

FAN COIL CONTROLLER WITH 0-10V FAN OUTPUT DEK19,DEK29

PRODUCT SPECIFICATION



DESCRIPTION

The control action is Proportional + Integral (P+I). This ensures accurate temperature control in all operating conditions.

The controller is suitable for mounting on a fan-coil chassis or for wall mounting.

In 2-pipe plants the summer/winter changeover can be activated by a centralized switch, or by a sensor installed on the pipe near the fan coil.

There are two pre-set control levels: Comfort and Economy, to which two temperature levels are linked; the selection of these temperatures can be made by a digital input.

The sensor for the temperature control is located inside the room unit and is automatically overridden if the optional remote sensor is fitted.

Commands available: set-point dial, fan speed dial, pushbuttons for S/W changeover and Comfort/Economy.

FEATURES

- 2 or 4 pipes fan coil applications
- Heating or cooling
- Proportional + Integral digital controller
- Automatic 0-10VDC modulating or 3 fan speed control with manual override
- Selectable valve actuators: ON-OFF, PWM.
- Output voltage: Valves 230Vac, Fan motor 0-10VDC
- Controller voltage: 230 Vac, 50/60 Hz
- CE certification
- DEK29 has Modbus RTU communication connections

GENERAL INFORMATION

The DEK19 and DEK29 range of microprocessor devices are designed to control heating and/or cooling within water based fan-coil systems. The DEK29 controls the operation of the water valves, the fan speed and the electrical resistance heater (when installed), in 2-pipe and 4-pipe fan coil systems.

INPUTS AND OUTPUTS

Digital Inputs

PRESENCE CONTACT or EXTERNAL TIME PROGRAMME:

The open contact indicates a presence in the room (room occupied) and the set point changes from economy to comfort. This contact can also be linked to an external timer system.

WINDOW:

A closed contact indicates that the window is open. This causes the valve(s) to close and the fan to stop (energy saving function). The freeze protection function is automatically activated, with 4 °C as default.

SUMMER / WINTER SWITCHING:

A closed contact indicates that warm water is flowing through the pipes. This automatically changes the control from summer to winter mode. NB that the water temperature sensor can also be connected as an alternative for this feature to operate

WATER TEMPERATURE SENSOR:

A sensor can be installed at the water outlet of the heat exchanger. This sensor will automatically detect the presence of warm water in the system during the winter heating mode. The fan cannot start until warm water is detected. The default temperature for this winter changeover is 38°C.

Analogue Inputs

RETURN AIR TEMPERATURE SENSOR:

When installed, this sensor has priority over the room unit internal sensor. The sensor is positioned at the air intake of the fan coil and is used as alternative to the room sensor.

WATER TEMPERATURE SENSOR

This sensor can be set to either switch the summer / winter mode, or to enable fan operation, or both

A) Summer / winter switching: The sensor measures water supply temperature. When this drops below the limit value set in Parameter 14, the summer mode is activated. When the water supply temperature is above the limit set in Parameter 15, the winter mode is activated. Supply water between the upper and lower limits means that the thermostat stays OFF unless frost protection mode is needed.

B) Enabling fan function: In 2 and 4-pipe fan coils the sensor is installed on the return pipe after the heating coil. This enables the fan function. Parameters 14 and 15 set the temperature that enables the fan to start (parameters 14 and 15, only available via the supervisor software).

C) Sensor set to enable both functions: In 2-pipe systems the sensor detects the supply water temperature and determines the summer or winter function mode. The fan function consent during the winter operating mode is given with a configurable delay time set in Parameter 24.

Analogue and digital outputs

FAN:

Fan speed control, modulating 0-10V DC output 1mA

Additional fan enabling 230VAC output, 50Hz max. 1.25A (3A peak)

HEATING VALVE:

Choice of a 230 Vac, 0.8A command module for a maximum of four on-off or thermal actuators.

COOLING VALVE:

Choice of a 230 Vac, 0.8A command module for a maximum of four on-off or thermal actuators.

AUXILIARY OUTPUT:230V,0,8A

| | | |
|-------------------------------------|---|--------------------------|
| Control Range | 10...30 °C | |
| Power Supply | 230 Vac, 50/60 Hz | |
| Ambient Temperature | Max 50°C, 90% R.U.% | |
| Outputs (hot and cold water) | PWM | |
| | On-Off | |
| Output - Fan | 0-10V DC output – 1 mA max 10Kohm load | |
| | Fan output steps | |
| Dial and Selector | | |
| Temperature levels | Comfort / Economy | Dig. Input |
| Mode | Summer/Winter | Dig. or Analog Input |
| Fan | Modulating Auto-0-1-2-3 or Auto-0-1-2-3 | 5-position selector dial |
| Set point | Temperature: 10,...30 °C | Dial |
| Analogue Inputs | | |
| Room Temperature | Return air sensor (remote) | NTC10K |
| Water Temperature | Contact or immersion sensor | NTC10K |
| Digital Inputs | Fan enabling/summer-winter switching | |
| | Window open | |
| | Presence/time program | |
| Proportional band | 2°K | |
| Neutral Band | From 0 to 4 °K | |
| Applications | 2-pipes system | |
| | 4-pipes system | |
| | 2 pipes + floor heating | |
| | 2-pipes with aux output | |
| Housing | Single housing | |

Table 2. Technical Features

FAN OPERATIONS

The fan can operate provided the consent thermostat is satisfied or the water temperature sensor detects a temperature above the fixed value, when these inputs are present.

The fan is controlled through the 5 position-speed selector dial.

The thermostat can control either a fan with 0-10V control or with 3 fan speed control.

A = Automatic modulating fan control proportional 0-10V or automatic 3 fan speeds

0 = fan OFF. In this position the valve is also closed.

Only the frost protection function is activated.

