User guide

DG8000

Fancoil Controller

CE

EUROPEAN COMMUNITY DIRECTIVES
This equipment meets all requirements of European Community Directives for Low Voltage (72/23/EEC), General Safety (92/59/EEC), and Electromagnetic Compatibility (89/336/EEC).

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ISO9000

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1 INTRODUCTION

DG8000 are designed to control 3 fan speeds and valves in 2/4-pipe fan-coils.
Two models are available: **DG8000**, for floating proportional valve control and **DG8001** for ON/OFF valve control.
Both controllers are especially suitable for hotel rooms (badge contact, window contact, mini bar fridge opening detection and auxiliary electrical charge output), hospitals and offices.

The **User Interface (DG8011)** and the **Temperature sensor (DG8022)** can be connected to the controllers.
The user interface is located into a 3-unit Bticino housing, the sensor has to be located on the return (1,5 m. max distance) while the controller can be mounted inside the fancoil or in false ceilings, fixed on a DIN rail (35x27x7,5).

Inside the controllers there are 3 jumpers with the following functions:
JP4 4Tub jumper: Closed = 4-pipe, Open = 2-pipe (it controls the heating output)
JP4 VAL jumper: Closed = the fan remains at Low speed with closed valve, Open = the fan is stopped with closed valve.
JP4 MOD B jumper: Closed = ModBus protocol, Open = proprietary protocol (it must be closed).

The controllers can operate locally (stand alone) or by a supervision management.
In the first case, the controller is independent and operates by means of the factory-configured functions or by ModBus configuration tools. In the second case, it is possible to read and set the parameters by the Supervision.

In Local mode by the user interface it is possible:

1. To switch off and switch on the controller
2. To display the temperature detected by the return sensor.
3. To adjust the room temperature SET value.
4. To override the fan speed (Auto, 1, 2, 3).
5. The other functions will depend on the configuration type.

In Supervision mode it is possible:

1. To operate as described for the local mode.
2. Set and/or change all parameters.
3. Set the modes (On, Reduced, Off) according to time schedules.

2 USER INTERFACE

The user interface allows overriding the main parameters as already described.

According to the operating modes set, it will be possible to:

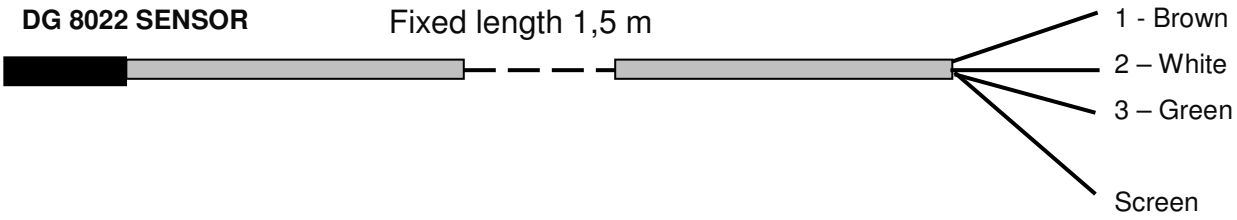
1. Enable/Disable control by pushing the "**ON**/**OFF**" key
2. Override the fan speed choosing between Low, Medium, High and Auto modes, pushing the "**FAN**" key.
   The user interface display shows the number corresponding to the selected speed (**1**, **2**, **3)** or "**Au**".
   Setting Au (automatic) the controller fan speed is estimated automatically according to the gap between room temperature and the Set one.
3. Adjust the Room temperature Set value by the "▲" and "▼" keys.
   Generally, the user interface display shows (with reduced intensity) the room temperature value.
   Pushing "▲" or "▼" it shows the Set value (higher intensity): the Set value can be changed by pressing the same keys.

If the keys are not pushed for some seconds, the displays returns to the room temperature value (reduced intensity).

