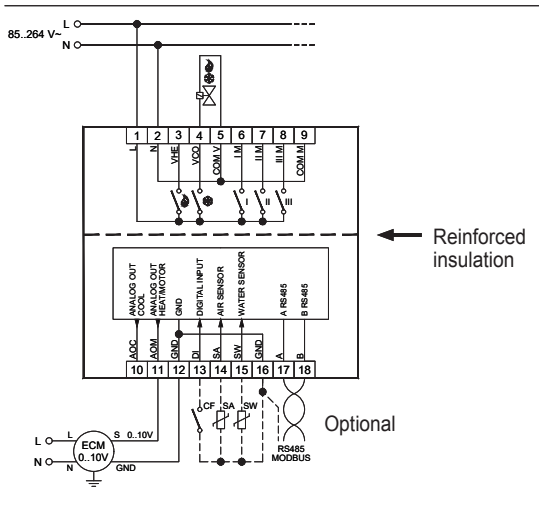
Fig. 1: Connection diagram for a 2-pipe system driving a hot/cold on/off valve and a three-speed AC fan.



Parameters to be configured:

P03	2 PIPES
P04	3-SPEED AC FAN MOTOR
P05	ON/OFF RELAY OUT

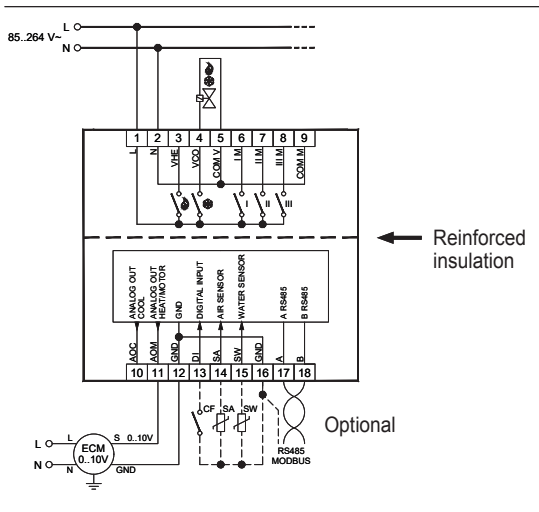
Fig. 2: Connection diagram for a 2-pipe system driving a hot/cold on/off valve and a proportional EC fan.



Parameters to be configured:

P03	2 PIPES
P04	EC FAN MOTOR
P05	ON/OFF RELAY OUT

Fig. 3: Wiring diagram for a 2-pipe system driving a 0.10V hot/cold actuator and a three-speed AC fan.

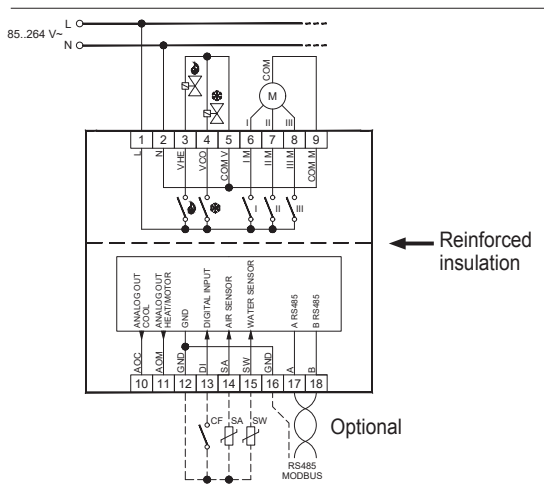


Parameters to be configured:

P03	2 PIPES
P04	3-SPEED AC FAN MOTOR
P05	PROPORTIONAL ANALOGUE OUTPUT

4-PIPE SYSTEM WIRING DIAGRAM

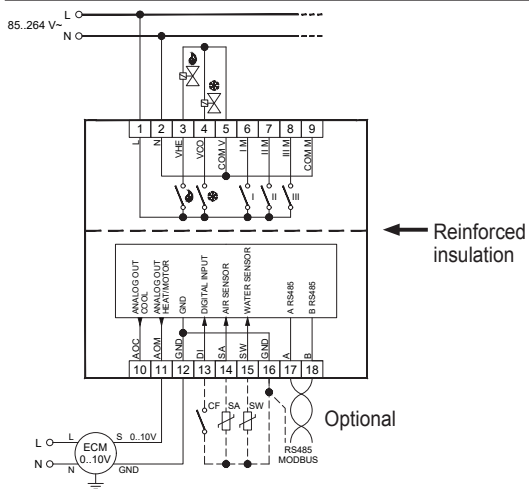
Fig. 4: Connection diagram for a 4-pipe system driving two hot/cold on/off valves and a three-speed AC fan.



Parameters to be configured:

P03	4 PIPES
P04	3-SPEED AC FAN MOTOR
P05	ON/OFF RELAY OUT

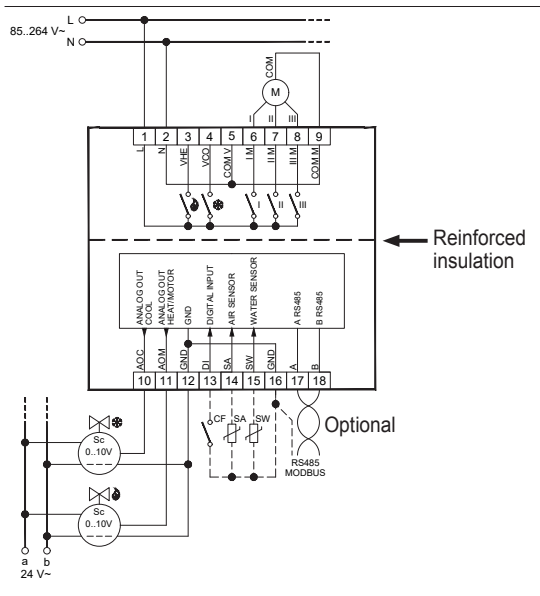
Fig. 5: Connection diagram for a 4-pipe system driving two hot/cold on/off valves and a proportional EC fan.



Parameters to be configured:

P03	4 PIPES
P04	EC FAN MOTOR
P05	ON/OFF RELAY OUT

Fig. 6: Wiring diagram for a 4-pipe system driving two 0..10V hot/cold actuators and a three-speed AC fan.







Parameters to be configured:

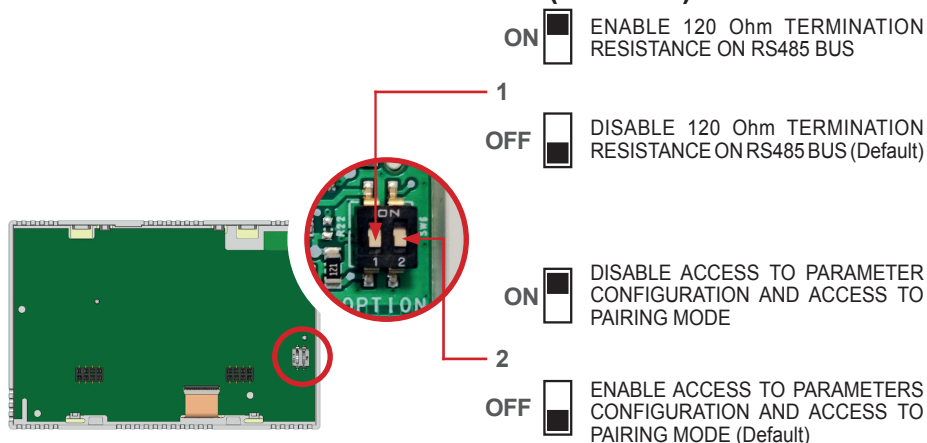
P03	4 PIPES
P04	3-SPEED AC FAN MOTOR
P05	PROPORTIONAL ANALOGUE OUTPUT

7. Connect the chrono-thermostat to its electrical power supply.
8. Configure the parameters indicated on the selected wiring diagram. Proceed as follows:
 - a. Press the + buttons simultaneously for 5 seconds to access the configuration. The first parameter of the 'U' group appears on the display: **U07 CHRONO PROGRAM**. If the is displayed, access to the parameters is not prohibited; see section 'Dip Switch Configuration'.
 - b. Press the button to display the first parameter of the 'P' group: **P03 SYSTEM TYPE**.
 - c. Pressing the to scroll through the various parameters of the 'P' group.
 - d. Pressing the button to edit the selected parameter; the value to be set is underlined.
 - e. Pressing the to modify the value of the displayed parameter. Changes to parameters are saved automatically.
 - f. Pressing the button to exit edit mode for the selected parameter; the number of the parameter is underlined.
 - g. To exit the configuration, press or wait for two minutes.
9. Download the Smart Fan App.
If you do not wish to use the app, skip the following steps.

