

**GB** INSTALLATION MANUAL AND USING INSTRUCTIONS

CE

**Mod. TAD - 15**

Cod. 02018056

**EMMETI**



## NOTA INFORMATIVA

**Ai sensi dell'art. 26 del Decreto Legislativo 14 marzo 2014, n. 49 "Attuazione della Direttiva 2012/19/UE sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE)".**



Il simbolo del cassonetto barrato riportato sull'apparecchiatura indica che all'interno dell'Unione Europea tutti i prodotti elettrici ed elettronici alla fine della propria vita utile devono essere raccolti separatamente dagli altri rifiuti.

Non smaltire queste apparecchiature nei rifiuti urbani indifferenziati. Conferire l'apparecchiatura agli idonei centri di raccolta differenziata dei rifiuti elettrici ed elettronici oppure riconsegnarlo al rivenditore al momento dell'acquisto di una nuova apparecchiatura di tipo equivalente. L'adeguata raccolta differenziata dell'apparecchiatura per l'avvio al successivo riciclaggio, trattamento e allo smaltimento ambientalmente compatibile contribuisce ad evitare possibili effetti negativi sull'ambiente e sulla salute dovuti alla presenza di sostanze pericolose nelle apparecchiature elettriche ed elettroniche e derivanti da un errato smaltimento o da un uso improprio delle stesse apparecchiature o di parti di esse, la raccolta differenziata favorisce inoltre il riciclo dei materiali di cui è composta l'apparecchiatura.

La normativa vigente prevede sanzioni in caso di smaltimento abusivo del prodotto.

## INFORMATION NOTE WEEE DIRECTIVE APPLICATION Directive 2012/19 / EU



The crossed-out wheeled bin symbol on the equipment indicates that, at the end of their useful life, all electrical and electronic products within the European Union must be collected separately from other waste.

Do not dispose of this equipment with mixed municipal waste.

Assign the equipment to appropriate separate collection centres of electrical and electronic waste or return it to the dealer when purchasing new equipment of an equivalent type. Appropriate separate collection of the equipment for subsequent recycling, treatment and environmentally compatible disposal contributes to avoid possible negative effects on the environment and health due to the presence of dangerous substances in electrical and electronic equipment and resulting from an incorrect disposal or misuse of the same or parts thereof. Separate collection also favours recycling of the materials the equipment is made up of. Current legislation provides for sanctions in case of illegal disposal of the product.

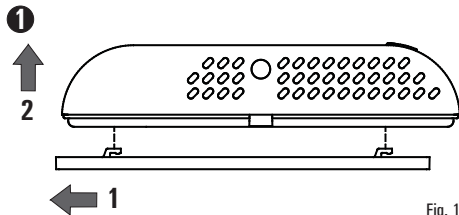


Fig. 1

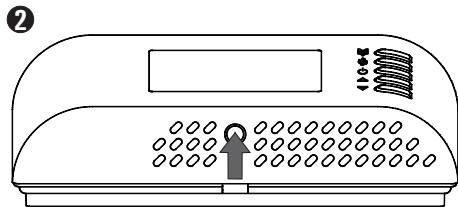


Fig. 2

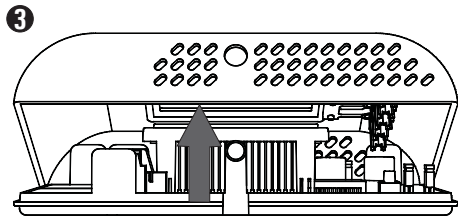


Fig. 3

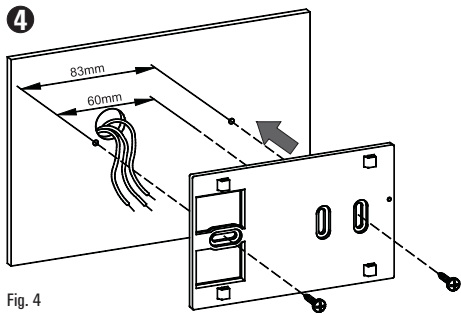


Fig. 4

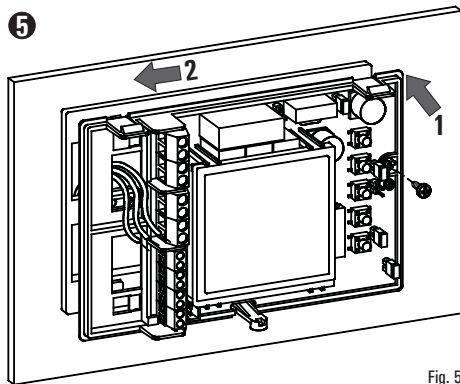


Fig. 5



## 6 SELEZIONE JUMPER JUMPER SET-UP

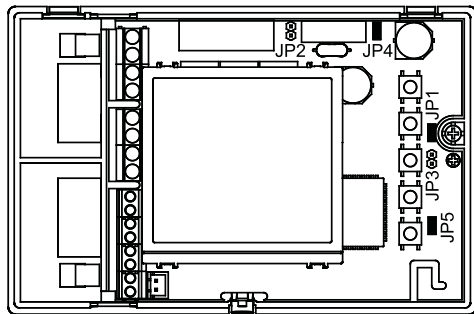


Fig. 6

**JP1** Alimentazione 230V ~ (impostazione di fabbrica)  
**JP2** 230V ~ power supply (factory setting)

**JP1** Alimentazione 24V ~  
**JP2** 24V ~ power supply

**JP3** Frequenza 50Hz (impostazione di fabbrica)  
**JP4** 50Hz frequency (factory setting)

**JP3** Frequenza 60Hz  
**JP4** 60Hz frequency

**JP5** Configurazione parametri abilitata  
 Parameter configuration enabled

**JP5** Configurazione parametri disabilitata  
 Parameter configuration disabled

# SCHEMA DI COLLEGAMENTO WIRING DIAGRAM

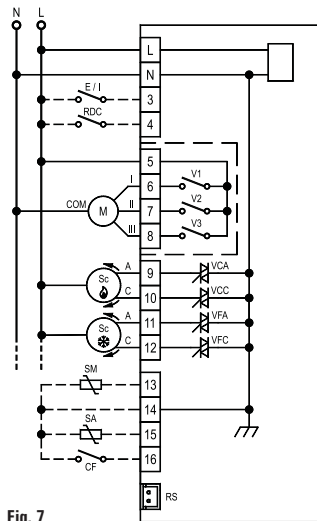


Fig. 7

## LEGENDA

### EXPLANATION

**E/I:** Ingresso remoto per l'attivazione della funzione "Estate/Inverno centralizzata"<sup>(1)</sup>

*Remote input to activate "centralised Summer/Winter" function<sup>(1)</sup>*

**RDC:** Ingresso remoto per l'attivazione della funzione "Economy"<sup>(1)</sup>

*Remote input to activate "Economy" function<sup>(1)</sup>*

**A:** Apre - Opens

**C:** Chiude - Closes

**Sc:** Servocomando a 3 punti - Floating actuator

**S.M.:** Sonda di mandata - Supply water sensor

**S.A.:** Sonda ambiente remota, vedere paragrafo "Collegamenti elettrici"  
*Remote room sensor, see "Electric connections"*