1 = Fan speed 1

2 = Fan speed 2

3 = Fan speed 3

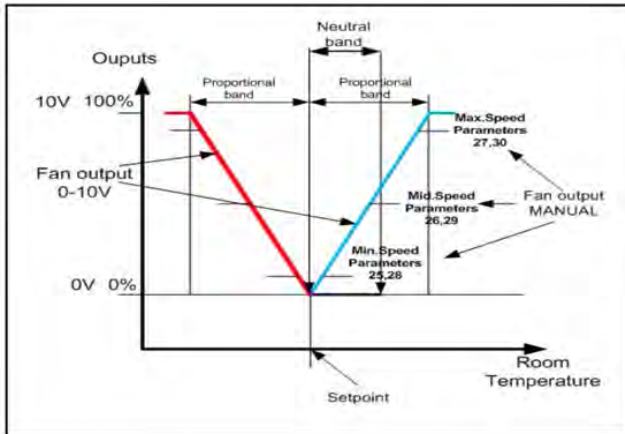


Fig. 1 Fan speed sequence

In normal operating mode, the fan operation depends on the following:

1. Room temperature value with respect to the setpoint
2. SEL2 selector dial position
3. Parameter 4 setting:
4. Default: Cycled operation. Fan is ON only when setpoint is not satisfied, either in heating or in cooling mode.
5. Alternative selections: Continuous operation: Fan is always running. When setpoint is satisfied, fan will run at the minimum voltage selected or at first speed

Cycled mode in Winter, Continuous mode in Summer.

OFF in Cooling mode, ON in Heating mode

ON in Cooling mode, OFF in Heating mode

The following factors can also interact with the normal operating mode:

1. SEL2 in position 1, 2 or 3
2. Value of parameter 22

In AUTO mode the controller drives the fan speed continuously between min. and max or between speed 1, 2 and 3, provided that setpoint is not satisfied. Fan speed varies depending on room temperature distance from setpoint.

The NEUTRAL BAND is the absolute temperature value that needs to be added to the setpoint in Winter to reach the changeover temperature to Summer. The same value needs to be subtracted to the setpoint in Summer to reach the changeover temperature to Winter. In normal operation, the setpoint does not change between heating and cooling modes.

In Manual mode, the fan speeds are set according to the position of the speed selector dial. Fan speeds 1, 2 and 3 are determined by the values of speed min, speed mid and speed max. Temperature control switches the fan on and off at the preset speed.

A minimum voltage is required to start the fan with 0-10V control. This can only be changed using the programming tool. This value is also the minimum voltage for speed 1. User changes without the programming tool will only increase the minimum voltage / fan speed.

Default fan speed voltages are as follows:

Minimum fan speed, parameter 25, default value = 2V

Middle fan speed, parameter 26, default value = 2.667V

Maximum fan speed, parameter 27, default value = 3.333V

Using the temperature dial, the default settings can be changed in 333mV steps (21 steps using the scale 10°C to 30°C including the 0mV step). Using the same process, the output voltage range can be set between 2V and 8.00V

DYNAMIC VARIABLE PRESETS

speed 1: incremental value, parameter 28= 0V, (speed min. preset + speed 1 = 2V = speed min.)

speed 2: incremental value, parameter 29= 2,333V, (speed mid. preset + speed 2 = 5,00V = speed mid.)

speed 3: incremental value, parameter 30= 6,667V, (speed max. preset + speed 3 = 10,00V = speed max.)

During the cooling cycle, if the set point is satisfied, the fan will continue to operate at speed 1 for 2 minutes and then stop.

DESTRATIFICATION CYCLE (REMOTE AIR SENSOR ONLY)

When using a remote air sensor, and the set point is satisfied, the fan cycles according to the time settings made in Parameters 20 and 21 to enable correct reading of the room temperature.

FAN START DELAY

In winter mode the fan will start after an additional delay set with parameter 22, to avoid cool air circulation before the heating coil warms up.

During cooling, if the setpoint is satisfied, the fan will continue to operate at speed 1 for 2 minutes and then stop.

HEATING AND COOLING OUTPUTS

Controlled output

Set Parameter 5 to "ON-OFF"

In this setting, the control algorithm works on a 6 cycles per hour cycles and changes the ON time based on P+I control. I.e. if the room temperature is at 50% of the proportional band, the output will be 5 minutes ON and 5 minutes OFF.

Set Parameter 5 to "PWM"

In this setting, the control algorithm works on a 1 second cycle, changing the ON time according to P+I control principles. I.e. if the room temperature is at 50% of the proportional band, the output will be 0.5 seconds ON and 0.5 seconds OFF

FAN COIL WITH ON-OFF and PWM OUTPUT

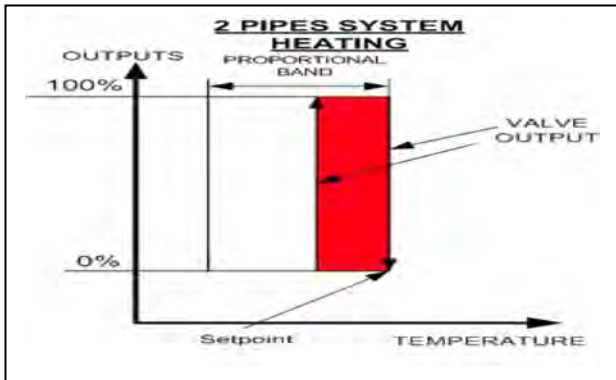


Fig. 2: 2-PIPS FAN COIL WITH AN ON-OFF OR PWM HEATING OUTPUT

The setpoint is set to the upper limit of the proportional band so the valve is closed when T_{Amb} is higher than the set point.

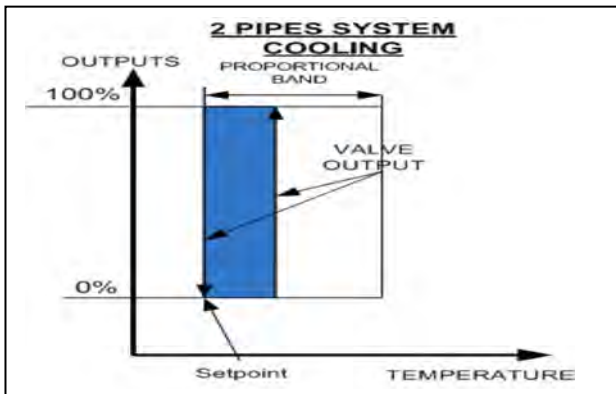


Fig. 3: 2-PIPS FAN COIL WITH ON-OFF OR PWM COOLING OUTPUT

The set point is set to the lower limit of the proportional band, so the valve is closed when T_{Amb} is lower than the set point.