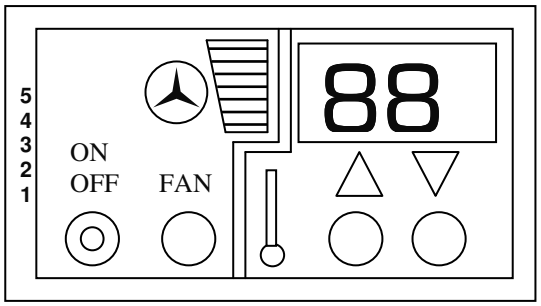
3 ELECTRICAL WIRING

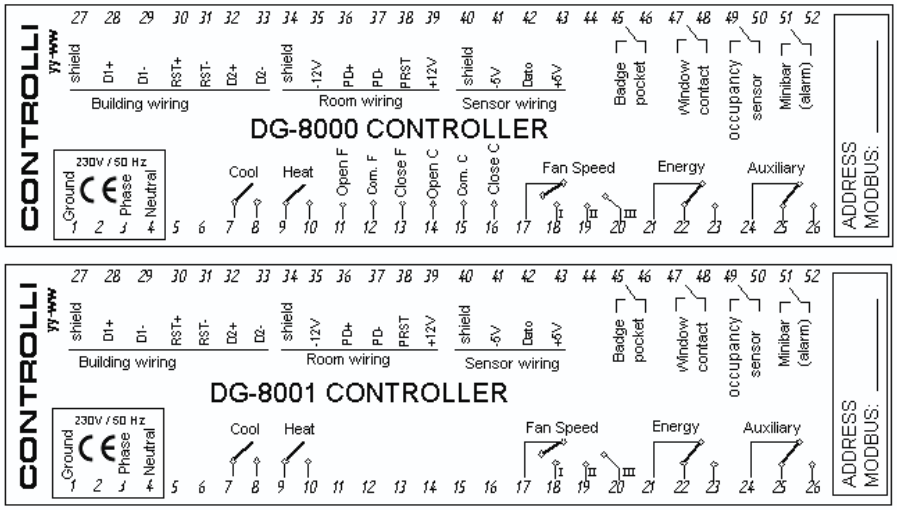
3.1 DG8001 (ON/OFF) AND DG8000 (FLOATING) CONTROLLERS

DG 8022 SENSOR



DG 8011 DISPLAY





DG8011 DISPLAY KEY

Terminal	Description
1	Connect to 36 terminal (PD+) of the controller
2	Connect to 37 terminal (PD-) of the controller
3	Connect to 38 terminal (PRST) of the controller
4	Connect to 35 terminal (-12V) of the controller
5	Connect to 39 terminal (+12V) of the controller

DG8022 SENSOR KEY

Terminal	Description
1	Connect to 41 terminal (-5V) of the controller
2	Connect to 42 terminal (Datum) of the controller
3	Connect to 43 terminal (+5V) of the controller

DG8000/8001 CONTROLLER KEY

Terminal	Description
1	Ground 230V 50 Hz power supply
3	Phase
4	Neutral
7	ON/OFF valve control, Cooling
8	
9	ON/OFF valve control, Heating
10	

(DG 8000 only)

11	OPEN
12	Floating valve Common, Cooling
13	CLOSE

(DG 8000 only)

14	OPEN
15	Floating valve Common, Heating
16	CLOSE
17	Common, fan control
18	LOW speed
19	MEDIUM speed
20	HIGH speed
21	Common, ENERGY control
22	NC contact
23	NO contact
24	Common, AUX. control
25	NC contact
26	NO contact
27	MODBUS RS485 cable screen
28	Date (D+)
29	Date (D-)
34	DG8011 display connection screen
35	Power supply (–12V)
36	Date (PD+)
37	Date (PD-)
38	Control (PRST)
39	Power supply (+12V)
40	**DG 8022 sensor connection screen**
41	Power supply (-5V)
42	Data
43	Power supply (+5V)
45	BADGE input
46	
47	OPEN DOOR input
48	
49	OCCUPANCY SENSOR input
50	
51	MINIBAR (Alarm) input
52	

4 OPERATION DESCRIPTION

4.1 GENERAL

The controllers manage the 3 fan speeds and the valve output of 2/4-pipe fancoils.
The controllers can be configured to enable the different operating modes so that the 4 digital inputs can be used to carry out the preset actions by controlling the 2 aux. digital outputs.
In case of 2-pipe systems, it is necessary to use the heating output.
In winter, it is possible to turn on the auxiliary heating. It implies the activation of the Cooling output when the temperature value is different from the Set: such value can be set by the user.

If the configuration required is different from the default one, it is necessary to use the ***configuration tool*** which sets the required parameters and modes through the ModBus protocol.