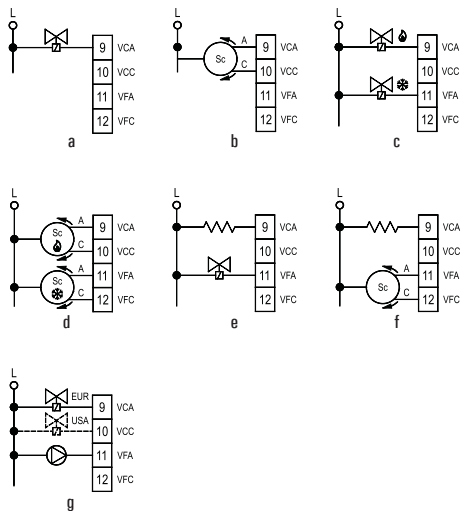
**CF:** Ingresso remoto per l'attivazione della funzione "Contatto finestra"<sup>(1)</sup>  
*Remote input to activate "Window contact" function<sup>(1)</sup>*

**RS:** Connettore per la sonda ambiente del termostato a bordo macchina  
*Connector for the room sensor of the fan-coil integrated regulator*

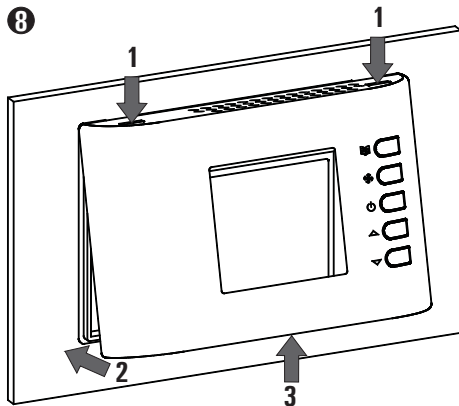
— — : Isolamento rinforzato - Reinforced insulation

### Note - Notes

(1): La funzione associata all'ingresso può essere modificata nei parametri C14, C15 e C16.  
*The C14, C15 and C16 parameters of the function associated to the input can be changed.*



**Fig. 8:** Possibili varianti per connessione valvole  
Possible diagrams for valves connection



**Fig. 9**

## INTRODUCTION

This digital controller is intended for temperature regulation in environments equipped with fan-coil heat-cool exchangers.

The device automatically controls the fan speed on 3 levels as well as the possible valves in order to regulate the room temperature in the most suitable way. Temperature acquisition can be performed either with the internal sensor or with an external one (optional).

## DESCRIPTION OF CONTROLS

The user has five buttons available to control the thermostat.

### - Key "⏻" (On/Off)

This button is used to turn on and off the controller: when the controller is turned off the display does not show the temperature, yet some symbols could still be turned on to show the active outputs.

If the thermostat is configured in the "Economy" function (P17), the "⏻" button activates/deactivates this status according to the following diagram:



### - "⚙️" button (Speed)

This button changes the set fan speed.

When the "⚙️" button is pressed, the fan speed changes according to the following cycle:



where 1, 2 and 3 mean the three fixed fan speeds meanwhile AUT mean the automatic fan speed.

More precisely 1 means the lowest speed, 2 the medium speed and 3 the fastest. Therefore when the controller is set on one of the three mentioned speeds, the fan will be activated when necessary at that (fixed) speed. Whenever the automatic speed is set instead, the controller will activate the fan at a speed as much high as the difference between the desired room temperature against the current one.

### - Key "☰" (Menu)

This button is used to change the display readout mode: when depressed once it makes the display show the set-point temperature.

In case the controller is configured to show the delivery water temperature, this value will be displayed with a further button depression.

When changing the readout, the controller informs the user about the temperature shown according to the following table:

	Set-point temperature
	Delivery water temperature

Repeatedly press the button to cyclically display the various temperatures. When inactive for a few seconds the display returns to room temperature.

### - "▲" and "▼" buttons

These buttons set the desired room temperature (set-point) and the configuration parameters. If "▲" or "▼" are pressed during normal operation, the set-point temperature is displayed, along with the new set value.

Even in this case, after a few seconds of inactivity the display readout returns to the room temperature.










## DISPLAY VIEW













The thermostat is equipped with an LCD display that shows temperature





and settings.

### Symbols displayed:

The symbols that can be shown on the display are described in the following table:

	Automatic heating/cooling selection The thermostat automatically switches the heating/cooling modes.
	Steady low fan speed setting.
	Steady medium fan speed setting.
	Steady high fan speed setting.
	Automatic fan speed setting.
	The thermostat is under configuration.
	Clogged filter, filter must be cleaned
	Function is not available.
	Delivery water temperature displayed.

	Set-point temperature displayed.
	Temperature regulation in "Economy" mode.
	Antifreeze mode active: the thermostat regulates the antifreeze temperature.
	Compressor active in a heat pump system.
	Electric heater active in an electric heater system.
	Heating active.
	Cooling active.
	Regulation suspended; the contact indicates open window
	Delivery water temperature is not sufficiently hot (heating) or cold (cooling).
	Regulation is suspended; 3 point servocontrol in resynchronisation.
	Timing standby.
	Installer configuration error or alarm.

	Condensate alarm: regulation is suspended.
	Motor alarm.
	Occupied room: regulation reactivated or exit from "Economy" mode.
	Unoccupied room: regulation suspended or "Economy" mode activated.

Some symbols on the display show the outputs status: fan, valves or other connected loads.

The "fan speed" symbols show fan status: all off when fan is off; all lit when fan is on, according to the following indications:



Symbols "🔥" and "❄️" indicates the status of the valve outputs which is different depending on the type of system.

- Two pipes system:**
- 🔥: heating mode, valve open
  - ❄️: cooling mode, valve open
- Four pipes system:**
- 🔥: heating valve open
  - ❄️: cooling valve open
- Electric heater system:**
- 🔥: heating mode, electric heater on
  - ❄️: cooling mode, cooling valve open

## Integrating electric heater

**system:**

- 🔥: heating mode, valve open
- ❄️: cooling mode, valve open
- 🔥❄️: heating mode, electric heater on

**Heat pump system:**

- 🔥: reversing valve in heating
- ❄️: reversing valve in cooling
- 🔄: compressor on

Symbols can also be flashing, to explain that the relevant output should be turned on, yet it is temporarily disabled by another function.

As an example, outputs are disabled in the following situations:

- The cut-off thermostat is inhibiting the fan;
- Window contact suspends the temperature regulation;
- Timer **C09** is inhibiting the compressor;
- Regulation is inhibited due to re-synchronization of the floating valve;
- Valve is inhibited because it is waiting for complete closing of the other floating valve.