N.B.: It is also possible to use the product without the App, with WiFi switched off. In this case, it will not be possible to set-up a time schedule, which means that Smart Fan will function as a simple thermostat (not as a chrono-thermostat).

10. Press the  +  +  buttons simultaneously for 5 seconds.
11. The , the MAC address and the words 'PAIRING' appear on the display for about 30 minutes.
12. Start the App and register the new user (email and password).
 - a. Log in.
 - b. Select the 'Add Device' option and choose Smart Fan.
 - c. Follow the tutorial in the App to connect the device to the desired WiFi network.

CONFIGURING THE DIP SWITCHES (OPTION)



This device is equipped with two dip switches located on the rear of the faceplate, which may be configured to enable or disable the following functions:

Dip switch number 1 :

Enable/Disable 120 Q termination resistor; enable only if Smart Fan is the terminal element of the RS485 network.

Dip switch number 2:

Enable/Disable access to the configurable chrono-thermostat parameters and Pairing mode. Use a small slotted screwdriver or similar tool to set-up the dip switches.

















ADDITIONAL AVAILABLE DOCUMENTATION

Scan the QR code on the side or log on to the website www.smartfan.it to download all the available commissioning documentation for Smart Fan:













- Complete instruction manual
- Implementing an RS485 network
- Modbus® register table
- Configuration Parameters



TOUCH BUTTON FUNCTIONS

	<ul style="list-style-type: none"> • Press and release: Switch on/off. • Press for 5 s: change the display mode (Minimised or Full). • When in Configuration Parameters, exit the parameter menu. 		<ul style="list-style-type: none"> • Press simultaneously for 5 seconds: access the chrono-thermostat parameter menu if the configuration has been enabled.
	<ul style="list-style-type: none"> • When in Configuration Parameters, cycle through parameters/set value. • View/Reduce set-point temperature value. 		<ul style="list-style-type: none"> • Press simultaneously for 5 seconds: enter Pairing mode to associate the chrono-thermostat with the App.
	<ul style="list-style-type: none"> • View/Increase set-point temperature value. • When in Configuration Parameters, cycle through parameters/set value. 		
	<ul style="list-style-type: none"> • View the set speed/Press repeatedly to set the fan speed: 1, 2, 3, auto. • When in Configuration Parameters, cycle between groups U - P - C - M. 		<ul style="list-style-type: none"> • Press simultaneously for 10 seconds: lock the keyboard (display shows ). To unlock the keyboard, press the three keys simultaneously for 10 seconds (the display shows ).
	<ul style="list-style-type: none"> • Press and release: cycle between comfort, reduction and program modes. • Press for 8 s: change the from summer (cooling) to winter (heating) mode and vice versa. • When in Configuration Parameters, enter edit mode for the selected parameter/exit edit mode. 		
			<ul style="list-style-type: none"> • Press simultaneously for 1 second: access the technical info screen.
			
			<ul style="list-style-type: none"> • Press simultaneously for 5 seconds: When in parameter configuration: reset the chrono-thermostat, restoring the parameters to the factory settings.
			

DISPLAY ICONS

	Waiting for pairing Chrono-thermostat/ App		Antifreeze Mode
	Wi-Fi connected		Clogged filter (the filter must be cleaned).
	Heating on		Heating element active (electric heater systems only).
	Cooling on		The supply water temperature is too low (heating) or too high (cooling).
	Temperature regulation in Economy mode		Access to the configurator parameters is prohibited.
	Temperature regulation in Comfort mode		
	Program Mode		

TECHNICAL SPECIFICATIONS

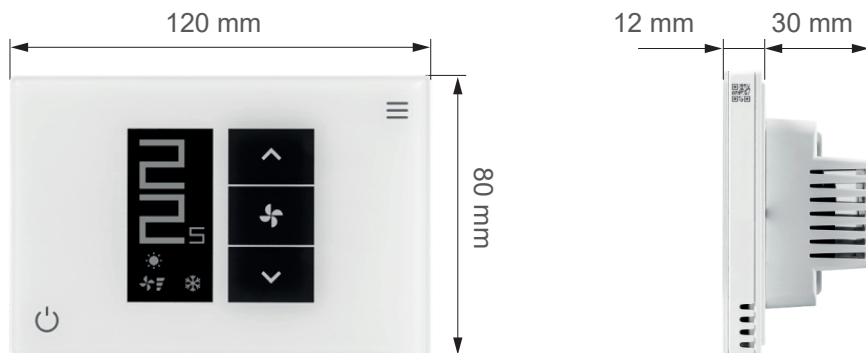
Type	Semi-recessed chrono-thermostat
Semi-recessed chrono-thermostat	ePaper 2.13"
Power supply:	85..264 V - 50..60 Hz
Power consumption	2.5 W
Room temperature	
Regulation range	5 °C .. 35°C
Resolution	0.1°C
Precision	± 1 °C
Hysteresis	0.2 °C (adjustable)
Antifreeze	0.0 .. 20.0°C
Type of internal sensor	NTC 10 kΩ @ 25 °C ±1% Beta 3977 (25/85 °C) ±1%
Remote probe (optional):	NTC 10 kΩ @ 25 °C ±1% Beta 3977 (25/85 °C) ±1%
Supply water temperature	
Remote probe (optional):	NTC 10 kΩ @ 25 °C ±1% Beta 3977 (25/85 °C) ±1%
Proportional outputs	
Signal range	0..10 V (adjustable)
Signal precision	± 0.53 V
Minimum actuator impedance:	
1 x 0..10V output	1000 Ohm
2 x 0..10V outputs	2000 Ohm
Proportional outputs	
Valve output contact rating (terminals 3, 4)	-
Fan output contact rating (terminals 6, 7, 8)	~ 3 (1) A 250 V
Total contact rating (valve+fan)	~ 4 (1) A 250 V
Communication port	9 A MAX
WiFi:	RS485 Modbus® RTU
Frequency	802.11b/g/n
Type of action	2.4 .. 2.5 GHz
Pollution rating	1 / 2
Protection rating	IP 30
Impulse withstand voltage	2500 V
Software class	A

EMC test voltage	230 V ~ 50 Hz
EMC test current	10 mA
'Short' fault mode exclusion distance tolerance:	±0.15 mm
Ball pressure test temperature	75°C
Operating temperature	0 °C .. 40°C
Humidity limits	20% .. 80% RH (non-condensing)

CLASSIFICATION ACCORDING TO COMMUNICATION 2014/C 207/02

Class:	V
	EU Reg. 813/2013

DIMENSIONS



SMART FAN - CONFIGURATION PARAMETERS

Firmware Version

The configuration parameters described below refer to Smart fans updated to Firmware version 0015 or later.

Parameter Groups

The parameters are divided into 4 groups to simplify consultation and modification:

- Uxx user interface customisation parameters
- Pxx system configuration parameters
- Cxx control configuration parameters
- Mxx Modbus communication configuration parameters

Parameter Display

Access the parameter display and editing menu to scroll through the parameter list and select which group to display (U,P,C,M).

Each screen displays the parameter number, the text and the set value, the latter being either a numerical value with or without units, or a text.

As many parameters are duplicated and have different settings, depending on the operating mode, the screen may also display a flame/snow symbol indicating whether the parameter is valid in heating or cooling mode.

In such cases it is possible to display the same parameter (same Text) split into a first parameter with the flame symbol and a second with the snow symbol. In heating mode the value of the first parameter is loaded and implemented, while in cooling mode the value of the second is loaded and implemented.

In the case of universal parameters that are valid in either heating or cooling mode, the flame/snow symbol is not displayed.

Scrolling and modifying the parameters

To access the parameter display and editing menu, press the ON/OFF + Down Arrow buttons simultaneously for 5 seconds. The first parameter of the 'U' group is displayed.