It is necessary to define the following operating modes:

1. **Fan speed**
   It is possible to set Automatic mode or to override the Low, Medium or High speed by the **Fan mode** parameter. It corresponds to push the FAN key on user display.
   Default value = 0 (Automatic).
2. **Room temperature display**
   The room temperature visualisation is enabled/disabled on display by **Room temperature** parameter.
   Default value = 1 (enabled).
3. **Control stop from window contact**
   The **Reg & Fan OFF by Open Window** parameter enables/disables the possibility to stop operation (fan and valve OFF) when the corresponding input is closed.
   Default value = 1 (enabled).
4. **S/W operation**
   It defines the s/w operation for the 2-pipe plants by **Summer**/**Winter** parameter.
   Default value = 1 (winter)
5. **User display**
   The user display is enabled/disabled by **Enable user display** parameter keeping the control active.
   Default value = 1 (active).
6. **Controller enable**
   The **Controller enable mode** parameter is defined if the controller is always enabled (independent mode) or only whether energy is provided (dependent mode). In the latter case, it is necessary to check the **Energy relay mode** parameter which defines if the Energy output is enabled by Badge, always enabled or disabled. When the controller is enabled, control can be activated by pushing the ON/OFF key on display. Default value = 1 (always enabled).
7. **Energy relay enabling**
   The **Energy relay mode** parameter defines whether the Energy output is always enabled, enabled by Badge or always disabled.
   Default value = 0 (enabled by Badge).
8. **Temperature value to use in case of error**
   The **Last temperature selection in case of error** parameter, defines whether, in case of error, to use the value contained in the **Temp. used in case of error** parameter or the last value which has been read correctly.
   Default value = 1 (it uses the value stored).
9. **Operating mode at start up**
   The **Use Def. data or EEprom** parameter defines whether the switching on takes place using the default values (display switched off - Set 22°C and Fan in Auto mode) or the stored parameters (**Control ON, Operating Set point and Fan Mode**).
   Default value = 0 (default data).

10. **Heating aid enable in 2-pipe systems**
    the **Heating Aid** parameter defines whether to use the cooling output for the additional heating in 2-pipe systems.
    Default value = 1 (yes automatically)
11. **Auxiliary output enabling**
    If the **Auxiliary Relay mode** parameter is = 0 (OFF) the auxiliary output follows the status of the **Auxiliary relay enabling/disabling** parameter. On the contrary, if the **Auxiliary relay mode** parameter is = 1 (ON) the auxiliary output is activated following the status of both the **Auxiliary relay enabling/disabling** parameter and the sensor mode.
    Default value= 0
12. **Energy output enabling/disabling according to the presence sensor**
    By the **Energy break** parameter, the Energy output is activated when door opening is detected (badge input).
    Default value = 0 (not active).
13. **Temperature sensor type**
    The **Sensor type** parameter defines whether to detect the sensor automatically or to set low/high resolution.
    Default value = 0 (Automatic).
14. **Control by badge**
    The **Adjustment Starting Mode** parameter allows activating control automatically only by inserting the badge.
    Default value = 0 (not active).

5 DG8000 CONTROLLER (PROPORTIONAL Driver)

5.1 GENERAL INFORMATIONS

- The temperature sensor reading takes place every 3 seconds.
- After start-up of the DG8000 controller the synchronization with the display DG8011 occurs; during this phase, which lasts 3 seconds, the display is disabled.
- After starting the DG8000 controller, the proportional valve is initialized, i.e. it is driven to complete closing for 150 seconds.
- The valves are controlled in sequence: before the heating valve is closed, then the cooling one and during this step, which lasts 300 seconds, control is not active; at the end of this process control starts again.
- Every 8 hours of operation the valve initialization is carried out in order to remove possible positioning errors occurred during operation.
- The proportional system of the DG8000 controller works in parallel and simultaneously to the ON/OFF system: therefore, it is possible to choose the system according to the kind of installation.
- The proportional system algorithm is calculated according to the following formula:

Valve Opening = K * (ERROR + Previous Error Sum / TI)

Where:
K = proportional constant
TI = integral constant

5.2 K and T PARAMETERS

The proportional control gives a proportional output value according to the error (difference of the controlled unit from the Set value) and the Proportional Band.

In practice, a value of proportional band, within which the action must operate P, is defined.
If the error is = 0 the output is worth 0%, if the error = Prop. Band, the output is worth 100%.

OUT = ERROR / PROPBAND * 100

In order to drive a proportional actuator, it is necessary to know the Actuator Stroke Time to carry out the whole stroke.

Example:
If an actuator with 120 s. stroke is 0% and it must be driven to 50%, it will be controlled for 60 s. in opening.

A proportional actuator, before it is controlled, must be inizialized; i.e. position the actuator at one stroke end in order to set a sure position and then allow a proper positioning.