## WARNING

- The delivery water sensor must be installed in a way that it can acquire the correct water temperature even in case the flow is stopped by the valve itself.
- Wiring the same remote temperature sensor to more than one controller is not allowed.
- All remote sensors, bimetallic contact and window contact must have a galvanic insulation against earth as well as against the mains power.
- In case preceding two directions are not respected an irreversible product damage can follow.
- All remote sensors, bimetallic contact and window contact must be double insulation (or reinforced insulation) rated in case they are accessible to people.
- In case the reinforced insulation of the preceding point cannot be obtained, power the regulator with a 24V ~ low voltage (yet in full compliance with the safety standards).
- While checking with a multimeter valve outputs (terminals from 9 to 12), it will not be possible to see the commutation correctly due to filters mounted with TRIAC outputs. It is necessary to wire a load to the output (valve) to correctly show the commutation status.
- The appliance must be wired to the electric mains through a switch capable of disconnecting all poles in compliance with the current safety standards and with a contact separation of at least 3 mm in all poles.
- Installation and electrical wirings of this appliance must be made by qualified technicians and in compliance with the current standards.
- Before wiring the appliance be sure to turn the mains power off.

## INSTALLATION

Carry out the operations below to install the device, while following the images in page 3 to page 7:

- ➊ Release the plate attached to the thermostat base by pushing it to the left. This releases the teeth shown in Fig. 1.
- ➋ Push the plastic tab in the lower slot using a screwdriver, slightly lifting the cover (Fig. 2).
- ➌ Turn the cover, while pressing it slightly, until it is extracted (Fig. 3).
- ➍ Fix the plate to the wall, using the two screw seats with centre distances of 60 mm or 85 mm (use the supplied wall plugs and/or screws). Pass the wires through the rectangular openings (Fig. 4).
- ➎
  - Connect the thermostat base to the wall plate (pass the wires through the rectangular openings). Align the base holes with the special wall plate teeth, then press the base to the left until the plate's plastic teeth click (Fig. 5).
  - Fix the thermostat base to the wall with the supplied screw.
- ➏ If required, correctly set jumpers **JP1**, **JP2**, **JP3**, **JP4** and **JP5**. Carefully read the "JUMPER SELECTION" (page 5) and "ELECTRICAL CONNECTIONS" paragraphs.
- ➐ Perform the electrical connections following the connection diagram in Fig. 7 and the possible variants in Fig. 8. Carefully read the "ELECTRICAL CONNECTIONS" paragraph.
- ➑ Perform the following operations to close back the thermostat:
  - Position the two teeth on the upper part of the cover in the special notches.
  - Turn the cover and push the plastic tab inwardly on the lower part of the base (see the arrow in Fig. 9). Press it so that the plastic fixing tab inside the special hole clicks.

## WIRINGS

This controller can be powered either with 230V ~ or with 24V ~.

The thermostat is factory set at 230V ~, with jumper in position **JP1**, with frequency at 50Hz, with jumper in position **JP4**. To select 24V ~ supply move jumper **JP1** (Fig. 6) to position **JP2** (Fig. 6). To select 60Hz frequency move jumper to **JP4** (Fig. 6) to position **JP3** (Fig. 6).

As can be seen in Fig. 7 supply terminals are L and N.

If you have a 230V power supply, the live and neutral must be respected. An input is available on terminal 3 for centralised heating/cooling selection. An input is available on terminal 4 to activate "Economy" mode. A window contact can be connected to terminals 14 and 16.

**Note:** there are limitations for window contact use. Carefully read the paragraph "ATTENTION".

The function of the input terminals 3, 4 and 16 can be changed, through parameters **C14**, **C15** and **C16**.

Signals to terminals 3 and 4 can be connected terminals 3 and 4 of other thermostats in the same building (centralised Heating/Cooling function).

**RS** connector, or alternatively terminals 14 and 15, can be used to connect an external room temperature sensor. Change configuration to select external or internal sensor use.

Terminals 13 and 14 is an input to connect different types of sensors for special functions: connect a delivery temperature sensor for the "changeover" and/or "cut-off thermostat" function, or connect a bimetal thermostat with "cut-off thermostat" function. Change configuration to select which type of sensor to use.

This device is suitable to control the fan speed of a 3-speed fan motor. The speed selection is done through three relays, which outputs are available on terminals 6, 7 and 8. 5 is the common terminal of the relays. Fig 7 shows how to wire the fan motor. Fan outputs from terminals 5 to 8,

are voltage free contacts and are isolated towards the other thermostat circuits.

Therefore, a thermostat can be supplied with SELV low voltage (24V ~), while controlling a high voltage fan (230V ~).

In this case, 24V ~ SELV and 230V ~ cables must be separated in accordance with current standards.

In particular, it is necessary to secure the two groups of cables with cable ties separating the SELV wires from the others. This is required to avoid that the insulation to SELV is reduced in the event of a wire accidentally disconnects.

Terminals 9 and 10 are for the heating output, while terminals 11 and 12 are for the cooling output. Fig. 8 shows different valve connection modes, according to their type. Change configuration to select which type of valve is used.

If on-off or proportional PWM on-off valves are used, connect according to Fig. 8 **a** or **c**. If 3 point floating servocontrols are used, connect according to Fig. 8 **b** or **d**. Systems with different types of valves on heating and cooling outputs can be managed. If the system has an electric heater for integration or in replacement of the heating valve, connect according to diagrams in Fig. 8 **e** or **f**.

The thermostat can also manage a heat pump system and, therefore, control the compressor and a 4-way change-over valve. In this case connect as in Fig. 8 **g**. The change-over valve is connected to a different terminal to get a reverse operation logic.



## TECHNICAL FEATURES

Power supply:	230V ~ -15% +10% 50Hz or 230V ~ ±10% 60Hz or 24V ~ -15% +10% 50 / 60Hz 1.2VA
Power absorption:	

### Room temperature

Regulation range:	5.0 .. 35.0 °C (configurable)
Sensor type:	NTC 10kΩ @ 25°C ±1%
Precision:	± 1.0 °C
Resolution:	0.1 °C
Display temp. range:	-10°C .. +50°C
Differential:	adjustable 0.2 .. 1.0 °C

### Supply pipe temperature

Sensor type:	NTC 10kΩ @ 25°C ±1%
Precision:	± 1 °C
Resolution:	1 °C
Display temp. range:	0 .. 99 °C
Differential:	2 °C

### Contact rating

Fan motor:	3A @ 230V ~ cosφ=1
Valves:	0.3A @ 230V ~ cosφ=1
Valves (inductive load):	10VA Max load power
Remote sensor (optional):	NTC 10kΩ @ 25°C ±1%
Protection grade:	IP 30
Type of action:	1
Overvoltage category:	II
Pollution degree:	2
Tracking Index (PTI):	175
Class of protection against electric shock:	II ( )

Rated impulse voltage:	2500V
Number of manual cycles:	50000
Number of automatic cycles:	100000
Software class:	A
EMC test voltage:	230V ~ 50Hz
EMC test current:	31mA
Distances tolerances fault mode 'short' exclusion:	±0,15mm
Ball pressure test temperature:	75°C
Operating temperature:	0 .. 40 °C
Storage temperature:	-10 .. +50 °C
Humidity limits:	20 .. 80% RH (non condensing)
Case:	material: ABS + PC VO self-extinguishing color: signal white (RAL 9003)
Size:	132 x 87 x 23.6 mm (W x H x D)
Weight:	~ 265 g

## CLASSIFICATION UNDER REG. 2013.811.EC


Class:	V
Contribution to energy efficiency:	3%

## WARRANTY


In the view of a constant development of their products, the manufacturer reserves the right for changing technical data and features without prior notice. The consumer is guaranteed against any lack of conformity according to the European Directive 1999/44/EC as well as to the manufacturer's document about the warranty policy. The full text of warranty is available on request from the seller.