Press the Speed button to switch between groups, press the Speed button several times to cycle between the groups

Uxx -> Pxx -> Cxx -> Mxx -> and restart from Uxx.

Press the Arrow buttons to move to the next (or previous) parameter.

To modify the displayed parameter, first press the Mode button to shift the focus from the parameter number Uxx to its current value, the current field is highlighted by a line below the value (underlined text).

When the current value of the parameter is highlighted (underlined), modify the value using the Arrow buttons.

To move to the next (or previous) parameter, first press the Mode button to move the focus back to the parameter number (Uxx underlined), and then use the Arrow buttons.

To exit the parameter menu, press the ON/OFF button, the system will also exit the parameter menu automatically if none of the buttons are pressed for more than 2 minutes.

Parameter Tables

The parameter tables list the available parameters and summarise the values that can be configured:

Dflt	factory-set default value
Parameter	parameter identification number
Text	text description of the parameter
H/C	mode (heating or cooling or both) in which the parameter is used (is valid)
Values	range of numeric and text values that may be assumed by the parameter
MIN VAL	minimum value that may be assumed by the parameter
MAX VAL	maximum value that may be assumed by the parameter
UM	unit of measurement used to express the parameter

Tab.1 Uxx user interface customisation parameters

Dflt	Parameter	Text	H/ C	Values	MIN VAL	MAX VAL	UM
0	U07	CHRONO PROGRAM		0 DISABLED - 1 ENABLED	0	1	-
0	U09	WIFI		0 DISABLED - 1 ENABLED - 2 PAIRING - 3 ERASE	0	3	-
100	U20	MIN SET-POINT	H	5.0 .. 35.0°C	50	350	°C/10
300	U21	MAX SET-POINT	H	5.0 .. 35.0°C	50	350	°C/10
150	U24	MIN SET-POINT	C	5.0 .. 35.0°C	50	350	°C/10
300	U25	MAX SET-POINT	C	5.0 .. 35.0°C	50	350	°C/10
1	U30	MODIF COMFORT SETP		0 DISABLED - 1 ENABLED - 2 LOCAL - 3 BAND	0	3	-
1	U31	MODIF ECONOMY SETP		0 DISABLED - 1 ENABLED - 2 LOCAL - 3 BAND	0	3	-
30	U34	MODIF BAND SETP		±0.1 .. ±10.0 °C	1	100	°C/10
0	U35	MODIF FAN SPEED		0 GLOBAL - 1 LOCAL	0	1	
1	U40	COMFORT MODE C	(H)	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFI- FIABLE - 3 TEMPORARY FIXED	0	3	-
1	U41	ECONOMY MODE C	(H)	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFI- FIABLE - 3 TEMPORARY FIXED	0	3	-
1	U42	OFF MODE C	(H)	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFI- FIABLE - 3 TEMPORARY FIXED	0	3	-
0	U44	COMFORT MODE TIME C	(H)	0 .. 720 hours	0	720	hours
0	U45	ECONOMY MODE TIME C	(H)	0 .. 720 hours	0	720	hours
0	U46	OFF MODE TIME C	(H)	0 .. 720 hours	0	720	hours

Dflt	Parameter	Text	H/ C	Values	MIN VAL	MAX VAL	UM
1	U48	COMFORT MODE M	(H)	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-
0	U49	ECONOMY MODE M	(H)	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-
1	U50	OFF MODE M	(H)	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-
0	U52	COMFORT MODE TIME M	(H)	0 .. 720 hours	0	720	hours
0	U53	ECONOMY MODE TIME M	(H)	0 .. 720 hours	0	720	hours
0	U54	OFF MODE TIME M	(H)	0 .. 720 hours	0	720	hours
0	U56	DEFAULT MODE M	(H)	0 COMFORT - 1 ECONOMY - 2 OFF	0	2	-
0	U58	ENABLE HEAT/COOL MODES		0 DISABLED - 1 ENABLED	0	1	-
1	U60	COMFORT MODE C	C	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-
1	U61	ECONOMY MODE C	C	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-
1	U62	OFF MODE C	C	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-
0	U64	COMFORT MODE TIME C	C	0 .. 720 hours	0	720	hours
0	U65	ECONOMY MODE TIME C	C	0 .. 720 hours	0	720	hours
0	U66	OFF MODE TIME C	C	0 .. 720 hours	0	720	hours
1	U68	COMFORT MODE M	C	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-
0	U69	ECONOMY MODE M	C	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-

Dflt	Parameter	Text	H/ C	Values	MIN VAL	MAX VAL	UM
1	U70	OFF MODE M	C	0 DISABLED - 1 ENABLED - 2 TEMPORARY MODIFIABLE - 3 TEMPORARY FIXED	0	3	-
0	U72	COMFORT MODE TIME M	C	0 .. 720 hours	0	720	hours
0	U73	ECONOMY MODE TIME M	C	0 .. 720 hours	0	720	hours
0	U74	OFF MODE TIME M	C	0 .. 720 hours	0	720	hours
0	U76	DEFAULT MODE M	C	0 COMFORT - 1 ECONOMY - 2 OFF	0	2	-
1	U80	FAN BUTTON LIMITATION	H	0 .. 16 (Tab.2)	0	16	-
1	U81	FAN BUTTON LIMITATION	C	0 .. 16 (Tab.2)	0	16	-
1	U82	ECONOMY MAX FAN SPEED		0 MIN - 1 MED - 2 MAX	0	2	-

Tab.2 Limiting the Speed button

Value	Fan button function
0	NO FUNCTION
1	1->2->3->AUTO
2	1->2->AUTO
3	1->AUTO
4	OFF->1->2->3->AUTO
5	OFF->1->2->AUTO
6	OFF->1->AUTO
7	OFF->1
8	OFF
9	1
10	2
11	3
12	AUTO
13	1->2->3
14	1->2
15	OFF->1->2->3
16	OFF->1->2

Description of user interface customisation parameters Uxx

U07 CHRONO PROGRAM

Chrono-thermostat functions enabled/disabled. The device is factory configured in 'thermostat' mode
 CHRONO PROGRAM = DISABLED.

After pairing the device with the App, the App automatically configures it in 'chrono-thermostat' mode
 CHRONO PROGRAM = ENABLED. This setting may be modified at any moment either via the App or the parameter.

U09 WIFI

Switch WiFi connectivity on and off:

DISABLED	WiFi off
ENABLED	WiFi on, starts the Pairing procedure if the credentials are missing.
PAIRING	starts the Pairing procedure to acquire or update the credentials (SSID and password) of the local WiFi network.
ERASE	deletes the credentials of the local WiFi network and switches WiFi off.

U20 SET-POINT MIN H

Heating set-point temperature lower limit

U21 SET-POINT MAX H

Heating set-point temperature upper limit

U24 SET-POINT MIN C

Cooling set-point temperature lower limit

U25 SET-POINT MAX C

Cooling set-point temperature upper limit

The parameters limit the range within which the user may modify the set-point temperature locally on the device.

Modifications implemented via the app are subject to the same limitation if the respective set-point temperature is restricted.

U30 MODIF COMFORT SETP

Enable modifications to Comfort Mode set point

U31 MODIF ECONOMY SETP

Enable modifications to Economy Mode set point

These parameters may be used to allow/prevent the user from modifying the set-point. It is possible enable or disable modifications individually each Mode.

It is also possible to make the set-point user-modifiable within a limit band (e.g. ± 3 °C)

DISABLED	set-point modification disabled
ENABLED	set-point modification enabled
LOCAL	set-point modification only permitted in manual modes
BAND	set-point modification permitted within a certain band

U34 MODIF BAND SETP

Band within which the user is permitted to modify the set-point when SETP MODIF = BAND.

U35 MODIF FAN SPEED

The user is permitted to modify the fan speed

GLOBAL	the user is permitted to modify the Speed, which is the same as in the programmed schedule.
LOCAL	the user user is permitted to modify the local Speed value only, the Speed of the programmed schedule remains the same.

U40-U46

U48-U56

these parameters may be used to define the Modes that can be called up manually, parameter set U40-U46 is used when the chrono functional is enabled [C], whereas parameter set U48-U56 is used when the chrono functional is disabled [M].