4 PIPES FAN COIL WITH ON-OFF and PWM OUTPUT

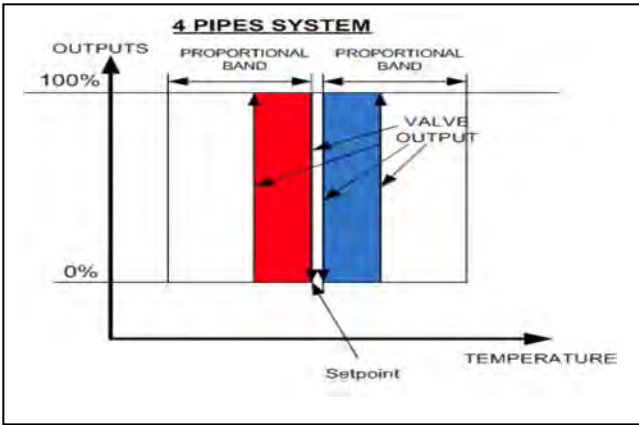


Fig.4: 4 PIPES FAN COIL WITH ON-OFF OR PWM COOLING OUTPUT

The setpoint is set to the upper limit of the proportional band when the device is in heating mode and to the lower limit of the proportional band when in cooling mode.

Auxiliary Output

In 2 pipes applications, it is possible to control also a second heating circuit connecting an actuator/valve to the cooling output (terminal 7), while the fan coil actuator/valve is connected to the heating output (terminal 8).

With parameter #3 it is possible to select the priority of the insertion of the aux output:

a) auxiliary as **primary output** means that when the room temperature decrease below the set point, immediately the aux output will be energized and the fan coil valve and fan will be activated if the room temperature decreases below the set point minus a value set with parameter #18. Aux output will be switched off when room temperature increases above the setpoint with an anti-oscillation time set with parameter #23. (default value :60 sec.)

See the diagrams below that show the operations in the heating mode and in the cooling mode.

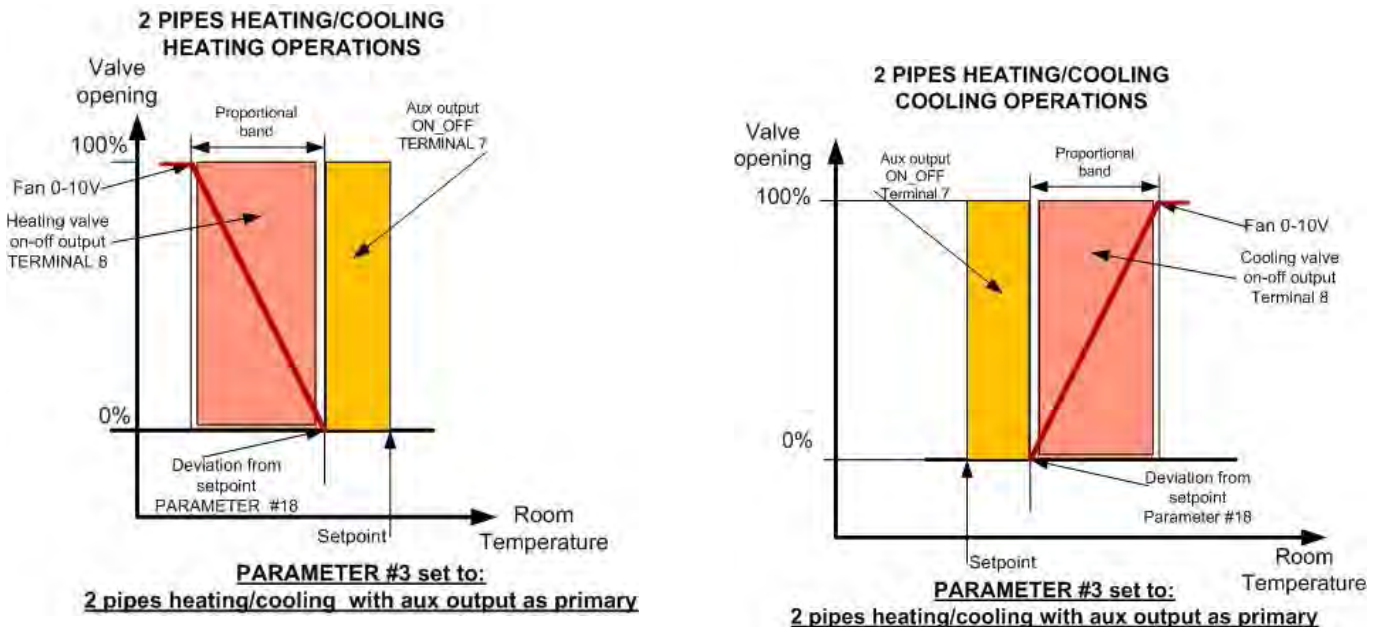
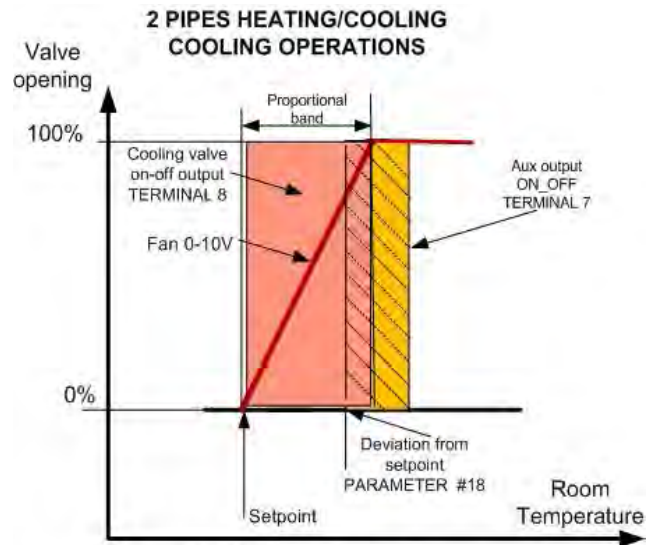
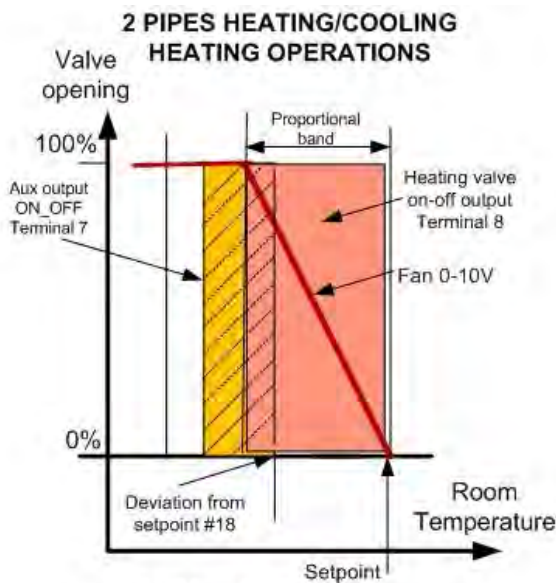


