e-controls
electronic intelligent controls, s.l.

Electronic Intelligent Controls,S.L.   08830 SantBoi de Llobregat   Tel.: +34 93 652 55 21   www.e-controls.es
C/Murcia, 35F   Barcelona, Spain   Fax: +34 93 652 55 22   info@e-controls.es

e-Room® Stand-Alone

Stand-alone room climate controller for fan coil applications
Product Reference No.: RC 604505-000

Instruction Sheet

e-Room® Stand-Alone is a room climate controller for water installations with fan coils. It is designed as a stand-alone device to operate the fan coil unit of a zone and includes a set of functions for zone occupancy and window position based climate control. A high level of comfort and appropriate climate control to ensure maximum energy savings are thus provided.

The device is a compact unit that includes a large backlit display screen, a built in temperature sensor, pushbuttons on the front panel, and inputs and outputs for room control.

CE

General features

- Wide, blue backlit LCD, 64 × 26 (mm)
- Front panel built in pushbuttons: +T/-T/Fan speed/On-Off
- Front panel built in temperature sensor
- Two models available: 4 or 5 pushbuttons (HEAT/COOL)
- Configurable for 2 pipe / 4 pipe systems
- Selectable temperature units (ºC/ºF)
- Configurable max/min/economy temperature setpoints
- Keycard switch contact occupancy monitoring for energy saving

- Configurable keycard switch input: keycard switch/lighting
- Configurable fan coil: 3 speeds / 1 speed
- Speed 1 configurable as blocked or unblocked on zero demand
- Economy mode Heat/Cool temperature setpoint Heat/Cool dead band
- Delayed switching to Economy when card is removed
- Automatic device startup after loss of power
- Configurable NO/NC valve outputs

Device Inputs and Outputs

Inputs:
 1 Digital, keycard switch contact / lighting auxiliary contact
 1 Digital, window contact
 1 Analog, water temperature sensor
 1 Analog, ambient temperature external sensor
 1 Temperature sensor, built in on device front panel

Outputs:
 3 Relays, fan coil speed (I,II,III)
 1 Relay, chilled water valve
 1 Auxiliary relay (hot water valve on 4 pipe systems / lighting on 2 pipe systems)
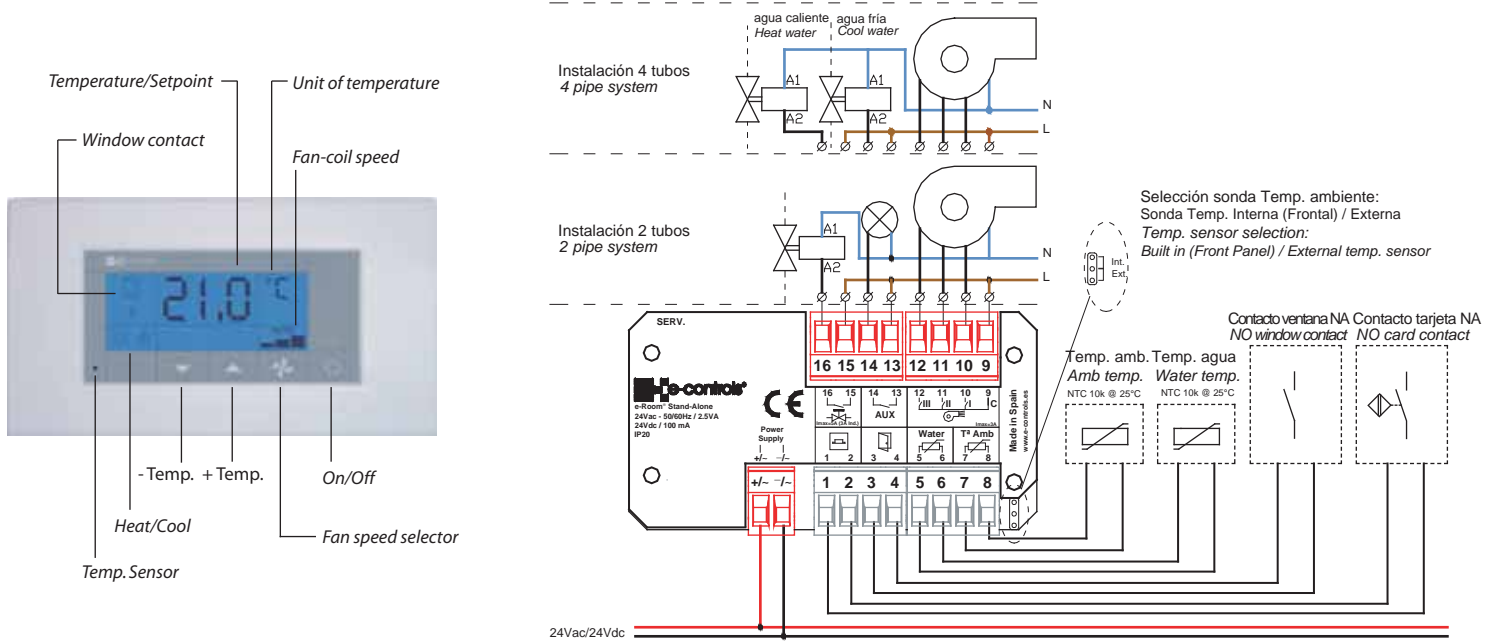
Product description