U40 COMFORT MODE C

Comfort Mode configuration

U41 ECONOMY MODE C

Economy Mode configuration

U42 OFF MODE C

OFF Mode configuration

Each Mode can be activated/deactivated via the respective configuration parameter:

DISABLED	Inactive mode
ENABLED	Active mode (fixed)
TEMPORARY MODIFIABLE	Temporary active mode, user-modifiable time
TEMPORARY FIXED	Temporary active mode, time cannot be changed by the user

The temporary mode, once called up, remains active for a limited period only, after which it reverts to the default mode.

U44 COMFORT MODE TIME C

Temporary Comfort Mode expiry time

U45 ECONOMY MODE TIME C

Temporary Economy Mode expiry time

U46 OFF MODE TIME C

Temporary OFF mode expiry time

The parameter defines the expiry time for each Mode when configured as temporary:

- 0 h time last chosen by the user (3 hours default)
- 1 h time of 1 hour
- 95 h time of 95 hours
- 720 h time of 30 days

Parameters U48-U54 are similar to U40-U46 and may be used to define the Modes when the chrono functional is disabled U07 CHRONO PROGRAM = DISABLED.

U56 DEFAULT MODE M

This is the default mode that is called up after the Temporary Mode expiry time, it is only used when the chrono functional is disabled; when the chrono functional is enabled, the default mode is always Program Mode.

U58 ENABLE HEAT/COOL MODES

This parameter may be used to enable a different Mode configuration, depending on whether the system is in summer or winter mode. By default, U40-U56, i.e. the set of parameters defining the Modes, is valid in both summer and winter.

In special cases, where it is necessary to differentiate and have define different Mode for summer and winter, U58 may be enabled, activating the parameter set

U60-U76,

which is valid in cooling (summer) mode, and U40-U56 which is only valid in heating (winter) mode.

U60-U76 similar to **U40-U56**, valid only in cooling (summer) mode.

U80 FAN BUTTON LIMITATION H U81 FAN BUTTON LIMITATION C

The speed button limitation button, which is diversified depending on whether heating or cooling mode is active, may be used to define which speeds may be selected by the user, using one of the values in Tab.2.

U82 ECONOMY MAX FAN SPEED

Maximum selectable fan speed in Economy Mode.

When in Economy Mode, only fan speeds that are equal to or lower than the value defines set in this parameter may be selected.

U90 BUTTON LOCK PASSWORD

Button lock password, setting a value other than 0000 activates the password for the button lock function.

Tab.3 System configuration parameters Pxx

Dflt	Parameter	Text	H/ C	Values	MIN VAL	MAX VAL	UM
0	P03	SYSTEM TYPE		0 2 PIPES - 1 4 PIPES - 2 ELECTRIC HEATER - 3 INTEGRATING EL.HEAT- ER - 4 UNDERFLOOR HEATING	0	4	-
2	P04	FAN TYPE		0 NO FAN - 1 3 SPEEDS AC FAN MOTOR - 2 EC FAN MOTOR - 3 BOTH - 4 CUSTOM	0	4	-
1	P05	VALVE TYPE		0 NO VALVE - 1 ON/OFF RELAY OUT - 2 PROPOR- TIONAL ANALOGUE OUT - 3 BOTH - 4 CUSTOM	0	4	-
0	P07	HEAT/COOL SELEC- TION		0 MANUAL - 1 AUTOMAT- IC - 2 REMOTE	0	2	-
2	P10	HEATING REGULA- TION	H	0 FAN ALWAYS ON - 1 VALVE ALWAYS ON - 2 VALVE AND FAN - 3 FAN ALWAYS OFF - 4 VALVE ALWAYS OFF	0	4	-
2	P11	COOLING REGULA- TION	C	0 FAN ALWAYS ON - 1 VALVE ALWAYS ON - 2 VALVE AND FAN - 3 FAN ALWAYS OFF - 4 VALVE ALWAYS OFF	0	4	-
0	P15	M3 HEAT RELAY OUT		0 ALWAYS OFF - 1 SPE- CIAL FUNCTION - 2 HEAT VALVE	0	2	-
0	P16	M3 RELAY FUNC- TION		0 .. 16 (Tab.4)	0	16	-
0	P17	M3 RELAY LOGIC		0 DIRECT (NC) - 1 IN- VERSE (NO)	0	1	-
3	P20	M4 COOL RELAY OUT		0 ALWAYS OFF - 1 SPE- CIAL FUNCTION - 2 COOL VALVE - 3 HEAT/COOL VALVE	0	3	-
0	P21	M4 RELAY FUNC- TION		0 .. 16 (Tab.4)	0	16	-
0	P22	M4 RELAY LOGIC		0 DIRECT (NC) - 1 IN- VERSE (NO)	0	1	-
0	P25	M6-7-8 FAN RELAY OUT		0 ALWAYS OFF - 1 SPECIAL FUNCTION - 2 3 SPEEDS AC FAN MOTOR	0	2	-
0	P26	M6 RELAY FUNC- TION		0 .. 16 (Tab.4)	0	16	-
0	P27	M6 RELAY LOGIC		0 DIRECT - 1 INVERSE	0	1	-

Dflt	Parameter	Text	H/ C	Values	MIN VAL	MAX VAL	UM
0	P28	M7 RELAY FUNCTION		0 .. 16 (Tab.4)	0	16	-
0	P29	M7 RELAY LOGIC		0 DIRECT - 1 INVERSE	0	1	-
0	P30	M8 RELAY FUNCTION		0 .. 16 (Tab.4)	0	16	-
0	P31	M8 RELAY LOGIC		0 DIRECT - 1 INVERSE	0	1	-
0	P40	M10 COOL ANALOGUE OUT		0 ALWAYS OFF - 1 SPECIAL FUNCTION - 2 COOL VALVE - 3 HEAT/COOL VALVE	0	3	-
0	P41	M10 ANALOGUE FUNCTION		0 .. 4 (Tab.5)	0	4	-
0	P42	M10 OUT ACTION		0 DIRECT - 1 INVERSE	0	1	-
3	P50	M11 HEAT ANALOGUE OUT		0 ALWAYS OFF - 1 SPECIAL FUNCTION - 2 HEAT VALVE - 3 EC FAN MOTOR	0	3	-
0	P51	M11 ANALOG FUNCTION		0 .. 4 (Tab.5)	0	4	-
0	P52	M11 OUT ACTION		0 DIRECT - 1 INVERSE	0	1	-
0	P60	M15 SW WATER T INPUT		0 NTC SENSOR - 1 BI-METAL CONTACT - 2 DIGITAL INPUT (Tab.6)	0	2	-
0	P65	M14 SA ROOM T INPUT		0 DIGITAL INPUT (Tab.6) - 1 REMOTE NTC SENSOR	0	1	-
0	P70	ROOM T OFFSET	H	-10.0 .. +10.0 °C	-100	100	°C/10
0	P71	ROOM T OFFSET	C	-10.0 .. +10.0 °C	-100	100	°C/10
60	P85	ANTIFREEZE TEMPERATURE	H	OFF/0.1 .. 20.0 °C	0	200	°C/10
40	P95	WATER T HEAT THRESHOLD	H	OFF/1 .. 80 °C	0	80	°C
0	P96	WATER T COOL THRESHOLD	C	OFF/1 .. 50 °C	0	50	°C

Tab.4 Configurable functions on relay outputs

Value	Relay output function	Description
0	ALWAYS OFF	output always off
1	ON/OFF LOGIC	output on when ON
2	ON/OFF MODE LOGIC	as 1 but includes OFF from program schedule
3	ECONOMY LOGIC	output on when in Economy mode
4	HEAT/COOL LOGIC	output on when in heating mode

Value	Relay output function	Description
5	DI DIGITAL INPUT	the output repeats the status of the DI input
6	SA DIGITAL INPUT	the output duplicates the state of the SA input
7	SW DIGITAL INPUT	the output duplicates the status of the SW input
8	HEAT VALVE	heat valve output (heating)
9	COOL VALVE	Cool valve output (cooling)
10	HEAT/COOL VALVE	heating/cooling valve outlet (2 pipes)
11	EL.HEATER	Heating element contactor control output
12	FAN SPEED MIN	minimum AC fan speed output
13	FAN SPEED MED	medium AC fan speed output
14	FAN SPEED MAX	maximum AC fan speed output
15	FAN ANY SPEED	output on when fan on
16	DIRTY FILTER	dirty filter alarm output