Fig.5:2 pipes application with aux output as primary

b) auxiliary as **secondary output** means that when the room temperature decrease below the set point, immediately the fan coil valve and fan will be activated and the aux output will be activated if the room temperature decreases below the set point minus a value set with parameter #18. Aux output will be switched off when room temperature increases above the setpoint minus the value of parameter 18 and with an anti-oscillation time set with parameter #23. (default value :60 sec.)

See the diagrams below that show the operations in the heating mode and in the cooling mode



PARAMETER #3 set to:
2 pipes heating/cooling with aux output as secondary

PARAMETER #3 set to:
2 pipes heating/cooling with aux output as secondary

Fig.6:2 pipes application with aux output as secondary

CHANGE OF THE OPERATION MODES

CHANGE OF SEASON – SUMMER / WINTER

In 2 pipes applications, summer/winter changeover will be made either by a contact connected to terminal 13 or by a water temperature sensor connected to terminal 11.

In 4 pipes applications, with the thermostat in heating mode, summer/winter changeover will be made by the room sensor :it will change from winter to summer when room temperature increases above set point plus neutral band (See parameter #2, default value:4°K).

Room set point will remain at the same value(winter value).So if user needs a higher value,he must change the value with the set point dial.

With the thermostat in cooling mode, summer/winter changeover will be made by the room sensor :it will change from summer to winter when room temperature decreases below set point minus neutral band (See parameter #2, default value:4°K).

Room set point will remain at the same value(summer value).So if user needs a lower value,he must change the value with the set point dial.

CHANGE OF MODE - COMFORT / ECONOMY

During normal operation(Comfort mode), it is possible to change the operating mode from COMFORT to ECONOMY connecting a digital input to terminal 14.

When the contact is closed,the thermostat switches to Economy mode, reducing (when it is in heating) or increasing (when it is in cooling) the set point by a value set with parameter #13.

When the contact is opened,the thermostat switches to Comfort mode, reducing (when it is cooling) or increasing (when it is in heating) the set point by a value set with parameter #13.

INSTALLATION

POSITION

The Thermostat is the room temperature control element in a fan coil plant. The room unit must be positioned 1.5 m from the floor, in a position exposed to good room air circulation. It should not be influenced by:

- a. Air currents or dead zones behind doors or in corners
- b. Warm or cold air coming from air ducts
- c. Solar radiation or heat from household appliances
- d. Non heated or cooled areas such as external walls behind the room unit
- e. Pipes or chimneys within the wall

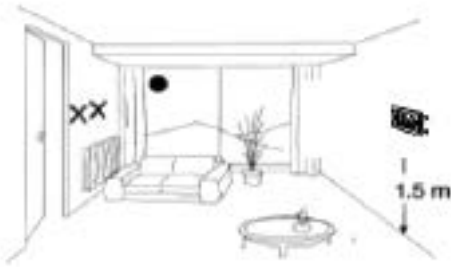


Fig. 7 Positioning the room unit

INSTALLATION

IMPORTANT: this product must be installed according to local safety standards and only by qualified personnel.

Isolate the electrical power supply before starting to **install or dismantle** the device.

INSTALLING THE ROOM UNIT

1. Use a screwdriver to loosen the retaining screw in the bottom of the housing until the cover can be removed.
2. Pass the wires through the holes in the rear of the housing and then fix the housing to the wall with screws.
3. Fix the wires to the terminals, taking care to follow the electrical diagram.
4. Replace the cover and secure it by tightening the screw in the bottom part of the housing.

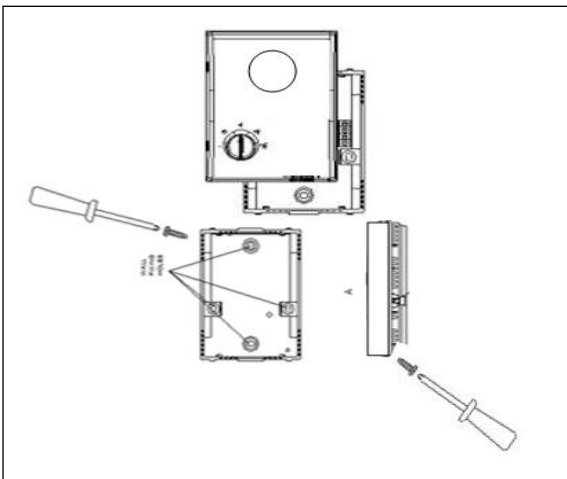


Fig. 8 Installing the room unit

DEK29:

1. **Water Temperature sensor for automatic Summer/Winter switching:** Position the sensor upstream from the valve as shown in Fig. 8.