## APPENDIX


### HEATING/COOLING SELECTION

Heating or cooling modes are selected by keeping the  "menu" button depressed for some seconds, until the display shows one of the following texts which indicates the current mode:

HEA  : Heating mode

COO  : Cooling mode

Then, by pressing the " " or " " or " ", the user can change the desired mode, cycling between heating and cooling. Depressing any of the other buttons results in saving the choice and quitting the menu.

When the thermostat is configured for automatic or centralised heating/cooling selection, the selection cannot be manually changed and if tried, the display shows the flashing  icon.

### DELIVERY WATER SENSOR

This controller features an input for the delivery water temperature sensor: when this sensor is installed the controller can automatically understand whether it should be working in "cooling" mode or in "heating" mode: this function is called "water temperature changeover".

The water temperature is also used to perform the "cut-off thermostat" function.

Alternatively a bimetallic thermostat can be wired to the input to get the "cut-off" function.

### EXTERNAL INPUTS - TERMINALS 3, 4 AND 16

The thermostat has three external inputs that can be associated to different functions through parameters **C14**, **C15** and **C16**.

Signals to terminals 3 and 4 can be connected to terminals 3 and 4 of other thermostats in the same building for centralised functions.



The signal on terminal 16 cannot be connected to other thermostats. Functions that can be associated to the inputs are:

#### "Centralised Heating/Cooling" function:






When installations have multiple thermostats in a single building, the centralised inputs of each thermostat can be connected together and controlled by the central heating room.

This way the central heating room determines whether the thermostats must operate in the heating or cooling mode.

#### "Economy" function:


The input activates/deactivates the economy mode (see the "Economy function" paragraph). This function can be associated with the following icon: . The thermostat is sensitive to the input status changes and not to the level, so it is always possible to change the economy status with the " " button (if enabled).

#### "Regulation stop" function

The input can suspend or reactivate room temperature regulation. When temperature regulation is suspended the fan is stopped, the valves remain closed and the relevant symbols on the display will flash. This function can be associated with one of these icons:  or  or . When an input is configured for the "regulation stop" function and the  icon, the "window contact" function is performed. Connecting a window contact to the input, when the window is open the  icon will appear on the display and the temperature regulation will be suspended.


**Note:** there are limitations for window contact use. Carefully read the paragraph "ATTENTION".

#### "Thermostat ON / OFF" function



The input turns the thermostat on or off, like pressing the " " button. Since the thermostat is sensitive to input status changes and not to the

level, so it is always possible to change the on/off status with the “” button (if enabled).

#### “Motor alarm” function

The input lights the “” icon on the display. When the alarm is active, the electric heater output will be cut off.

#### “Electric heater alarm” function

When the alarm is activated “” + “” symbols flash on the display and the electric heater output will be cut off.

The electric heater safety thermostat can be connected to this input.

#### “Dirty filter” warning function

the input activate the dirty filter warning, the “” filter icon blinks on the display.

### TEMPERATURE ACQUISITION

This controller acquires both the room temperature and the delivery water temperature in the fan-coil exchanger with NTC type sensors.

The room temperature is acquired and displayed with the above mentioned resolution in the range  $-10^{\circ}\text{C} \dots +50^{\circ}\text{C}$ .

The controller features an internal temperature sensor and also an input for a remote sensor is also available.

The selection between internal or remote sensor is done through parameter **P10** in the “installer configuration”.

The supply water temperature in the fan-coil is acquired through a remote sensor and can be displayed with  $1^{\circ}\text{C}$  resolution in the  $0^{\circ}\text{C} \dots 99^{\circ}\text{C}$  range. The delivery water sensor does not have to be installed in case the system does not require it. To enable delivery water sensor related functions, see the “Cut-off temperature function” section.

In case the room or water temperature falls outside the operating range,

the display shows “**Or**” (out of range). In case the sensor is faulty as an open or a short circuit, the display shows “**EEE**” (error): in this situation, functions which need the temperature are not performed.

### CUT-OFF TEMPERATURE FUNCTION

The cutoff temperature function is used to inhibit the fan operation whenever, in heating mode, the delivery water is not hot enough. In order to accomplish this function a delivery water sensor must be wired, alternatively, a bimetallic thermostat can be wired to the same terminals. In case the delivery water sensor is used, the “water hot enough” threshold is defined on parameter **P22**. In case this function is not needed, parameter **P22** can be set to a very low value (0).

In case a bimetallic thermostat is used for this function, parameter **P07** must be set to the value “2”: in this case the fan operation will be enabled only when the bimetallic contact is closed.

When this type of bimetallic thermostat is used the water temperature cannot be displayed, nor the automatic changeover function can be performed. Please refer to the section “Installer Configuration” to set the parameters related to the above described functions.

The cut-off temperature function is also available in cooling mode. In this case the fan operation is inhibited when the water delivery is not sufficiently cold, according to the threshold defined on parameter **P23**. In case this function is not needed, parameter **P23** can be set to a very high value (99).

When the delivery water temperature is not sufficiently hot or cold as per **P22** and **P23** thresholds, the display shows the “” icon. The fan is inhibited and the fan speed symbols flash.

### ELECTRIC HEATER SYSTEM

The thermostat can be configured (**P01=2**) to manage a system with an

electric heater for heating the room and a valve that regulates the cool water for cooling the room. Follow the wiring diagram in Fig. 8 e and f. In this type of system it is suggested to set a delay on the fan switch-off on **P21**, so that when the electric heater is switched off, the fan keeps running to cool the heater down.

In this type of system it is possible to have a neutral zone regulation setting the automatic heating/ cooling selection (**P02=1**).

In case the cut-off temperature function is used in this system, the fan will never be inhibited while in heating mode.

### INTEGRATING ELECTRIC HEATER SYSTEM

This regulator can be configured (**P01=3**) to manage a special plant type featuring two heating systems: one with a hot water flow controlled by a valve, the other with an integrating electric heater. In this mode the regulator is only driving one valve wired at the cooling output to manage a special plant type featuring two heating systems: one with a hot water flow controlled by a valve, the other with an integrating electric heater. In this mode the regulator is only driving one valve wired at the cooling output and one integrating electric heater wired at the heating output.

The relevant wiring diagram is in Fig. 8 e and f. The valve is driven as in a two pipes system: according to the heating or cooling setting of the controller the relevant flow of hot or cool water is managed.