Tab.5 Functions that may be configured on the 0..10 V outputs

Value	0-10V output function	Description
0	ALWAYS OFF	output always off
1	HEAT/COOL VALVE	heating/cooling valve outlet (2 pipes)
2	HEAT VALVE	heat valve output (heating)
3	COOL VALVE	Cool valve output (cooling)
4	EC FAN MOTOR	EC fan output

Tab.6 Functions that may be associated with digital inputs

Value	Digital input function	Logic
0	No function	-
1	Summer/Winter	closed = Summer
2	Economy/Comfort	closed = Economy
3	Economy/Comfort with occupancy icon	closed = Economy
4	Economy	closed = Economy
5	Economy with occupancy icon	closed = Economy
6	Comfort	closed = Comfort
7	Comfort with occupancy icon	closed = Comfort
8	ON/OFF	closed = OFF
9	OFF	closed = OFF
10	ON	closed = ON
11	Stop Regulation	closed = Stop
12	Stop Regulation with occupancy icon	closed = Stop

Value	Digital input function	Logic
13	Stop Regulation with window icon	closed = Stop
14	Stop Regulation with condensation icon	closed = Stop
15	Motor alarm with M icon!	closed = Alarm
16	Heating element alarm with element icon!	closed = Alarm
17	Filter warning with filter icon	closed = Warning

Description of the system configuration parameters Pxx

P03 SYSTEM TYPE

Select system type

2 PIPES	2-pipe system, one hot/cold valve
4 PIPES	4-pipe system, two valves, one hot, one cold
ELECTRIC HEATER	system with heating element
INTEGRATING EL.HEATER	system with integrated heating element
UNDERFLOOR HEATING	system with underfloor heating

P04 FAN TYPE

Select connected fan type:

NO FAN	No fan connected
3 SPEED AC FAN MOTOR	3-speed AC fan
EC FAN MOTOR	Proportional 0-10 V EC fan
BOTH	Both AC and EC fans connected
CUSTOM	Set-up fan outputs manually

When different from CUSTOM, changing one of the 3 parameters P03,P04 or P05, automatically self-configures the outputs and type of regulation used to drive the type of fan and valve indicated in P04 and P05.

P05 VALVE TYPE

Select connected valve type:

NO VALVE	No valve connected
ON/OFF RELAY OUT	ON/OFF valve, relay output
PROPORTIONAL ANALOGUE OUT	Proportional valve, 0-10V output
BOTH	Both ON/OFF and proportional valves
CUSTOM	Set-up valve outputs manually

When different from CUSTOM, changing one of the 3 parameters P03,P04 or P05, automatically self-configures the outputs and type of regulation used to drive the type of fan and valve indicated in P04 and P05.

P07 HEAT/COOL SELECTION

Select heating/cooling mode:

MANUAL	Manual, set-up by user via push-button or App
AUTOMATIC	Automatic, changeover (2 pipes), neutral zone (4 pipes)
REMOTE	Remote, via digital input

P10 HEATING REGULATION

Select which outputs to use for temperature regulation in heating mode

P11 COOLING REGULATION

Select which outputs to use for temperature regulation in cooling mode

FAN ALWAYS ON	Fan always on during regulation
VALVE ALWAYS ON	Valve always on during regulation
VALVE AND FAN	Regulate by driving both valve and fan
FAN ALWAYS OFF	Fan always off
VALVE ALWAYS OFF	Valve always off

P15 M3 HEAT RELAY OUT

Dedicated heating output terminal M3 relay output configuration

ALWAYS OFF	Always switched off, unused
SPECIAL FUNCTION	Special function, defined in the next parameter
HEAT VALVE	Heat valve (heating)

P16 M3 RELAY FUNCTION

Special function assigned to the M3 terminal relay output. See configurable functions in Tab.4.

P17 M3 RELAY LOGIC

M3 terminal relay output logic setting, may be used to invert the output:

DIRECT (NC)	Direct logic (e.g. valve normally closed)
INVERSE (NO)	Inverted logic (e.g. valve normally open)

P20 M4 COOL RELAY OUT

Dedicated cooling output terminal M4 relay output configuration

ALWAYS OFF	Always switched off, unused
SPECIAL FUNCTION	Special function, defined in the next parameter
COOL VALVE	Cool valve (cooling)
HEAT/COOL VALVE	Heating/cooling valve (2 pipes)

P21 M4 RELAY FUNCTION

Special function assigned to the M4 terminal relay output. See configurable functions in Tab.4.

P22 M4 RELAY LOGIC

M4 terminal relay output logic setting, may be used to invert the output:

DIRECT (NC)	Direct logic (e.g. valve normally closed)
INVERSE (NO)	Inverted logic (e.g. valve normally open)

P25 M6-7-8 FAN RELAY OUT

Dedicated 3-speed AC fan output terminals, M6, M7 and M8, relay outputs configuration

ALWAYS OFF	Always switched off, unused
SPECIAL FUNCTION	Special functions, defined in subsequent parameters
3 SPEED AC FAN MOTOR	3 outputs for 3-speed AC fan

P26 M6 RELAY FUNCTION**P28 M7 RELAY FUNCTION****P30 M8 RELAY FUNCTION**

Special functions assigned to M6, M7 and M8 terminals relay outputs. See configurable functions in Tab.4.

P27 M6 RELAY LOGIC**P29 M7 RELAY LOGIC****P31 M8 RELAY LOGIC**

M6, M7 and M8 terminal relay output logic setting, may be used to invert the output:

DIRECT (NC)	Direct logic (e.g. valve normally closed)
INVERSE (NO)	Inverted logic (e.g. valve normally open)

P40 M10 COOL ANALOGUE OUT

Dedicated cooling output terminal M10 0-10 V output configuration

ALWAYS OFF	Always 0V, unused
SPECIAL FUNCTION	Special function, defined in the next parameter
COOL VALVE	Cool valve (cooling)
HEAT/COOL VALVE	Heating/cooling valve (2 pipes)

P41 M10 ANALOGUE FUNCTION

Special function assigned to the 0-10V output of terminal M10, see configurable functions in Tab.5.

P42 M10 OUT ACTION

M10 terminal 0-10 V output action setting, may be used to invert the output:

DIRECT Direct logic:	0V valve closed; 10V valve open 100%.
INVERSE Inverted logic:	10V valve closed; 0V valve open 100%.

P50 M11 HEAT ANALOGUE OUT

Dedicated EC fan and heating output terminal M11 0-10 V output configuration

ALWAYS OFF	Always 0V, unused
SPECIAL FUNCTION	Special function, defined in the next parameter
HEAT VALVE	Heat valve (heating)
EC FAN MOTOR	EC fan

P51 M11 ANALOGUE FUNCTION

Special function assigned to the 0-10V output of terminal M11, see configurable functions in Tab.5.

P52 M11 OUT ACTION

M11 terminal 0-10 V output action setting, may be used to invert the output:

DIRECT Direct logic:	0V valve closed; 10V valve open 100%.
INVERSE Inverted logic:	10V valve closed; 0V valve open 100%.

P60 M15 SW WATER T INPUT

SW water probe input, terminal M15 configuration

NTC SENSOR	NTC supply water temperature measurement sensor
BI-METAL CONTACT	Bi-metal thermostat, ON/OFF contact that closes when the battery is sufficiently hot
DIGITAL INPUT	Digital input, see configurable functions in the next parameter

P61 M15 SW INPUT FUNCTION

Function assigned to terminal M15 SW input, when configured as digital input, see functions that can be associated in Tab.6.

P62 M15 SW INPUT LOGIC

By setting the SW input logic, when configured as a digital input, it is possible to invert the action of the input:

DIRECT (NC)	Direct logic
INVERSE (NO)	Inverted logic

P63 M15 SW INPUT DELAY IN

SW input closure acquisition delay, when configured as a digital input, this parameter may be used to delay the function when the input is closed. If the input is configured with inverted logic, the delay is applied when the input is opened.

P64 M15 SW INPUT DELAY OUT

SW input opening acquisition delay, when configured as a digital input, this parameter may be used to prolong the function executed when the input is opened. If the input is configured with inverted logic, the delay is applied when the input is closed.