The **DG8000** controller doesn't have the Proportional Band parameter, but the **K parameter** represents a proportional constant (Control time for Prop. Band units). This parameter should be calculated according to the actuator stroke time and the proportional band required:

K = STROKE TIME / PROP BAND

The **Valve_Opening** parameter**……** in the database, represents the stroke time % for which the actuator has to be controlled:

Valve % Opening……. = ERROR/PROP BAND * 100

The control time is calculated as follows:

TIME = K * ERROR

Example:
SET = 20°C, Prop. Band = 4, 120 s. actuator.

1. it is necessary to calculate K
   K = STROKE TIME/PROP. BAND = 120 / 4 = **30**

2. Temperature = 22°C
   ERROR (absolute)= SET –TEMPERATURE = 20-22 = **2**

3. The result will be:
   Valve % Opening ….. = ERROR/PROP BAND * 100 = 2 / 4 * 100 = **50**%
   control time (s.) = KC * ERROR = 30 * 2 = **60 sec**.

The TI parameter is the integration constant which allows to cancel a possible difference from the set point value.

In practice, if the temperature doesn't attain the Set value due to proportional action, the integral action continues driving the valve to opening, trying to cancel the error.

Setting TI = 0 integral action is cancelled

Action will increase as the TI parameter decreases, vice versa, it will decrease, if the T1 parameter increases.

5.3 2-PIPE CONFIGURATION WITH FAN STOP

The controller manages the only physical output either for heating or cooling and it has a 2K fixed hysteresis for the fan low speed. The medium and high speeds are enabled in sequence with a 1K leap.
For valve control, read the information described above.
The S/W changeover occurs by setting the **Summer and Winter** parameter **(**ModBus Address: **105)** in case of Supervision, or by running the "minibar" input in stand-alone mode.

Note: if the **JP4- Val** inside jumper is open, the fan never stops, remaining at low speed when the Set value is reached. In any case, it is stopped when control is switched off.

5.4 4-PIPE CONFIGURATION WITH FAN STOP

The controller manages both heating and cooling outputs and it has a 2K fixed hysteresis for the fan low speed. The medium and high speeds are enabled in sequence with a 1K leap.
For valve control, read the information described above.

Note: if the **JP4- Val** inside jumper is open, the fan never stops, remaining at low speed when the Set value is reached. In any case, it is stopped when control is switched off.

6 DG8001 CONTROLLER (ON/OFF Driver)

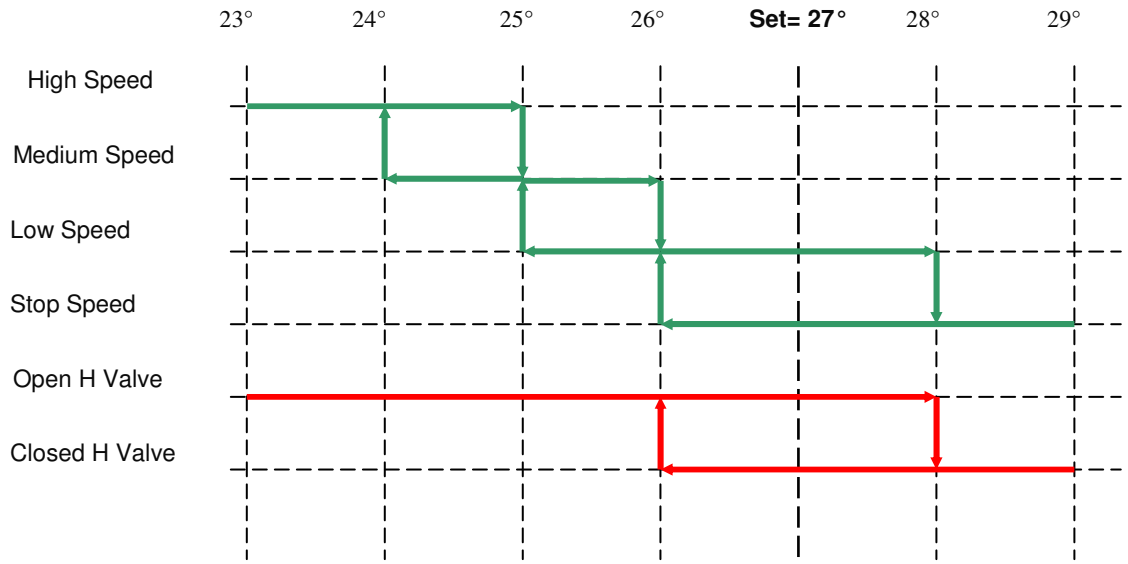
6.1 2-PIPE CONFIGURATION WITH FAN STOP

The diagrams below show that the controller manages the only physical output either for heating or cooling and it has a 2K fixed hysteresis having the Set point value in the middle, both for the valve output and the controller low speed. The medium and high speeds are enabled in sequence with a 1K leap.