The electric heater is turned on as an additional (integrating) heat source whenever, in heating mode, the room temperature falls below the set point temperature by a  $\Delta$  setpoint that can be configured in parameter **C18**.

In cooling mode it is possible to have a neutral zone regulation by setting a neutral zone width greater than zero on **P19**. In this case cooling is achieved by activating the valve, while heating by activating the electric heater.

In this type of system it is suggested to set a delay on the fan switch-off on **P21**, so that when the electric heater is switched off, the fan keeps running to cool the heater down.

In case the cut-off temperature function is used in this system, the fan will never be inhibited while in heating mode, since the electrical heater will be turned on in advance instead.

### HEAT PUMP SYSTEM

The regulator can be configured to manage a heat pump system (**P01=4**) thus controlling a 4-way valve wired at the heating output and a compressor at the cooling output.

The wiring diagram is shown in Fig. 8 g. The 4-way valve output is always turned on or off according to the heating or cooling setting of the regulator. In case the "EUROPEAN" type of driving is chosen, the 4-way valve is powered in heating mode and left unpowered in cooling. Alternatively, with the valve wired at terminal 10, the driving logic is reversed: the valve is powered in cooling and left unpowered in heating ("USA" type).

The compressor output is active whenever it is necessary to "pump" the heat, that is when the room needs to be cooled down or heated up. It is advisable to set a delay on the compressor output (parameter **C09**) in order to avoid too frequent turn-off and turn-on.

In the heat pump mode the supply water temperature sensor can still be wired and its purpose is for protection against freezing or overheating of the heat exchanger. Should the supply sensor, when in cooling mode, detect a temperature lower than **C02**, the regulator stops the compressor (anti-freeze protection).

On the other hand, should the supply sensor, when in heating mode, detect a temperature higher than the value stored in parameter **P22**, the regulator stops again the compressor (over-heat protection).

## UNDERFLOOR HEATING SYSTEMS WITH FAN COIL FOR COOLING

The thermostat can be configured to manage a special system which uses different means of temperature conditioning depending on whether heating or cooling is needed in the room.

For example, in summer season a fan coil can be driven for room cooling by controlling the fan and the cold valve, while in winter season it could only drive the hot valve of the underfloor system, always keeping the fan coil fan off.

The thermostat can receive information on the summer/winter status directly from the heating system on an input (3 or 4), in this way there will be an automatic management of the seasonal changeover, with an automatic recall of the climate mode and setpoint of the respective season.

To configure this type of system, set **P01 = 1** and **P03 = 4**.

## ECONOMY FUNCTION

The "Economy" function allows to temporary set an energy saving mode through a reduction of the actual setpoint temperature by a step (configurable) when in heating mode, or increasing it by the same step when in cooling mode.

The value for this reduction step is set with parameter **P17**: when this is set to 0.0 the Economy function is actually disabled. The Economy mode is activated by the "⏻" button, as described in the "Description of controls" section.

The Economy mode can be remotely activated in centralised mode, even for multiple thermostats, using the inputs to terminals 3 or 4 (see parameters **C14** and **C15**).

Since the thermostat is sensitive to signal status changes and not to the level, use the "⏻" button to change the activation status of the Economy

function, even when it is forced by the centralised signal. When the Economy function is activated ("⏻" icon on), fan speed is limited to the first.

## DIRTY FILTER WARNING FUNCTION

Fan-coils and other devices including a fan are often equipped with a filter for the air in the suction path, which needs a periodical maintenance and cleaning or replacement. This regulator can warn the user when the maintenance has to be made, provided the "Dirty filter warning" function has been enabled.

The function is activated by setting the time-to-maintenance on parameter **P24**. The thermostat will count the fan operation time and when the threshold set in **P24** (per 100 hours) is reached, the "⬠" filter icon blinks on the display. Once the filter has been cleaned, to reset the warning and the time counter keep the "♣" button pressed for 10 seconds, until the "⬠" filter icon disappears from the display.

## TEMPERATURE REGULATION

This device can drive in a proportional way both valves and fan in order to control room temperature with the highest comfort and energy saving. Nonetheless each different environment needs a different set for some parameters in order to get an accurate regulation.

Parameters responsible for the regulation accuracy are:

- Proportional band: **C05** and **C06**
- Integral time: **C07** and **C08**

For each of the settings two parameters are available, because the user is allowed to set different values for heating and cooling mode. Proportional band, measured in °C, is intended as the difference between setpoint and room temperature which is needed to fully open the regulating valve.

The narrower the proportional band, the fastest is the regulator to

counteract temperature variations in the room. Yet a too “narrow” value for this parameter can result in room temperature oscillations or system instability.

A too “wide” value could result in the impossibility to reach the setpoint temperature in the room. When the integral time is set to zero, no integral action is made and therefore the regulation is purely proportional (P type). When an integral time different from zero is set the resulting regulation is made of a Proportional plus an Integral action (P + I type).

The smaller the integral time, the greater the influence of the integral action and vice-versa: with a greater integral time the resulting integral action is softer. A too soft or null integral action could result in the impossibility to reach the setpoint temperature, meanwhile a too strong integral action could possibly generate oscillations in the room temperature. It is necessary to adjust these parameters according to the actual environment in which the regulator is installed to get the best regulation accuracy.

When PWM valves or floating servo-actuators are used the quality of the final proportional regulation is directly associated to how accurately is performed the system tuning. When simple on-off valves are used no proportional action can be obtained: the relevant driving will always be either full-on or full-off, with a differential value set on parameter **P18**.

In this situation both parameters “proportional band” and “integral time” are not used.

The fan is driven in a proportional way only in case the regulator has been set with automatic speed control. When the valve is proportional type, the **P + I** regulation will provide the correct fan speed, meanwhile in case the valve is not proportional type, the fan speed will be selected according to a purely proportional (**P**) rule, therefore only the “proportional band” parameter will be used to decide how reactive will need to be the fan against variations in the room temperature.

The distance between the three speed stages is calculated dividing by three the proportional band and rounding down. For example if the proportional band is 2°C, the distance between stages will be 0.6°C.

## VALVE TYPES


This regulator can drive the following type of valves:

**ON-OFF:** if Normally Closed (NC) it enables the water flow when power is applied; if Normally Open (NO) water is normally flowing when the valve is unpowered and is stopped when powered. Wiring diagram in Fig. 8 a, c and e.

**PWM:** same as above; moreover the regulator controls the water flow in a proportional way by driving the valve with power pulses whose duration in time is a function of how much heat the room is requiring (PWM).



**3 point floating servocontrol:** this is a kind of motor valve featuring one “open” wire and one “close” wire, plus a common wire. This type of valve is characterized by a nominal opening time (defined by the manufacturer) whose value must be set into parameters **C03** and **C04**. The regulator will drive this valve through power pulses with one second resolution in a way that its stem will reach the position needed for the regulation, thus performing a proportional modulation.



The relevant wiring diagram is shown in Fig. 8 b, d and f. When the thermostat is configured to control a 3 point valve, upon power-up, before starting the room temperature regulation, it will perform a valve position resynchronisation cycle.