P65 M14 SA ROOM T INPUT

SA air probe input, terminal M14 configuration

DIGITAL INPUT	Digital input, see configurable functions in the next parameter
REMOTE NTC SENSOR	Room temperature measurement from remote NTC sensor instead of internal sensor

P66 M14 SA INPUT FUNCTION

Function assigned to terminal M14 SA input, when configured as digital input, see functions that can be associated in Tab.6.

P67 M14 SA INPUT LOGIC

By setting the SA input logic, when configured as a digital input, it is possible to invert the action of the input:

DIRECT (NC)	Direct logic
INVERSE (NO)	Inverted logic

P68 M14 SA INPUT DELAY IN

SA input closure acquisition delay, when configured as a digital input, this parameter may be used to delay the function when the input is closed. If the input is configured with inverted logic, the delay is applied when the input is opened.

P69 M14 SA INPUT DELAY OUT

SA input opening acquisition delay, when configured as a digital input, this parameter may be used to prolong the function executed when the input is opened. If the input is configured with inverted logic, the delay is applied when the input is closed.

P70 ROOM T OFFSET H**P71 ROOM T OFFSET C**

Room temperature correction constant that is applied to the room temperature sensor reading irrespective of whether the internal or remote NTC sensor is being used.

P74 M13 DI INPUT FUNCTION

Special function assigned to the DI digital input of terminal M13, see configurable functions in Tab.6.

P75 M13 DI INPUT LOGIC

By setting the DI digital input logic, it is possible to invert the function assigned to the input:

DIRECT (NC)	Direct logic
INVERSE (NO)	Inverted logic

P76 M13 DI INPUT DELAY IN

DI digital input closure acquisition delay, this parameter may be used to delay the function executed when the input is closed. If the input is configured with inverted logic, the delay is applied when the input is opened.

P77 M13 DI INPUT DELAY OUT

DI digital input opening acquisition delay, this parameter may be used to delay the function executed when the input is closed. If the input is configured with inverted logic, the delay is applied when the input is closed.

P80 DESTRATIFICATION H**P81 DESTRATIFICATION C**

This parameter maybe used to activate/deactivate the room air “de-stratification” function

The air anti-stratification function intervenes when the room temperature control maintains the fan in off for prolonged periods, forcing the fan to switch on at minimum speed for a pre-determined interval. The timing and duration may be configured using the dedicated parameters, C20 and C21.

P85 ANTIFREEZE TEMPERATURE

Antifreeze Function. This parameter corresponds the antifreeze function, i.e. a minimum room temperature that is maintained even when the thermostat is switched off, switched off via the ON/OFF button or when the program schedule imposes the OFF mode in that time slot. The system regulates the temperature at this value only when in heating mode.

Set this parameter to the minimum value to disable this function.

P90 NEUTRAL ZONE WIDTH

If the device is configured to operate with a neutral zone, this parameter determines the amplitude of the neutral zone. This value is assumed to be central with respect to the set-point temperature.

P95 WATER T HEAT THRESHOLD

This parameter defines the temperature threshold, above which the supply water is considered sufficiently hot to implement the “minimum temperature thermostat” function in heating mode.

If this function is not required, set this parameter to the minimum value so that the device displays OFF (0).

P96 WATER T COOL THRESHOLD

This parameter defines the temperature threshold, below which the supply water is considered sufficiently cold to implement the “minimum temperature thermostat” function in cooling mode.

If this function is not required, set this parameter to the minimum value so that the device displays OFF (0).

P100 FILTER TIME COUNTER

Fan operating hours timer. This value is used for the dirty filter warning function. This value may be reset by pressing the relevant buttons, but may not be modified.

P101 FILTER WARNING TIME

Dirty filter warning function, this parameter represents the fan operating threshold (expressed in hours), after which the dirty filter warning is generated. If this function is not required, set this parameter to the minimum value so that the device displays OFF (0).

Tab.7 Regulation configuration parameters Pxx

Dflt	Parameter	Text	H/ C	Values	MIN VAL	MAX VAL	UM
2	C03	REGULATION TYPE FAN	H	0 NONE - 1 ON/OFF - 2 PROPORTIONAL	0	2	-
2	C04	REGULATION TYPE FAN	C	0 NONE - 1 ON/OFF - 2 PROPORTIONAL	0	2	-
1	C05	REGULATION TYPE VALVE	H	0 NONE - 1 ON/OFF - 2 PROPORTIONAL	0	2	-
1	C06	REGULATION TYPE VALVE	C	0 NONE - 1 ON/OFF - 2 PROPORTIONAL	0	2	-
17	C10	CHANGEOVER LOW- ER THRES.		0 .. 24°C	0	24	°C
30	C11	CHANGEOVER UPPER THRES.		26 .. 48°C	26	48	°C
2	C30	ROOM T HYSTER- ESIS		0.1 .. 2.0°C	1	20	°C/10
2	C32	WATER T HYSTER- ESIS		1 .. 5°C	1	5	°C
20	C40	PROPORTIONAL BAND	H	0.8 .. 8.0°C	8	80	°C/10
20	C41	PROPORTIONAL BAND	C	0.8 .. 8.0°C	8	80	°C/10
60	C42	INTEGRATING TIME	H	OFF/5 .. 180 min	0	180	min
60	C43	INTEGRATING TIME	C	OFF/5 .. 180 min	0	180	min
20	C50	PROP. VALVE MIN ON HEAT	H	0 .. 50%	0	50	%
0	C51	PROP. VALVE MIN ON COOL	C	0 .. 50%	0	50	%
0	C55	HEAT SIGNAL LOW- ER LIMIT	H	0.0 .. 10.0 V	0	100	V/10
100	C56	HEAT SIGNAL UP- PER LIMIT	H	0.0 .. 10.0 V	0	100	V/10
0	C60	COOL SIGNAL LOW- ER LIMIT	C	0.0 .. 10.0 V	0	100	V/10
100	C61	COOL SIGNAL UP- PER LIMIT	C	0.0 .. 10.0 V	0	100	V/10
3	C70	N SPEEDS AC FAN MOTOR		1 .. 3	1	3	-
6	C72	STAGES DIFF AC FAN MOTOR	H	0.2 .. 3.0°C	2	30	°C/10
6	C74	STAGES DIFF AC FAN MOTOR	C	0.2 .. 3.0°C	2	30	°C/10

Dflt	Parameter	Text	H/ C	Values	MIN VAL	MAX VAL	UM
0	C80	FAN SIGNAL LOWER LIMIT	H	0.0 .. 10.0 V	0	100	V/10
100	C81	FAN SIGNAL UPPER LIMIT	H	0.0 .. 10.0 V	0	100	V/10
0	C82	FAN SIGNAL LOWER LIMIT	C	0.0 .. 10.0 V	0	100	V/10
100	C83	FAN SIGNAL UPPER LIMIT	C	0.0 .. 10.0 V	0	100	V/10
33	C90	FAN MIN FIXED SPEED	H	1 .. 100%	1	100	%
66	C91	FAN MED FIXED SPEED	H	1 .. 100%	1	100	%
100	C92	FAN MAX FIXED SPEED	H	1 .. 100%	1	100	%
33	C93	FAN MIN FIXED SPEED	C	1 .. 100%	1	100	%
66	C94	FAN MED FIXED SPEED	C	1 .. 100%	1	100	%
100	C95	FAN MAX FIXED SPEED	C	1 .. 100%	1	100	%
40	C101	EC FAN MIN EL.HEATER ON		10 .. 100%	10	100	%
15	C120	EL.HEATER INTEGR. DELTA		0.0 .. 20.0°C	0	200	°C/10

Description of the regulation configuration parameters Pxx

C03 REGULATION TYPE FAN H

C04 REGULATION TYPE FAN C

This parameter may be used to select the method used to regulate the fan. Normally this parameter is self-configured according to the type of fan that is connected, as indicated in P04. It is also possible to select the type of regulation manually if the type of installation requires it.

NONE	No regulation
ON/OFF	ON/OFF regulation with hysteresis
PROPORTIONAL	Proportional regulation

C05 REGULATION TYPE VALVE H

C06 REGULATION TYPE VALVE C

This parameter may be used to select the method used to regulate the valves. Normally this parameter is self-configured according to the type of valve that is connected, as indicated in P05.