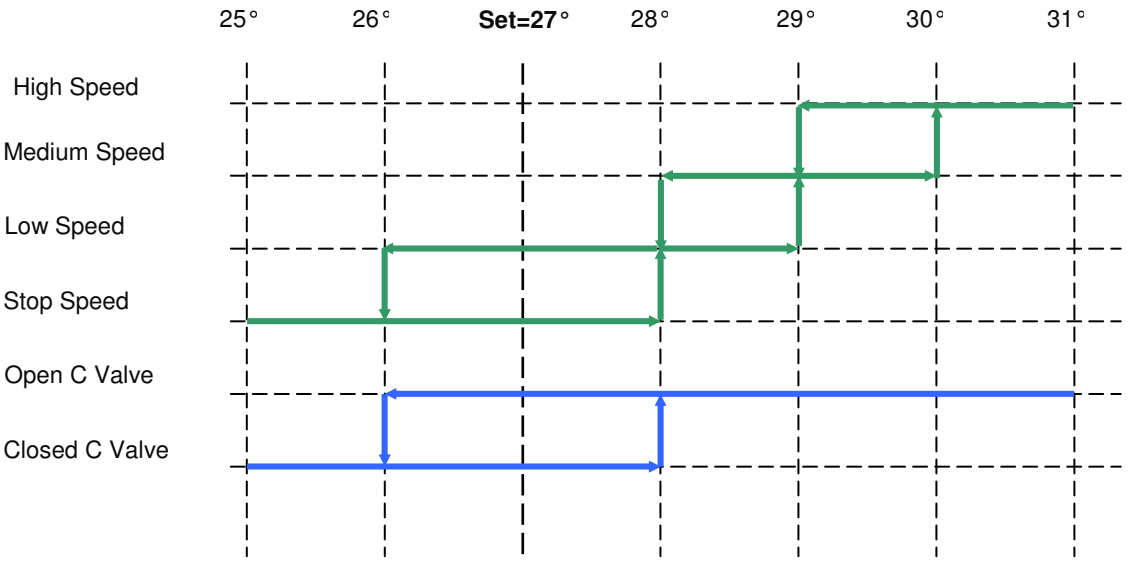
The S/W changeover occurs by setting the **Summer and Winter** parameter **(**ModBus Address: **105),** in case of Supervision, or by running the “minibar” input in stand-alone mode.

Note: if the **JP4- Val** inside jumper is open, the fan never stops, remaining at low speed when the Set value is reached. In any case, it is stopped when control is switched off.

6.1.1 WINTER (Heating fluid valve control)



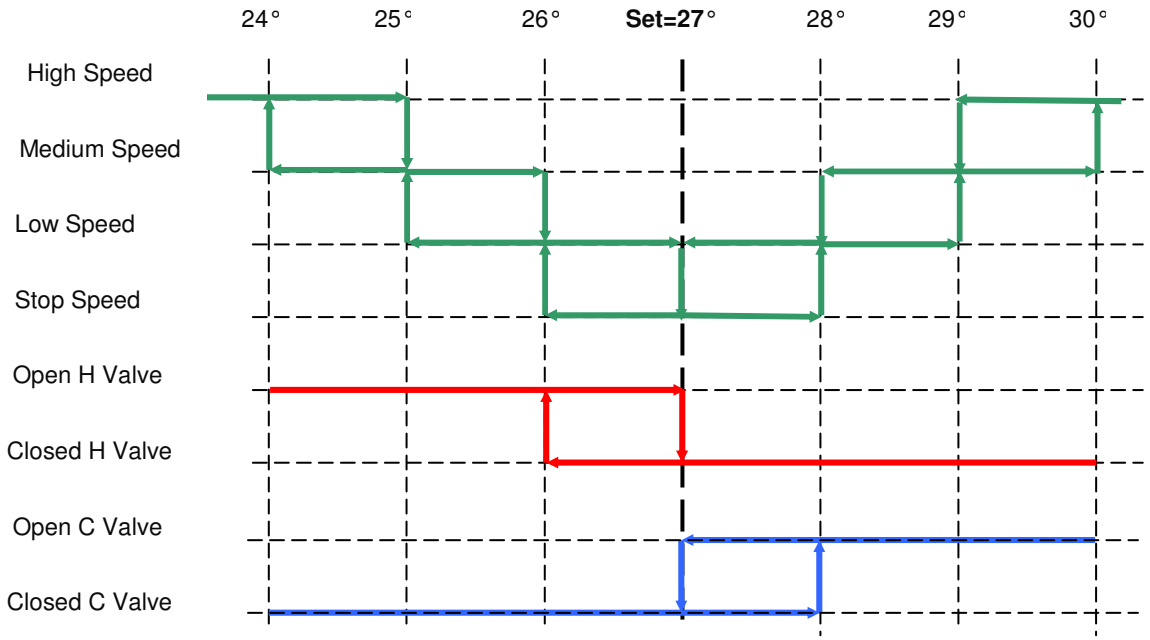
6.1.2 SUMMER (Cooling fluid valve control)