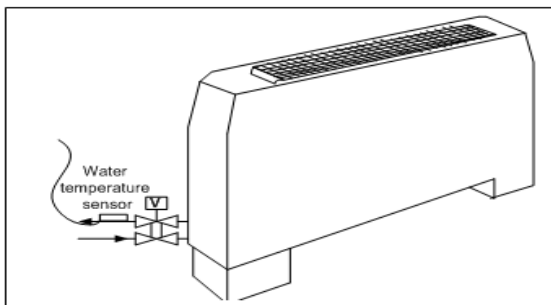


Fig. 9 Position of the Summer / Winter water sensor

WIRING THE CONTROLLER

The terminals are suitable for 1.5 mm² cables.

WIRING THE ACTUATORS FOR 4-PIPE SYSTEMS

The actuators must be wired to terminals 8 and 3 (heating water valve) and 7 and 3 (cooling water valve).

WIRING THE ACTUATORS FOR 2-PIPE SYSTEMS

In 2-pipe fan coil systems, the actuator must be connected to the heating water outlet, terminals 8 and 3.

STARTUP

MANUAL PARAMETER SETUP PROCEDURE

The thermostat allows manual access to the level one parameters 1 - 11. Parameters 12 – 33 can only be accessed by means of the factory based supervisor tool.

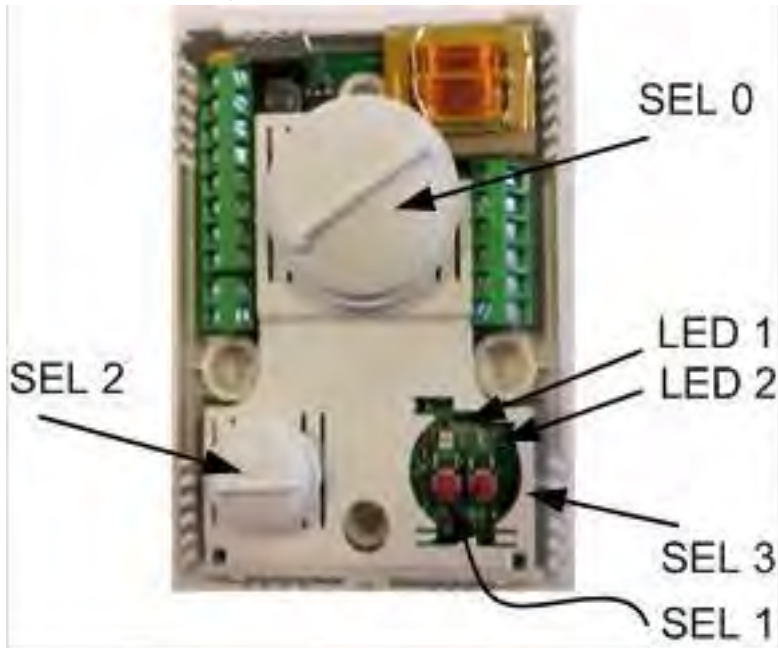


Fig. 10 Setting the parameters

For parameter access, the cover will need to be removed. PAY ATTENTION TO ELECTRICAL SAFETY STANDARDS

The SEL0 selector knob allows parameters (from 1 to 10) to be selected, (see parameter table on page 10).

The fan speed selector SEL2 allows the value of the chosen parameter to be set.

The SEL1 and SEL3 keys, if pressed simultaneously for 5 seconds, allow access to the “parameter settings mode”.

SEL1 is used as the “Enter” button when pressed during the programming phase and confirms the newly set value.

If pressed for 5 seconds during programming, SEL1 saves the parameter settings (the green LED blinks 3 times to indicate that the data has been saved).

The green or red LED1 indicates which value was set in the parameter selected by the “selector SEL 0” knob.

SETTING OR CHANGING THE ISU PARAMETERS

To access the “parameter setting (ISU)” mode, proceed as follows:

1. Set the SEL0 knob to 10 degrees.
2. Set the SEL2 knob to the AUTO position.
3. Press keys SEL1 and SEL3 together for ≥ 5 sec.

After pressing the keys for 5 seconds, LED1 will start to blink alternating red-green-red-green for 3 seconds to indicate that the “ISU setting mode” has been accessed.

Three seconds after accessing the ISU menu, the LED turns to green if the current parameter corresponds to the value selected with the SEL0 knob. The LED turns red if the current parameter is not the selected one.

To change a parameter value, position the SEL2 knob to the selected value (the LED will turn red), then press the SEL1 button and wait until the LED turns to green.

To save a new setting in the permanent memory of the controller, press the SEL1 key for ≥ 5 seconds; the green LED will blink 3 times to confirm the new parameter settings.

After saving the value, the controller immediately exits the parameter configuration mode.

The above sequence is valid for the configuration of all parameters that are selectable with the SEL0 knob.

To summarise:

Select a parameter by rotating the SEL0 knob, and then set its value with the selector knob SEL2.

CHECKING THE PARAMETER SETTINGS

By simply moving selector knob SEL2 one can also check which value was set in any specific parameter (green LED = the same chosen value, red LED = a different value). If no controls are touched for two minutes, the controller will revert to normal operating mode

RESETTING THE DEFAULT VALUES

1. Enter programming mode (as described in STARTUP section)
2. Set the SEL0 dial to 30°C
3. Set the SEL2 dial to position 2

The red LED2 blinks quickly to indicate that the default parameter table has been selected.