It is also possible to select the type of regulation manually if the type of installation requires it.

NONE	No regulation
ON/OFF	ON/OFF regulation with hysteresis
PROPORTIONAL	Proportional regulation

For example, it is possible to connect a 0-10V proportional valve but force ON/OFF regulation, thereby forcing the proportional output to assume only the values 0V (OFF) and 10V (ON). Alternatively, it is possible to connect an ON/OFF valve but force a proportional regulation, so to render a proportional heating (or cooling) demand state available via a Modbus register.

C10 CHANGEOVER LOWER THRES

C11 CHANGEOVER UPPER THRES

These parameters may be used to define the automatic changeover function thresholds.

The C10 parameter corresponds to the lower threshold, while C11 corresponds to the upper threshold.

C20 DESTRATIFIC. PERIOD

This parameter may be used to define the periodicity of the anti-stratification function, i.e. how often a new ventilation cycle is activated.

C21 DESTRATIFIC. ON TIME

This parameter may be used to define the duration of the anti-stratification function ventilation cycle, i.e. how long the fan remains on for each cycle.

C30 ROOM T HYSTERESIS

This parameter may be used to define the hysteresis applied to the room temperature ON/OFF regulation.

C32 WATER T HYSTERESIS

This parameter may be used to define the hysteresis applied to the supply water temperature settings.

C40 PROPORTIONAL BAND H

C41 PROPORTIONAL BAND C

These parameters may be used to define the room temperature regulation proportional band. The parameters are differentiated according to heating or cooling mode.

C42 INTEGRATING TIME H

C43 INTEGRATING TIME C

These parameters may be used to define the P+I proportional regulation integral time, in minutes. If no additional action is desired (proportional control type P), set these parameters to the minimum until the system displays OFF (0).

C50 PROP. VALVE MIN ON HEAT H

C51 PROP. VALVE MIN ON COOL C

These two parameters correspond to the minimum power percentage of the proportional heating and cooling valve respectively.

The minimum power corresponds to the minimum proportional valve opening percentage, below which the fan remains disabled so that it is not switched on before the valve has started to open the flow of water.

C55 HEAT SIGNAL LOWER LIMIT

C56 HEAT SIGNAL UPPER LIMIT

These parameters may be used to define the lower (C55) and upper (C56) limits of the heating valve proportional output signal.

The parameters permit the user to customise the output voltage so as to limit the valve stem excursion between a minimum and a maximum distance. Irrespective of the lower limit setting, whenever it is necessary to close the valve the output signal will be 0 V.

C60 COOL SIGNAL LOWER LIMIT C

C61 COOL SIGNAL UPPER LIMIT C

These parameters may be used to define the lower (C60) and upper (C61) limits of the cooling valve proportional output signal.

The parameters permit the user to customise the output voltage so as to limit the valve stem excursion between a minimum and a maximum distance. Irrespective of the lower limit setting, whenever it is necessary to close the valve the output signal will be 0 V.

C70 N SPEEDS AC FAN MOTOR

This parameter may be used to define the number fan motor speeds used in the system.

Typically, fans are driven by three speed type motors, but this parameter may also be used to manage 1 or 2 speed motors. The one-speed motor is connected to the IM output M6 (minimum speed). The 2-speed motor should be connected to the IM and IIM outputs M6 and M7 (minimum and medium speed).

C72 STAGES DIFF AC FAN MOTOR H

C74 STAGES DIFF AC FAN MOTOR C

This parameters may be used to define the differential between the AC fan states, i.e. the difference between room temperature and the set-point temperature required to switch the speed from minimum to medium and medium to maximum, and vice versa.

C80 FAN SIGNAL LOWER LIMIT H

C81 FAN SIGNAL UPPER LIMIT H

C82 FAN SIGNAL LOWER LIMIT C

C83 FAN SIGNAL UPPER LIMIT C

These parameters may be used to define the lower and upper limit of the fan proportional output signal. These parameters may be used to customise the output voltage, in order to limit the minimum and maximum speed of the fan motor. Limiting the maximum fan speed may help to reduce noise. Limiting the minimum fan speed may help to prevent it stalling at very low speeds. Irrespective of the lower speed setting, whenever it is necessary to switch the fan off the output signal will be 0 V.

The parameters are differentiated according to heating or cooling mode, so that different speed limits can be configured depending on the season.

C90 FAN MIN FIXED SPEED H**C91 FAN MED FIXED SPEED H****C92 FAN MAX FIXED SPEED H****C93 FAN MIN FIXED SPEED C****C94 FAN MED FIXED SPEED C****C95 FAN MAX FIXED SPEED C**

These parameters may be used to define the speed regimes associated with the fixed settings 1, 2 and 3, i.e. the minimum, average and maximum speed of the EC fan, which is the fan driven via the proportional output.

The parameters are expressed as a % of the maximum fan speed, as defined in C81 and C83.

C100 AC FAN MIN EL.HEATER ON

In a system with a heating element, P03 = ELECTRIC HEATER or P03 = INTEGRATING EL.HEATER, which is used to drive a 3-speed AC type fan, this parameter may be used to define the minimum speed to be maintained when the heater is switched on.

C101 EC FAN MIN EL.HEATER ON

In a system with a heating element, P03 = ELECTRIC HEATER or P03 = INTEGRATING EL.HEATER, which is used to drive the fan via the proportional output (EC motor), this parameter may be used to define the minimum speed to be maintained when the heater is switched on.

The parameter is expressed as a % of the maximum fan speed, as defined in C81 and C83.

C110 FAN DELAY AT TURN ON H**C112 FAN DELAY AT TURN ON C**

This parameter may be used to define a delay time (in seconds) between the moment the fan is switched on and the moment the valve is opened, so as to allow sufficient time for the heat exchanger to heat up or cool down.

C111 FAN DELAY AT TURN OFF H**C113 FAN DELAY AT TURN OFF C**

This parameter may be used to define a delay time (in seconds) between the moment the fan is switched on and the moment the valve is closed, so as to allow sufficient time for the heat exchanger or heating element to dissipate all its heat.

C120 EL.HEATER INTEGR.DELTA

This parameter may be used to configure the integration “delta set-point” for the integrated heating element system. See the “Integrated heating element system” section for further information.

Tab. 8 Modbus communication configuration parameters Mxx

Dflt	Parameter	Text	H/ C	Values	MIN VAL	MAX VAL	UM
1	M00	MODBUS SLAVE ADDRESS		1 - 247	1	247	-
3	M02	MODBUS BAUD RATE		1200 - 460800	0	8	-
15	M03	MODBUS SETTINGS		8E1 - 8O1 - 8N1	11	15	-

Description of the Modbus communication configuration parameters Mxx

M00 MODBUS SLAVE ADDRESS

Device slave address of the device. This is the address that allows the device to distinguish itself from other devices on the same bus, while also permitting the Master to identify and query a specific device. Each device connected to the same bus should be assigned a different value.

M02 MODBUS BAUD RATE

The baud rate of the serial communication port may be selected from the values listed below:

Value	Baud rate
0	1200
1	2400
2	4800
3	9600
4	19200
5	38400
6	57600
7	115200
8	460800

M03 MODBUS SETTINGS

The serial communication port settings and Modbus protocol settings may be selected from the values listed below:

Value	Protocol	Parity	Setting
11	RTU	even	8E1
13	RTU	odd	8O1
15	RTU	none	8N1

IMPLEMENTING AN RS485 NETWORK

Detailed guide for implementing and wiring an RS485 network.

RS485 Bus Connection Cables

The bus connections must be installed using twisted, shielded pairs having specifications equivalent to the BELDEN 9841 or BELDEN 9842 cables shown in the table below:

Type	N° Pairs	DC resistance (Conductors)	DC resistance (Shield)	Nominal Impedance	Capacitance Nominal between Conductors	Capacitance Nominal between Conductors and Shield	AWG
BELDEN 9841	1	78.7 Ohm/km	11.0 Ohm/km	120 Ohm	42.0 pF/m	75.5 pF/m	24 (0.25 mm ²)
BELDEN 9842	2	78.7 Ohm/km	7.2 Ohm/km	120 Ohm	42.0 pF/m	75.5 pF/m	24 (0.25 mm ²)

- The total length of the RS485 network must not exceed 1000 metres.
- The shield of the BUS cable must be earthed at one end only, e.g. on the peripheral unit closest to the control device. A second earth connection would not guarantee the equi-potentiality of the screen. Do not use the same conduit for bus and power cables, or power cables in general.