6.2 4-PIPE CONFIGURATION WITH FAN STOP

The diagram below shows that the controller manages the output for both heating and cooling and it has a 1K fixed hysteresis for the heating and cooling valve outputs, while it is 2K for the fan low speed.
The medium and high speeds are enabled in sequence with a 1K leap.

Note: if the **JP4- Val** inside jumper is open, the fan never stops, remaining at low speed when the Set value is reached. In any case, it is stopped when control is switched off.



7 SUPERVISION AND CONFIGURATION

7.1 GENERAL

DG8000 controllers can be connected to a RS485 network and communicate with a Supervisor by ModBus protocol.
The controllers are Slave devices and should have an univocal address. All controllers have ModBus address = 1 (default setting). For this reason, before starting communication, it is necessary to set a univocal address for each controller on the same network. It will be necessary to connect individually to each controller using a Configuration tool.
The address can be set by the **Controller Modbus Address** parameter **(**ModBus Address = **250**). **Attention**, paying attention not to create controller pairs with the same address.
We recommend to label the controller with the assigned address and create a plant wiring diagram in order to find the controller location.

7.2 PARAMETERS BY MODBUS

Parameter: **Control On**
ModbusAddress **1**: (R/W)
It allows switching control on and off: push the ON/OFF key on the display.

Parameter: **Operating Set Point**
ModbusAddress: **2** (R/W)
It allows adjusting the Controller Operating Set: it is necessary to push the Up and Down key on the display.
It is possible to change the Set within min. value Set and max. value Set. T.

Parameter: **Fan Speed**
ModbusAddress: **3** (R/W)
It allows setting the Fan Speed between Automatic, Low, Medium and High: push the FAN key on the Display.

Parameter: **Minibar Open**
ModbusAddress: **4** (R/W)
It shows whether the Minibar has been opened. This action is stored in memory: once it has been read, it is necessary to initialize the value to 0 to be able to detect another opening. It can be used to detect any kind of action (Alarm).

Parameter: **Controller Reset**
ModbusAddress: **5** (R/W)
It shows if the controller has been reset (un-powered): it has been read, it is necessary to initialize the value to 0. If it is overridden to 1 the controller is reset.

Parameter: **Fan Speed**
ModbusAddress: **6** (R)
It displays the fan speed: it is necessary when the Fan Automatic Mode is set.

Parameter: **Room Temperature**
ModbusAddress: **7** (R)
It displays the room temperature read by the return sensor: it is the value shown on the display without decimals.

Parameter: **Badge ON/OFF Inserted**
ModbusAddress: **8** (R)
It shows if the Badge is inserted into an ON/OFF reader.

Parameter: **Energy Relay Status**
ModbusAddress: **9** (R)
It shows the Relay Status on the controller.

Parameter: **Open Window Status**
ModbusAddress: **10** (R)
It shows if the window is open or closed.

Parameter: **Communication Error by Display**
ModbusAddress: **11** (R)
It shows if there is a communication error with the Display.

Parameter: **Communication Error by Sensor**
ModbusAddress: **12** (R)
It shows if there is a communication error with the temperature sensor.

Parameter: **EEprom Data Storing Error**
ModbusAddress: **13** (R)
It shows if there is an error in the EEprom data storing.

Parameter: **Decimal Room Temperature**
ModbusAddress: **14** (R)
It displays the room temperature read by sensor with decimal resolution.

Parameter: **Sensor Reset**
ModbusAddress: **15** (W)
By writing 1 in this parameter, the Reset of sensor is carried out un-powering it for 2 sec.