4. Press the button SEL1

The green LED1 on the device blinks 3 times to indicate that the device is saving the default parameter table

SETTING MANUAL FAN SPEED VALUES

To enter manual fan speeds setting

1. Position SEL2 to the fan speed value to be set and position SEL0 to 10°C.
2. Press SEL2 and SEL3 together for 10 seconds. Both LEDs will flash alternately.
3. Turn SEL0 to the next step value corresponding to the voltage / speed needed and then press SEL1 for 5 seconds. The green LED will flash 3 times indicate that the setting has been activated.
4. Repeat steps 1 – 3 to set the other incremental speed values.

| Fan speed steps – Incremental values | | | | | | | | | | | |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Dial Position °C | 10°C | 11°C | 12°C | 13°C | 14°C | 15°C | 16°C | 17°C | 18°C | 19°C | 20°C |
| mV output | 0 | 333 | 667 | 1000 | 1333 | 1667 | 2000 | 2333 | 2667 | 3000 | 3333 |
| Dial Position °C | 21°C | 22°C | 23°C | 24°C | 25°C | 26°C | 27°C | 28°C | 29°C | 30°C | |
| mV output | 3667 | 4000 | 4333 | 4667 | 5000 | 5333 | 5667 | 6000 | 6333 | 6667 | |

Fig. 11 Incremental Fan Speed DC output values

SETTING MAXIMUM AUTOMATIC 0-10V FAN SPEED VALUE MANUAL FAN SPEED VALUES

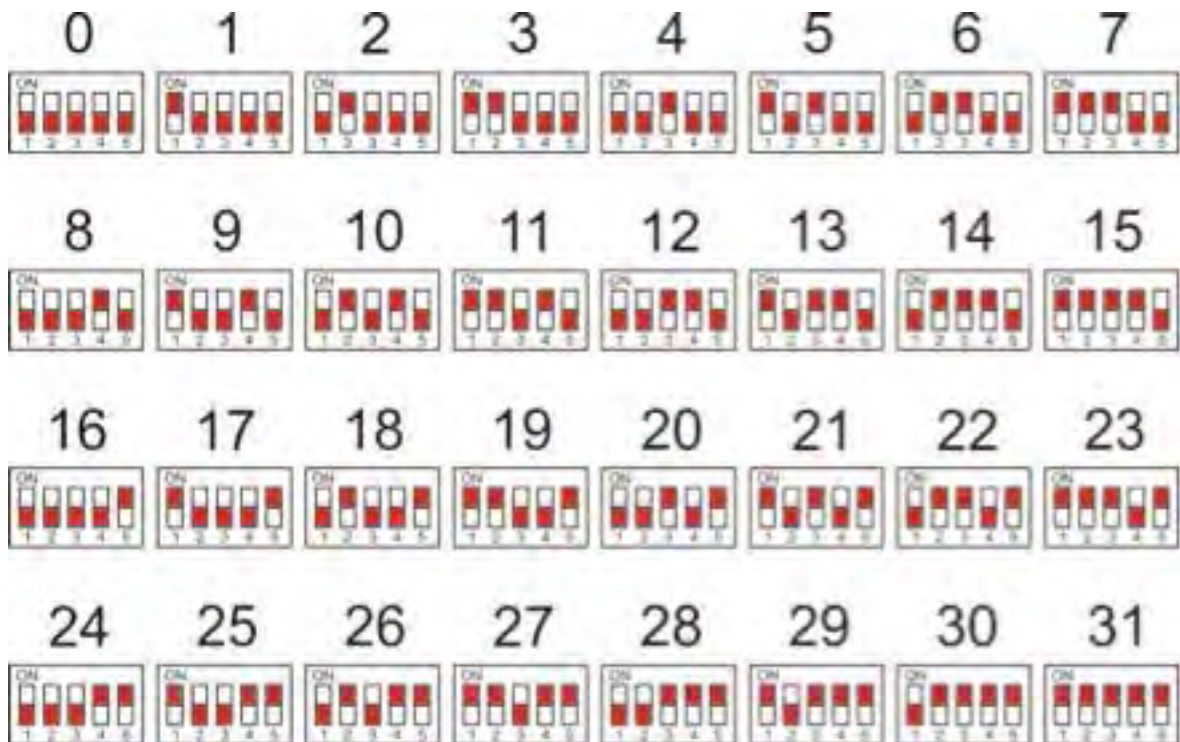
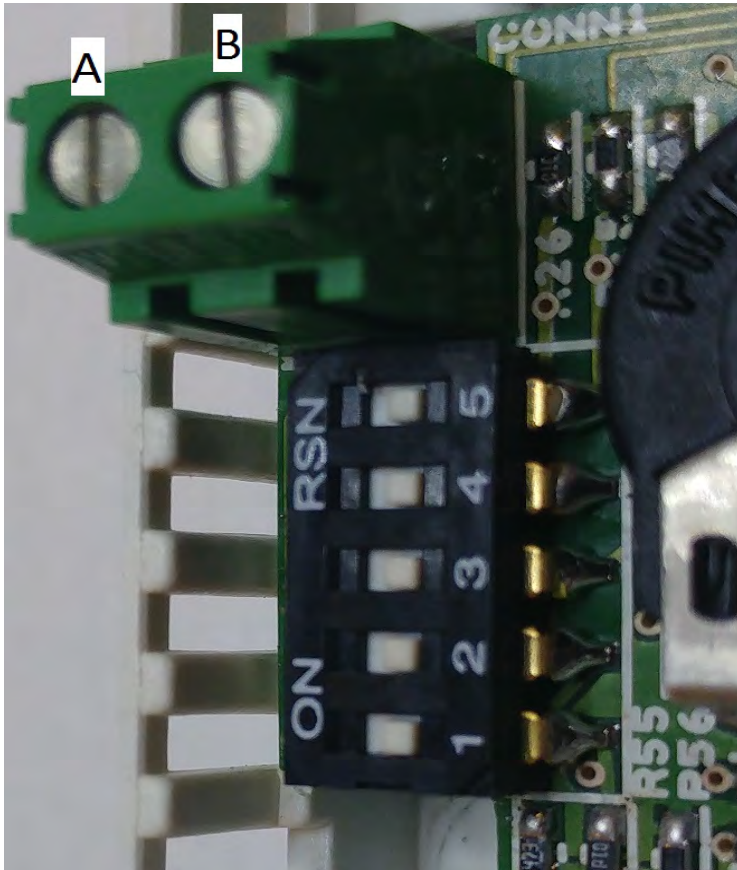
To enter manual fan speeds setting