This consists of closing the valve for a time equal to 150% of the nominal set time. The resynchronisation cycle in progress is shown on the display by the “” icon.

This cycle will be periodically repeated in order to recover possible positioning errors which might be accumulated during time.

## INSTALLER CONFIGURATION


Installer configuration defines the thermostat operation and allows to adapt it to the different types of plants and systems. To access the configuration menu, simultaneously press the  e "" buttons for a few seconds until "**Con**" (configuration) appears on the display.

Once entered in configuration menu, pressing  scrolls through the various parameters, identified with **P** and the parameter number, from **P01** to **P24**. The configuration end is displayed with "**End**". Press  again to save the configuration and return to normal operation.

Press the "" button, at any time, to exit from the configuration menu without saving the changes.

When scrolling the parameters pressing button " or " or "" displays its current value.


To change the value, when it is displayed, press button " or "".

To prevent unauthorised access to the configuration remove the internal jumper (**JP5**) shown in Fig. 6. Any attempt to access the configuration will display the flashing "" icon.

The installer configuration consists of two lists of parameters:





- main parameters **P01** to **P24** (table 1)
- extended parameters **C01** to **C19** (table 2)

The extended parameters **C01-C19** allow an advanced thermostat configuration.

When the display shows "**Con**" at configuration start or "**End**" at configuration end, press the "" button to access the extended parameters.

## INSTALLER CONFIGURATION RESET

In order to reset the installer configuration, so that all parameters are reset to the factory default values, enter the configuration mode by

holding down the keys " and "" until the display shows "**Con**", then hold down the two keys " and "" for a few seconds, until the display returns to the usual screen.

## DESCRIPTION OF MAIN CONFIGURATION PARAMETERS

The main installer configuration parameters are shown in table 1 and explained below.

**P01:** System type selection.

2 pipes system: when configured for a two-pipes system the controller drives one valve only, wired at the "heating" valve terminals, both when heating and when cooling, as the same valve is going to control either hot or cool water flow.

See wiring diagram in Fig. 8 a and b.

In case of a two-pipes system without valve, and therefore with no wirings at the valve output terminals, make sure to set parameters **P03** and **P04** to "fan control" in order to get an effective regulation.

4 pipes system: when configured for a four-pipes system the controller drives both valves outputs in order to activate either the hot water or the cooling one according to the actual requirements of the controlled environment.

See wiring diagram in Fig. 8 c and d.

Electric heater system: the regulator is configured to control a system equipped with an electric heater: see the section "Electric heater system" for more details.

Integrating electric heater system: the regulator is configured to control a system equipped with an electric heater: see the section "Integrating electric heater system" for more details.

Heat pump system: the regulator is configured to control a system equipped

with a heat pump: see the section "Heat pump system" for more details.

**P02:** This parameter sets the way how the controller switches from the cooling mode (summer) to the heating mode (winter) and vice versa. The switching can be either manual or automatic:

***Manual:*** The user manually sets the heating or the cooling mode.

***Automatic:*** The controller automatically switches from the heating to the cooling mode or vice-versa.

This automatic operation is different according to the system type as set with parameter **P01**.

In case of a 4-pipes system, an electric heater or heat pump system the thermostat operates with a neutral zone. Therefore it activates heating or cooling according to the set point temperature.

In case of a 2-pipes system or an "integrating electric heater" system, the controller operates a changeover according to the delivery water temperature.

When the delivery water temperature is low (that is below the threshold set with parameter **C01**) the controller switches to cooling mode.

On the opposite side, when this temperature is high (that is above the threshold set with parameter **C02**) the controller switches to heating mode. In case the supply temperature is neither too low nor too high the operating mode is kept unchanged, and can be manually changed.

When the delivery water sensor is not installed or it is not properly working, no automatic selection is performed and only the manual switching is allowed.

***Remote selection:*** In a building with several regulators all inputs can be wired together for a remote selection coming from the central heating room. On **C11**, **C12** and **C13** parameters it is possible to choose the input and the mode (normal or reversed) to be associated to the "remote heating/

cooling" selection.

In Fig. 7 is shown a wiring example for a remote heating/cooling selection.

**P03 and P04:** these parameters set which outputs are controlled.

When in heating mode parameter **P03** is used, when in cooling mode **P04** is used instead, in this way you can choose different means of temperature conditioning depending on the season.

Each parameter defines whether the thermostat must regulate the temperature by acting on the valve or on the fan or on both.

If you choose to regulate only with the valve, the fan will be always on even after temperature has reached the setpoint, or you can choose to keep the fan always off.

If you choose to regulate only with the fan, the valve will be always open even after temperature has reached the setpoint, or you can choose to keep the valve always closed.

In systems with electric heater or heating pump these parameters cannot inhibit the valve outputs because these outputs are driven according to the specific system type.

**P05 and P06:** these parameters set which type of valve is wired respectively at the heating and cooling outputs. See "Valve types" section for more informations.

**P07:** This parameter sets the type of the sensor used for the acquisition of the delivery water temperature.

When set to value 0 or 1 we mean that a sensor is used for the acquisition of the water temperature, properly wired to terminals 13 and 14: when 1 is set, the temperature value can also be displayed, according to the user choice. In case 0 is set, the information coming from the temperature sensor is still used for the regulation purpose, even if its value can not be displayed.



When set to value 2 we mean that a bimetallic thermostat will be connected to terminals 13 and 14 to perform only the cut-off temperature function when in heating mode.

**P08:** This parameter enables the room “de-stratification” function. With this function the fan is turned on, at its lowest speed, for about 1.5 minutes every 15 minutes.

The function is only active when the fan should be turned off according to the room temperature regulation.

**P09:** In case of a black-out the thermostat remembers its latest state and when the power returns, it restarts with the same settings (on/off, heating/cooling, etc.). Anyway, in some situations it is requested that the thermostat restarts to a known state (i.e. always OFF or always ON). This can be accomplished by setting parameter **P09** to “2” (always restart from “ON”) or “3” (always restart from “OFF”).

**P10:** Room temperature sensor selection.

This parameter sets whether the temperature sensor used for regulation has to be the internal one in the thermostat or the external one (optional).

**P11:** With this parameter a slight correction (offset) for the acquired room temperature can be set. Actually it could happen that in some installations, due to the sensor location (either internal or external) the temperature readout is not accurate.

By changing the value of this parameter the display readout can be corrected of the equivalent amount being this a value which is actually added to the acquired temperature reading.

**P12 and P13:** These two parameters set the range of the setpoint temperature when in heating mode. In details **P12** is the lower limit, it can be configured in the range 5.0°C .. 35.0°C. while **P13** is the upper

limit, whose value can be configured starting from the actual **P12** value until 35.0°C. The maximum range is then 5°C .. 35°C and it can be easily modified according to the installation needs.

**P14 and P15:** These two parameters set the range of the setpoint temperature when in cooling mode with the same logic as those in the former step. When the heating/cooling mode is changed, the limits of the setpoint temperature are automatically modified in turn.