Parameter: **Cooling Output**
ModbusAddress: **16** (R)
It shows if the cooling valve is open

Parameter: **Heating output**
ModbusAddress: **17** (R)
It shows if the heating valve is open

Parameter: **Reduced Mode**
ModbusAddress: **18** (R)
It shows if the reduced mode is active

Parameter: **Presence detection**
ModbusAddress: **19** (R)
It shows if a presence has been detected

Parameter: **Min. Value of Set**
ModbusAddress: **100** (R/W)
It allows to set the min. Set value of temperature adjustable by PC or Display keys.

Parameter: **Max. Value of Set**
ModbusAddress: **101** (R/W)
It allows setting the max. Set value of temperature adjustable by PC or Display Keys.

Parameter: **Sensor average value correction**
ModbusAddress: **102** (R/W)
It allows making a correction of the average real value read by the temperature sensor.

Parameter: Room T. visualisation by Display
ModbusAddress: **103** (R/W)
It defines if Room Temperature has to be visualised on Display.

Parameter: **Reg & Fan OFF if Window is open**
ModbusAddress: **104** (R/W)
It configures the controller to be able to stop (fan and valves OFF) in case the open window contact has been detected.

Parameter: **Summer/Winter**
ModbusAddress: **105** (R/W)
It sets the Summer or Winter Operating Mode for 2-pipe configuration: it controls the same valve output (having Heating fluid in winter and Cooling fluid in summer).

Parameter: **Enable Display**
ModbusAddress: **106** (R/W)
It Enables/Disables the Display enabling or disabling the use from the user. The control operates with the parameters stored or sent by protocol.

Parameter: **Control enabling Mode**
ModbusAddress: **107** (R/W)
It shows if the controller should operate always (independent) or only when Energy is supplied (dependent). Eenergy is supplied when the Badge is inserted and the Energy Relay Mode parameter is set as a simple ON/OFF reader or when the Energy Relay Mode is set as always active. In these cases, the controller can be switched on pushing the ON/OFF key. In other cases, the Display is disabled.

Parameter: **Maintaining Active Temperature**
ModbusAddress: **108** (R/W)
It defines if the maintaining temperature is active: in this case the controller has to attain Min. maintaining temp. Set and Max. maintaining temp. Set parameters.

Parameter: **Min. Maintaining Temp Set**
ModbusAddress: **109** (R/W)
Min. Temperature Set to be maintained if Min. maintaining active temperature parameter is active.

Parameter: **Max. Maintaining Temp Set**
ModbusAddress: **110** (R/W)
Max. Temperature Set to be maintained if Max.maintaining active temperature parameteris active

Parameter: **Energy Relay Mode**
ModbusAddress: **111** (R/W)
It shows the Energy relay operating mode: it is enabled by Badge, always enabled, always disabled.

Parameter: **Aux. Relay Enable/Disable**
ModbusAddress: **112** (R/W)
It enables/disables the auxiliary relay.

Parameter: **Energy Switch off delay**
ModbusAddress: **113** (R/W)
Delay time before removing power after having extracted the Badge from the ON/OFF reader.

Parameter: **Selection of last Temperature in case of Error**
ModbusAddress: **114** (R/W)
If = 1, in case of sensor using error as setting value into Temp. Used in case of error parameter, otherwise the last correct value is read.

Parameter: **Temp. Used in case of Error**
ModbusAddress: **115** (R/W)
Room Temperature Value to use in case of error.

Parameter: **Use of EEprom or default data**
ModbusAddress: **116** (R/W)
If = 1 it means that, when the controller is switched on, it is required to read the EEProm data of the Control on, Operating set point and Fan mode parameters. Otherwise the default data are used. (Display Off, Set 22°C and AUTOmatic fan).

Parameter: **Heating Aid**
ModbusAddress: **117** (R/W)
In 2-pipe plants it shows if the Cooling valve output is used as a support in heating aid management.

Parameter: **Heating aid differential**
ModbusAddress: **118** (R/W)
The Heating aid is inserted starting from differential.

Parameter: **Minibar Status Inversion**
ModbusAddress: **119** (R/W)
It shows if the minibar input status inversion should be applied.

Parameter: **Presence Sensor Status Inversion**
ModbusAddress: **120** (R/W)
It shows if the presence sensor input status inversion should be applied.

Parameter: **Window Status Inversion**
ModbusAddress: **121** (R/W)
It shows if the open window input status inversion should be applied.

Parameter: **Badge Status inversion**
ModbusAddress: **122** (R/W)
It shows if the badge input status inversion should be applied.