1. Position SEL2 to the fan speed position AUTO and position SEL0 to 10°C.
2. Press SEL2 and SEL3 together for 10 seconds. Both LEDs will flash alternately.
3. Turn SEL0 to the next step value corresponding to the voltage / speed needed and then press SEL1 for 5 seconds. The green LED will flash 3 times indicate that the setting has been activated.
4. The default maximum value for fan speed is 10V

| Fan speed steps – Maximum values | | | | | | | | | | | |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Dial Position °C | 10°C | 11°C | 12°C | 13°C | 14°C | 15°C | 16°C | 17°C | 18°C | 19°C | 20°C |
| mV output | 0 | 0,5 | 1 | 1,5 | 2 | 2,5 | 3 | 3,5 | 4 | 4,5 | 5 |
| Dial Position °C | 21°C | 22°C | 23°C | 24°C | 25°C | 26°C | 27°C | 28°C | 29°C | 30°C | |
| mV output | 5,5 | 6 | 6,5 | 7 | 7,5 | 8 | 8,5 | 9 | 9,5 | 10 | |

Fig. 11 Maximum Fan Speed DC output values

CONNECTION AND SETTING MODBUS ADDRESS



The connections to the Modbus is made with 2 wires at the terminals positioned at the lower left side of the thermostat. See figure above: CONN1. (A + , B -)

Please follow the indication reported on the Modbus standards regarding the wires size and type,length and especially the position of the wires related to line voltage wires.

The bus address of the thermostat is obtained using the 5 dipswitches positioned at the lower left side of the thermostat. See figure above.

Position and insertion of the different switches assigne the bus address to each thermostat.

Care must be taken not assigning the same bus address to 2 or more thermostats on the same bus.

MODBUS ADDRESSES EXTENSION OVER 31.

NOTE:the following settings must be carried out with controller in OFF.

It is possible to extend the Modbus addresses from 32 to 95 using a Supervisor software and setting parameter #34 as follows:

Parameter 34 =0:Modbus addresses set by dipswitches

Parameter 34 =1:Modbus addresses =dipswitch set +32 x value of parameter #34.Example:Dipswitch set for address 5.Final Modbus address = 5 + (1x32)= 37.

Parametro 34 =2: Modbus addresses =dipswitch set +32 x value of parameter #34.Example:Dipswitch set for address 5.Final Modbus address= 12 + (2x32)= 76.

To save the new setting ,just switch OFF the power supply to the controller.

SETTING OF MODBUS COMMUNICATION OPTIONS

NOTE : the following settings must be carried out with controller in OFF

Using a Supervisor software and setting parameters #35,#36 e #37 it is possible to set the following Modbus communication options:BAUD rate,Parity and Stop bit.

The settings could also be carried out with the following procedure:

Switch ON the controller pushing MODE pushbutton.Red LEDs light up for 2 seconds and then the green LED lights up. Carrie the new setting following the table below.

Then switch OFF and ON again the controller,that will work with the new settings.

| BAUD | Dipswitch 0 | Dipswitch 1 |
|-------|-------------|-------------|
| 9600 | OFF | OFF |
| 14400 | ON | OFF |
| 19600 | OFF | ON |
| 38200 | ON | ON |

| PARITY | Dipswitch 2 | Dipswitch 3 |
|-----------|-------------|-------------|
| NO PARITY | OFF | OFF |
| ODD | ON | OFF |
| EVEN | OFF | ON |

| STOP Bit | Dipswitch 3 |
|------------|-------------|
| 1 STOP Bit | OFF |
| 2 STOP Bit | ON |

1st LEVEL PARAMETER TABLE

The parameters below are the ones that can be modified from the controller key pad.

| SELO KNOB POSITION | PARAMETER No. | PARAMETER TO BE SET | PARAMETER DESCRIPTION | DEFAULT VALUE | SELECTOR POSITION | SELECTOR POSITION | SELECTOR POSITION | SELECTOR POSITION |
|--------------------|---------------|-----------------------------------|--|--|---|--|---|--|
| | | | | SEL 1 AUTO | SEL 1 OFF | SEL 1 1 | SEL 1 2 | SEL 1 3 |
| 10 | 1 | COMFORT SET POINT RANGE | Min. and max. values for temperature setpoints | 10 - 30 | 12 - 28 | 13 - 27 | 14 - 26 | 15 - 25 |
| 12 | 2 | DEAD BAND | Defines the Dead Band in 4-pipe plants | 4°C | 3°C | 2°C | 1°C | 0°C |
| 14 | 3 | TYPE OF PLANT | Type of system | 2-Pipe | 4-Pipe | 2 pipes Cooling+Electric Heater PWM(Terminal 4) | 2 pipes Heat /Cool + Electric Heater with S/W changeover (terminal 4) | 2 pipes heat /cool with aux out as primary |
| 16 | 4 | FAN | Defines the fan operating mode in the dead band | Always in continuous mode – Summer and Winter | Always in cycled mode – Summer and Winter | Cycled mode in Winter, Continuous mode in Summer | OFF in cooling mode-ON in heating mode | OFF in Heating mode-ON in Cooling mode |
| 18 | 5 | TYPE OF OUTPUT | Defines the type of regulation at output 1 – Depends on which type of actuator is used | ON-OFF | PWM | | | |
| 20 | 6 | WINDOW CONTACT | Defines if the window contact is normally open or normally closed | OPEN CONTACT=Window closed | CLOSED CONTACT=Window closed | | | |
| 22 | 7 | DE-STRATIFICATION | Enable or disable the destratification function | Disabled | Enabled | Disabled | | |
| 24 | 8 | WATER TEMPERATURE SENSOR FUNCTION | Describes the function of the water temperature sensor input | Summer / Winter changeover | No sensor used | | Summer / Winter changeover plus Fan enabling | |
| 26 | 9 | SUMMER / WINTER SWITCHING | Defines the Summer/Winter changeover method | Central changeover switch or NTC10K water temperature sensor | | From room unit | | |
| 28 | 10 | SENSOR READING OFFSET | Modifies the room temperature sensor reading to give an offset | 0 | + 1k | - 1k | + 2k | - 2k |
| 30 | 11 | RESET | Resets to all default values | | Set the filters hours to zero | | Reset the device to factory default parameters | |

Other parameters that are listed in the following table can be modified only with the factory software though the RS485 port.