When the “neutral zone” operation is selected, these two parameters will not be used and only the **P12** and **P13** values will be taken into account.

**P16:** This parameter defines an anti-freeze temperature (in °C), that is a minimum temperature which is maintained in the room even when the regulator is turned off.

Regulation according to this temperature will only take place when the regulator is set in heating mode; the fan speed will be limited to the lowest one. Setting the value to 0.0 disables the anti-freeze function.

**P17:** This value defines the entity of a temperature reduction step (in °C) used to perform the “Economy” function.

The actual setpoint is therefore reduced (when in heating mode) or raised (when in cooling mode) by this step, once the “Economy” function is made active.

Setting this parameter to 0.0 the “Economy” function is always disabled.

**P18:** This parameter sets the differential (in °C) used in the regulation process when on-off loads are used.

**P19:** In case the controller is configured for a neutral zone operation this parameter determines the neutral zone amplitude in the range 0.0°C .. 11.0°C. This value has to be intended centered across the setpoint temperature.

**P20:** This parameter allows to set a delay time (in seconds) from the valve opening to the fan turn-on, in order to allow some time for the heat exchanger to heat-up or cool-down.

**P21:** This parameter allows to set a delay time (in seconds) from the valve closing to the fan turn-off, in order to allow some time for the heat exchanger or electric heater to dissipate the residual heat.

**P22:** This parameter defines the threshold above which the delivery water is considered sufficiently hot for the cut-off temperature function in heating mode. In case this function is not wanted, set the parameter to zero. If, instead, the "heat pump" system has been configured, this threshold protects the heat exchanger from overheating. See "Heat pump system" section for further information.

**P23:** This parameter defines the threshold below which the delivery water is considered sufficiently cold for the cut-off temperature function in cooling mode. In case this function is not wanted, set the parameter to 99. If, instead, the "heat pump" system has been set this threshold protects the battery from freezing. See "Heat pump system" section for further information.

**P24:** This parameter sets the time after which the "Dirty Filter Warning" is shown; it can be set in the range 0..50 x 100h. As an example "10" means that the warning will be shown after 10 x 100 = 1000 hours of fan operation. When set to 0 the function is disabled.

## DESCRIPTION OF EXTENDED CONFIGURATION PARAMETERS

The extended installer configuration parameters are shown in table 2 and explained below.

**C01 and C02:** These parameters define the thresholds for the automatic changeover function: if the function is not used this information is not

applied. The **C01** parameter represents the lower threshold, set in the 0°C .. 24°C range, while **C02** represents the upper threshold in the 26°C .. 48°C range.

**C03 and C04:** In case a floating actuator is chosen as regulating valve, these parameters must be set to the opening time (in seconds) of the heating output actuator and the cooling actuator, respectively.

In case instead a PWM valve is chosen, this parameters must be intended as the cycle-time for the valve or, in other words, the modulation repetition time, i.e. the time occurring between two adjacent power pulses applied to the valve.

**C05 and C06:** These parameters set the proportional band amplitude (in °C) when in heating and in cooling mode respectively.

These parameters can be set in the 0.8 .. 8.0°C range, yet the lower limit could be higher, being related to the differential value stored in **P18**.

**C07 and C08:** these parameters are used to set the integral time respectively for regulation in heating mode and in cooling mode.

When set to zero no integral action is performed.

**C09:** This parameter determines the timing (in minutes) of the cooling output, when controlling an on-off valve (or other load).

This function is enabled only in the "4 pipes", "electric heater" and "heat pump" systems: if the cooling output is switched off, it can be switched on again only after the time configured on C09.

A compressor, which is normally not rated to tolerate repeated switch-offs and switch-ons, can thus be controlled directly.

**C10 and C11:** respectively represent the minimum power percentage of the heating and cooling proportioning valve.

The minimum power is the opening percentage of the proportional valve

below which the fan is kept off to avoid that the fan blows when the valve has not yet opened the water flow.

**C12:** Sets the number of speeds of the fan motor used in the system. Typically Fan motors are 3 speeds type, but this parameter allows 1 and 2 speeds motors to be managed also.

**C13:** Determines which fan speeds can be set with the “fan” button. In certain installations it may be necessary to limit “♣” button function. Table 3 shows the available combinations.

**C14, C15 and C16:** These parameters allows to set which function must be associated to the **3, 4 and 16** inputs. Table 4 shows which functions can be associated to each input. It is the installer’s responsibility that each function is not associated to more than one input.

See the “External inputs - terminals **3, 4 and 16**” section for further information.

**C17:** Determines which operating modes can be set with the button “⏻”. In certain installations it may be necessary to limit button “⏻” function. Table 5 shows the available combinations.

**C18:** This parameter configures the integration “ $\Delta$  set point” of the electric heater system. See the “Integrating electric heater system” section for further information.

**C19:** If the buttons are inactive for a few seconds the thermostat returns to display the room temperature. When this parameter is set to 1, the thermostat displays the set-point temperature instead of room temperature.

## ROOM TEMPERATURE CORRECT ACQUISITION

For a correct temperature acquisition it is mandatory to remember and apply the following tips:

- In order to have an accurate room temperature acquisition the controller must be installed far from heat sources, airstreams or cold walls (thermal bridges). When the remote sensor is used in conjunction with the controller, then this note is to be applied to the remote sensor itself.
- When a remote sensor is used, do not use the same duct for signal wires and power (mains) wires, as the temperature reading accuracy could be impaired. Wirings can be usefully made with bipolar screened cable, whose screen is only wired at the regulator side (terminal 14) with 1,5 mm<sup>2</sup> minimum cross section and 15 m. maximum length.
- In the normal operation with internal sensor, the controller conditions the signal acquired according an exclusive algorithm designed to compensate the heat generated from its internal components. From this derives that the temperature value displayed at turn-on can be actually lower than the real one. This must be considered a normal behaviour: anyway in some minutes this difference should decrease down to zero.
- In case the controller should drive with its outputs large loads (whose current is close to the maximum rated value) it might happen that the internal components heat gets bigger. This temperature increase could in turn influence the room temperature acquisition when the internal sensor is used. This problem is not present when the remote temperature sensor is used.
- When, for any reason, the room temperature accuracy is considered unsatisfactory (due to the above mentioned reasons), it can be corrected with parameter **P11**.
- When the controller is powered with 230V ~ it is mandatory to respect the live and neutral (L and N) position during wiring.

Table 1: Main configuration parameters.