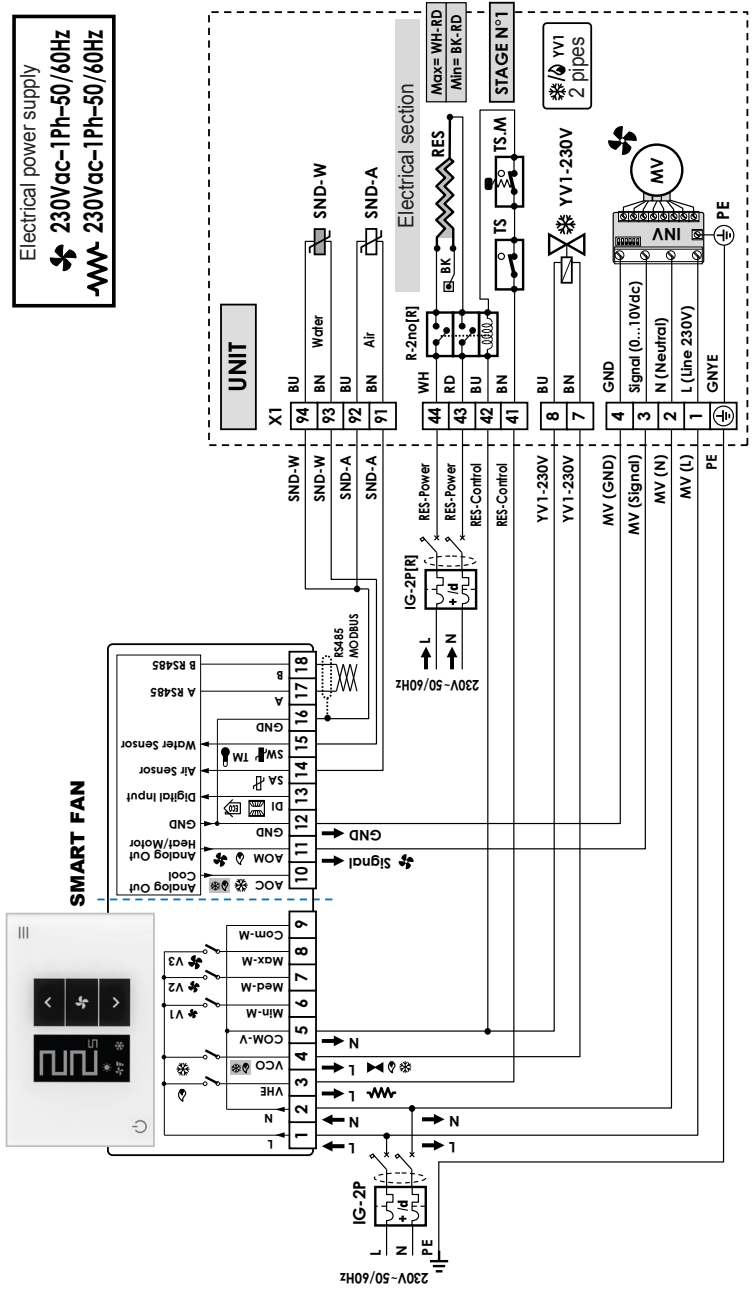
Power Cables


- Use flame retardant cables with an adequate cross-section depending on the loads connected to the control unit, the cross-section must never be less than 2.5mm². Calculate the cross-section of the cable according to the length and number of connected loads so as to ensure they are capable of providing the necessary power to the devices.
- To avoid using conductors with a large cross-section, the devices may be supplied point-to-point via individual power supplies.
- It is not necessary to connect the individual device grounds together on RS485 networks.
- In the event of communication problems, for example, in the case point-to-point power supply and electrically ungrounded devices, it may help to connect the device grounds to each other electrically.
- In the case of devices with an earthed power supply (e.g. PCs), connecting the earth and ground together may cause problems.
- The simplicity of the RS485 network wiring sometimes causes some simple precautions to be overlooked, which may give rise to errors, or even cause the entire network to fail.

Examples of Connection Errors

- Cable routing within the same cable duct.
- Cable routing in the vicinity of strong sources of interference, e.g. near the power cables of electric motors or contactors.
- Ground and earth cables connected together.
- False contacts or inappropriate electrical connections in junction boxes.
- Use of cables not suitable for RS485 data transmission, e.g. use of non-twisted cables.
- Use of cables with insufficient cross-section.
- Excessive voltage drops on the power cables

WIRING DIAGRAM



REF.:	No. 1 EC MOTOR (ELECTR. OR BRUSHLESS) 230 Vac~/0...10 Vdc
	<ul style="list-style-type: none"> - <i>Please do not forget that the warranty is invalidated in the event of electrical or mechanical modifications, or tampering in general.</i> - WARNING: Making electrical connections correctly - Incorrect electrical connection may causes the unit electrical devices to burn out!
X1	<p>Terminal block for connection to remote control (Supplied mounted on the unit; Depends on item required/ordered)</p> <p>X1= (MRS1= 'Mamut' type terminal box IP20); (MRS2=MRS1+TM); (MRS3=MRS1 with IP40 sealing cover); (MRS4=MRS3+TM); (MRS5=MRS1 inside IP55 electrical box); (MRS6=MRS5+TM).</p> <p>Only the occupied terminals (PE,1,2...) are supplied as standard. Terminals 5,6...n are only present if the respective accessories are installed. In some cases, unoccupied terminals may not be present: in such cases, the unoccupied terminals are missing (e.g. 5-6 if TM is not present) while subsequent terminals retain the same numbering (e.g. 7 remains 7).</p>

WARNING

- **THE USER MUST SET-UP THE REGULATOR ACCORDING TO HIS/HER REQUIREMENTS**
- **IT IS OBLIGATORY TO REFER TO THE REGULATOR MANUAL**
- **RES- OBLIGATORY: POST-VENTILATION**
- **RES- OBLIGATORY: AIR SPEED > 1 m/s**
- **See the notes on the RES electrical section circuit diagram.**

Legend

REF.	DESCRIPTION
L	Phase (line 230 Vac - 1ph)
N	Neutral
PE	EARTH
GNYE	Yellow/green
BN	Brown
BU	Blue
BK	Black
RD	Red
WH	White
GY	Grey
VT	Violet
OG	Orange
1,2,...; a,b,...; etc.:	Markings that appear on the terminal boards and electrical devices
STANDARD COMPONENTS SUPPLIED ALREADY MOUNTED	
MV	EC (or Brushless) electronic fan motor: power supply 230 Vac, signal 0...10 Vdc GND = Signal reference GND Signal = Control signal (0...10 Vdc)
INV	EC electronic motor inverter (or Driver)
X1	Unit electrical terminal board (with user side terminals)
ACCESSORIES (present only if requested/ordered)	
YV1-230V	Main heat exchanger valve 230 V on/off (2 pipes = cold/hot; 4 pipes = cold)
RES	Electric heating element 230 Vac; 2 states (RD = Common; BK = Low Power; WH = High Power): ▶ "RD-BK" cables connection: Lower power ▶ "RD-WH" cables connection: Higher power The 2 "WH" - "BK" electrical heating element cables may be connected differently with respect to the indications on the electrical circuit diagram (depending on the model).
TS	Self-rearming safety thermostat (1 ST always fitted for each state)
TS.M	Manually re-armed safety thermostat (only upon request)
R-2no[R]	Dual NO contact relay (NO = normally open), with 230 Vac coil
SND-A	Air temperature probe
SND-W	Water temperature probe

OLIMPIA SPLENDID spa
via Industriale 1/3
25060 Cellatica (BS)
www.olimpiasplendid.it
info@olimpiasplendid.it

I dati tecnici e le caratteristiche estetiche dei prodotti possono subire cambiamenti. Olimpia Splendid si riserva di modificarli in ogni momento senza preavviso.