2nd LEVEL PARAMETER TABLE (ONLY AVAILABLE USING SUPERVISOR SOFTWARE)

| No. | NAME | DESCRIPTION | RANGE | U.M. | RES | DEFAULT |
|-----|---|--|---------------------|-------|-------|----------|
| 12 | NEUTRAL BAND | Use to set the size of the proportional band | 1 - 5 | °C | 0.1 | 2 |
| 13 | DELTA ECONOMY | Use to select the default temperature difference between Summer and Winter modes or the setback temperature for Economy mode | 1 -10 | °C | 1 | 2 |
| 14 | TEMP. FAN CONSENT WINTER | Use to select the fan start consent in Winter, or the temperature at which to change to Winter mode provided Parameter 9 = H ₂ O/CONT | 20 - 60 | °C | 0.1 | 38 |
| 15 | TEMP. FAN CONSENT SUMMER | Use to select the fan start consent in Summer, or the temperature at which to change to Summer mode provided Parameter 9 = H ₂ O/CONT | 5 - 25 | °C | 0.1 | 14 |
| 16 | FROST PROTECTION | Use to select the temperature at which the anti-frost function starts | 0 -10 | °C | 0.1 | 4 |
| 17 | FILTER HOURS (300 HOURS x K) | Use to select the number of operating hours after which filter maintenance should be carried out Value 0 means that the filter warning is disabled | 0 - 20 | h x K | 1 | 0 |
| 18 | °K DEVIATION FOR AUX OUTPUT | Set the degree temperature value for aux output enabling | 0-10 | °K | 0,1 | 0,5° |
| 19 | VALVE EXERCISE | Enables or disables valve exercise function | ENABLED DISABLED | - | - | DISABLED |
| 20 | DE-STRATIFICATION FAN OFF TIME | Use to select the time between de-stratification fan cycles – NB: Only applies if De-Stratification is ENABLED in ISU 8 | 1 - 60 | min | 1 | 15 |
| 21 | DE-STRATIFICATION FAN ON TIME | Use to select the fan ON-time during the de-stratification cycle – only applies if ISU 8 is ENABLED | 1 -10 | min | 1 | 1 |
| 22 | FAN DELAY IN HEATING | Use to select the fan start delay after opening the heating valve | 0 - 250 | s | 1 | 120 |
| 23 | AUX OUTPUT ANTI OSCILLATION TIME | Use to set the time aux output is ON after reaching set point value | 0-1000 | sec | 1 | 60 |
| 24 | FAN OFF TIME DELAY WITH PRIMARY ELECTRIC HEATER | Set the time delay for fan deenergize when set point is reached in application with primary electric heater | 0-300 | sec | 1 | 60 |
| 25 | MINIMUM VALUE FAN SPEED 1 | Use to select the minimum value for fan speed 1 in manual mode | 2.00 -10V | mV | 0.01V | 2.00 |
| 26 | MINIMUM VALUE FAN SPEED 2 | Use to select the minimum value for fan speed 2 in manual mode | 2.667 -10V | mV | 0.01V | 2.667 |
| 27 | MINIMUM VALUE FAN SPEED 3 | Use to select the minimum value for fan speed 3 in manual mode | 3.333 -10V | mV | 0.01V | 3.333 |
| 28 | INCREMENTAL VALUE FAN SPEED 1 | Use to select the incremental value for fan speed 1 in manual mode | 0-10V | mV | 0.01V | 0 |
| 29 | INCREMENTAL VALUE FAN SPEED 2 | Use to select the incremental value for fan speed 2 in manual mode | 0-10V | mV | 0.01V | 2.333 |
| 30 | INCREMENTAL VALUE FAN SPEED 3 | Use to select the incremental value for fan speed 3 in manual mode | 0-10V | mV | 0.01 | 6.667 |
| 31 | PRIORITY ON SETTING SETPOINT | Use to select the Priority between on board knob (LOCAL)or remote value from Modbus (REMOTE) | LOCAL REMOTE | | | LOCAL |
| 32 | PRIORITY ON SETTING FAN SPEED | Use to select the Priority between on board knob (LOCAL)or remote value from Modbus (REMOTE) | LOCAL REMOTE | | | LOCAL |
| 33 | PRIORITY ON USING PUSHBUTTONS | Select the priority for S/W and Comfort/Economy changeover between pushbuttons and REMOTE) | LOCAL REMOTE | | | LOCAL |
| 34 | OFFSET MODBUS ADDRESS | Set a multiplier value for Modbus address | 0,1,2, | | | 0 |

| | | | | | | |
|----|-----------------------------------|--|---------------------|----|---|---------|
| 35 | MODBUS COMMUNICATION SPEED | Set dipswitches 0 and 1 for Modbus Communication Speed | Dipswitches 0 and 1 | | | OFF-OFF |
| 36 | MODBUS PARITY | Set dipswitches 2 and 3 for Modbus Parity | Dipswitches 2 and 3 | | | OFF-OFF |
| 37 | MODBUS STOP BIT | Set Stop Bit option | Dipswitch 4 | | | OFF |
| 38 | REMOTE SET POINT | Set Set Point value from Supervisor | 10-30 | °C | 1 | 20 |

ELECTRICAL CONNECTIONS

DEK29 ELECTRICAL CONNECTIONS



Fig.12:Electrical connections

| Terminal | Connection |
|----------|---|
| M1 | power supply phase input |
| M2 | power supply neutral input |
| M3 | neutral for power outputs |
| M4 | fan output – speed 1/auxiliary output |
| M5 | fan output –speed 2 |
| M6 | fan output-speed 3 |
| M7 | output for actuator/valve cooling |
| M8 | output for actuator/valve heating |
| M9 | 0-10V fan output |
| M10 | 0-10V fan output |
| M11 | remote room sensor input |
| M12 | water sensor input |
| M13 | common connection for analog and digital inputs |
| M14 | S/W digital changeover input |

- M15 Economy digital input
- M16 Window digital input

DIMENSIONS