DFLT	PAR.	DESCRIPTION	SET VALUES					
0	P01	System type	0 2-pipes system	1 4-pipes system	2 Electric heater	3 Integrating Electric heater	4 Heat pump	
0	P02	Heating/cooling selection	0 Manual	1 Automatic	2 Remote			
3	P03	Heating regulation	1 Always ON fan	2 Always ON valve	3 Regulates valve and fan	4 Always OFF fan	5 Always OFF valve	
3	P04	Cooling regulation	1 Always ON fan	2 Always ON valve	3 Regulates valve and fan	4 Always OFF fan	5 Always OFF valve	
2	P05	Heating output type	1 Floating servo-actuator	2 NC ON/OFF valve	3 NO ON/OFF valve	4 Prop. ON/OFF NC valve	5 Prop. ON/OFF NO valve	
2	P06	Cooling output type	1 Floating servo-actuator	2 NC ON/OFF valve	3 NO ON/OFF valve	4 Prop. ON/OFF NC valve	5 Prop. ON/OFF NO valve	
0	P07	Supply water sensor input	0 Do not show temperature	1 Show temperature	2 Bi-metallic contact			
0	P08	De-stratification	0 Never	1 Cooling only	2 Heating only	3 Always		
1	P09	On/Off state at power up	1 Last	2 Always ON	3 Always OFF			
0	P10	Room temperature sensor	0 Internal	1 External				

0.0	P 11	Room temperature offset (°C)	-10.0.. 10.0
10.0	P 12	Heating set-point lower limit (°C)	5.0.. 35.0
30.0	P 13	Heating set-point upper limit (°C)	5.0.. 35.0
10.0	P 14	Cooling set-point lower limit (°C)	5.0.. 35.0
30.0	P 15	Cooling set-point upper limit (°C)	5.0.. 35.0
0.0	P 16	Anti-freeze threshold temperature (°C)	0.0.. 15.0
0.0	P 17	Economy reduction (°C)	0.0.. 10.0
0.2	P 18	Room temperature hysteresis (°C)	0.2.. 1.0
3.0	P 19	Neutral zone width (°C)	0.0.. 11.0
0	P20	Fan delay at turn-on (seconds)	0.. 600
0	P21	Fan delay at turn-off (seconds)	0.. 600
40	P22	Heating delivery temperature threshold (°C)	0.. 99

15	P23	Cooling delivery temperature threshold (°C)	0.. 99
0	P24	Dirty filter warning time (x 100 hours)	0.. 50

Table 2: Extended configuration parameters.

DFLT	PAR.	DESCRIPTION	SET VALUES
17	C01	Changeover lower threshold (°C)	0..24
30	C02	Changeover upper threshold (°C)	26..48
150	C03	Heating floating actuator opening time (seconds)	30..500
150	C04	Cooling floating actuator opening time (seconds)	30..500
2.0	C05	Heating proportional band (°C)	0.8..8.0
2.0	C06	Cooling proportional band (°C)	0.8..8.0
0	C07	Heating integrating time (minutes)	0..60
0	C08	Cooling integrating time (minutes)	0..60
0	C09	Cooling output timing (min)	0..15
20	C10	Heating valve minimum power (%)	0..50

0	C11	Cooling valve minimum power (%)	0..50
3	C12	Fan motor speeds number	1..3
0	C13	Fan speed "✿" button limitation	0..11 <sup>Tab. 3</sup>
1	C14	Terminal 3 input function	0..22 <sup>Tab. 4</sup>
3	C15	Terminal 4 input function	0..22 <sup>Tab. 4</sup>
9	C16	Terminal 16 input function	0..22 <sup>Tab. 4</sup>
0	C17	On/Off "⏻" button limitation	0..7 <sup>Tab. 5</sup>
1.5	C18	Δ integration set point (°C)	0.0..20.0
0	C19	Default display	<div>0 Room Temperature</div> <div>1 Set point Temperature</div>

Table 3: C13 parameter - Fan speed "🌀" button limitation.

VALUE	DESCRIPTION
0	1 → 2 → 3 → AUTO
1	1 → 2 → AUTO
2	1 → AUTO
3	OFF → 1 → 2 → 3 → AUTO
4	OFF → 1 → 2 → AUTO
5	OFF → 1 → AUTO
6	OFF → 1
7	OFF
8	1
9	2
10	3
11	AUTO
12	1 → 2 → 3
13	1 → 2
14	OFF → 1 → 2 → 3
15	OFF → 1 → 2

Table 4: PARAMETERS C14, C15, C16 - Functions associated to 3, 4 and 16 inputs.

VALUE	DESCRIPTION
0	No function associated.
1	"Centralised Summer/Winter" function (closed contact = summer); <b>P02</b> parameter configured to 2.
2	"Reversed centralised Summer/Winter" function (closed contact = winter); <b>P02</b> parameter configured to 2.
3	"Economy" function (closed contact = reduction).
4	"Economy" function (closed contact = reduction) - display shows the "🏠" (present) or "🏠" (absent) icon.
5	"Reversed economy" function (contact open = reduction).
6	"Reversed economy" function (contact open = reduction) - display shows the "🏠" (present) or "🏠" (absent) icon.
7	"Stop adjustment" function (closed contact = stop adjustment).
8	"Stop adjustment" function (closed contact = stop adjustment) - display shows the "🏠" (present) or "🏠" (absent) icon.
9	"Stop adjustment" function (closed contact = stop adjustment) - display shows the "🔧" icon.
10	"Stop adjustment" function (closed contact = stop adjustment) - display shows the "🔧" icon.













11	Reversed "Stop adjustment" function (open contact = stop adjustment).
12	Reversed "Stop adjustment" function (closed contact = stop adjustment) - display shows the  (present) or  (absent) icon.
13	Reversed "Stop adjustment" (open contact = stop adjustment) - display shows the  icon.
14	Reversed "Stop adjustment" (open contact = stop adjustment) - display shows the  icon.
15	"Thermostat ON / OFF" function (closed contact = thermostat off).
16	Reversed "thermostat ON / OFF" function (contact closed = thermostat on).
17	"Motor alarm" function (closed contact = alarm) - display shows the  icon.
18	Reversed "Motor alarm" function (open contact = alarm). - display shows the  icon.
19	Electric heater alarm (closed contact = alarm, flashing  +  icons).
20	Reversed electric heater alarm (open contact = alarm, flashing  +  icons).
21	Dirty filter warning: closed contact = dirty filter icon  flashing.
22	Reversed dirty filter warning: open contact = dirty filter icon  flashing.

Table 5: C17 parameter - On/Off  button limitation.

VALUE	DESCRIPTION
0	OFF → ON → RDC
1	OFF → ON
2	OFF → RDC
3	OFF
4	ON → RDC
5	ON
6	RDC
7	No function





**Rispetta l'ambiente!**

Per il corretto smaltimento, i diversi materiali devono essere separati e conferiti secondo la normativa vigente.

**Respect the environment!**

For a correct disposal, the different materials must be divided and collected according to the regulations in force.

**Respectez l'environnement!**

Pour procéder correctement à leur élimination, les matériaux doivent être triés et remis à un centre de collecte dans le respect des normes en vigueur.

**Umweltschutz!**

Zur richtigen Entsorgung müssen die verschiedenen Materialien getrennt und gemäß den gültigen Bestimmungen abgegeben werden.

**EMMETI Spa**

Via B. Osoppo, 166 - 33074 Vigonovo  
frazione di Fontanafredda (PN) - Italy  
Tel. 0434-567911 - Telefax 0434-567901  
Internet: <http://www.emmeti.com>  
E-mail: [info@emmeti.com](mailto:info@emmeti.com)



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