Parameter: **H Valve Control Inversion**
ModbusAddress: **123** (R/W)
It shows if the control inversion of heating electro-valve (for N.O. valve) should be applied.

Parameter: **C Valve Control Inversion**
ModbusAddress: **124** (R/W)
It shows if the control inversion of cooling electro-valve (for N.O. valve) should be applied.

Parameter: **Aux. Relay Mode**
ModbusAddress: **125** (R/W)
If = 1 the AUXiliary relay follows the Presence Sensor input status carrying on an OR with the Aux. Relay Enable/Disable parameter.

Parameter: **Energy stop**
ModbusAddress: **126** (R/W)
It allows to stop the energy in case the sensor doesn't detect any presence (volumetric detector connected to occupancy sensor) in a X time window starting from the door opening (open door detector connected to badge input).

Parameter: **Energy Stop Time**
ModbusAddress: **127** (R/W)
This parameter defines a lapse of time during which a presence has to be detected after opening the door.
If during this time a presence is detected (entrance) the controller is powered and the control is On, otherwise (exit) the controller is un-powered and the control is Off.

Parameter**: Sensor Type**
ModbusAddress: **128** (R/W)
It allows showing if the type of the connected sensor has to be detected automatically or if it is a high or low resolution sensor (without decimals).

Parameter: **Control Activation Mode**
ModbusAddress: **129** (R/W)
It allows activating automatically the control when the badge is inserted.

Parameter: **Temperature Set at start-up**
ModbusAddress: **130** (R/W)
It shows the temperature set value that the controller has to reach when the AutoON_mode is activated.

Parameter: **Communication uP version**
ModbusAddress: **140** (R)
MicroP version of communication.

Parameter: **Communication uP Revision**
ModbusAddress: **141** (R)
MicroP revision of communication.

Parameter: **uP process version**
ModbusAddress: **142** (R)
MicroP version of process.

Parameter: **Process uP Revision**
ModbusAddress: **143** (R)
MicroP revision of process.

Parameter: **Display uP version**
ModbusAddress: **144** (R)
MicroP version of display

Parameter: **Display uP revision**
ModbusAddress: **145** (R)
MicroP revision of display.

Parameter: **2/4 pipe controller**
ModbusAddress: **146** (R)
It shows if the controller is configured (JP4 – 4-pipe) as 2 or 4-pipe.

Parameter: **OFF fan with Set OK**
ModbusAddress: **147** (R)
When the set value is reached it shows whether the fan has to be switched off too (JP4 - Val).

Parameter: **Controller Modbus address**
ModBusAddress:**250** (W)
It shows the controller Modbus address

PARAMETERS FOR PROPORTIONAL CONTROL ONLY

Parameter: **Cooling proportional constant**
ModbusAddress: **200** (R/W)
Proportional Constant of cooling.

Parameter: **Cooling Integration constant**
ModbusAddress: **201** (R/W)
Integration constant of cooling

Parameter: **Heating Proportional Constant**
ModbusAddress: **202** (R/W)
Proportional Constant of heating

Parameter: **Heating integration constant**
ModbusAddress: **203** (R/W)
Integration constant of heating

Parameter: **Valve stroke time (sec)**
ModbusAddress: **204** (R/W)
Valve stroke time in seconds.

Parameter: **Heating valve opening (%)**
ModbusAddress: **205** (R/W)
Heating valve opening (%)

Parameter: **Cooling valve % Opening**
ModbusAddress: **206** (R/W)
Opening percentage of cooling valve

Parameter: **Opening heating valve**
ModbusAddress: **207** (R/W)
It shows if the heating valve is opening.

Parameter: **Closing heating valve**
ModbusAddress: **208** (R/W)
It shows if the heating valve is closing.

Parameter: **Opening cooling valve**
ModbusAddress: **209** (R/W)
It shows if the cooling valve is opening.

Parameter: **Closing cooling valve**
ModbusAddress: **210** (R/W)
It shows if the cooling valve is closing.

Parameter: **Valve starting position**
ModbusAddress: **211** (R/W)
It shows if the proportional valve is going to the initial position.

8 MODBUS PROTOCOL

COMMUNICATION PARAMETERS
Protocol = ModBus RTU
Baud rate = 9600 baud
Data Bit = 8
Parity = NO
Stop Bit = 1

CONTROLS
Reading = 0X04
This control enables the simultaneous reading of one or more records (15 max.).

Writing = 0X10
This control enables the simultaneous writing of one or more records (15 max.).