The e-Room® Stand-Alone climate controller is designed for room climate control at hotels, offices and homes with water and fan coil installations. The device includes all the necessary inputs and outputs to operate a 2 pipe or a 4 pipe system; control over one or two on/off valves and a 3 speed fan coil is provided to maintain room or zone temperature to user requirements.

The device includes a built in temperature sensor on its front panel for room temperature measurement, and features an advanced control algorithm for fan coil speed and valve position control. Two digital inputs are also provided, one to detect zone occupancy from a keycard switch contact-used in hotels to indicate that the room is occupied-,

and another one to connect to a window contact-used to temporarily disconnect operation when the window is open. The keycard switch input may alternatively be configured to control zone lighting on 2 pipe systems. In this case, one of the valve outputs converts to lighting control output.

The device includes a simple configuration menu that allows configuring up to 24 parameters. The unit can thus be adapted to the requirements of each installation.

Wiring diagram

Temperature/Setpoint — Unit of temperature
Window contact — Fan-coil speed

- Temp. + Temp. — On/Off
Heat/Cool — Fan speed selector
Temp. Sensor

agua caliente / *Heat water* agua fría / *Cool water*

Instalación 4 tubos / *4 pipe system*

Instalación 2 tubos / *2 pipe system*

Selección sonda Temp. ambiente:
Sonda Temp. Interna (Frontal) / Externa
Temp. sensor selection:
Built in (Front Panel) / External temp. sensor

Temp. amb. / *Amb temp.* Temp. agua / *Water temp.* Contacto ventana NA / *NO window contact* Contacto tarjeta NA / *NO card contact*
NTC 10k @ 25°C   NTC 10k @ 25°C

SERV.

e-controls®
e-Room™ Stand-Alone
24Vac - 50/60Hz / 2.5VA
24Vdc / 100 mA
IP20

Power Supply

Made in Spain www.e-controls.es

24Vac/24Vdc

Installation instructions

This device should not be installed on shelves, behind curtains, above or near heat sources, or exposed to direct sunlight. For fast and accurate ambient temperature measurement, the controller should be installed such that air may circulate vertically. Installation height should be approximately 1.5 m from the floor.

Caution:
Prior to installing or removing the device, ensure that there is no mains voltage present in the wiring to be connected or near the unit.
Do not cut or roll up the wires to be connected to the device.
Do not work on the wiring with wet hands.
Do not open or drill through the device.
Keep the device and the supply wires away from moisture and dust.
Use a damp cloth to clean the device.

Installation steps:
1- Install the flush mount back box on the wall
2- Connect all wires to the appropriate device terminals

3- Seal the internal flexible cable conduit to avoid air flowing into the device.
4- Insert and screw the device in the box
5- Fit the frame onto the device
6- Remove the front panel anti-scratch protective foil

Pushbutton operation

 On/Off

Switches the device and its operation on and off. In keycard switch contact operating mode, when the room is not occupied it will not allow operation until occupancy is detected.

 Fan-Coil Speed

Selects sequentially the 3 fan coil speeds and the AUTO mode every time the pushbutton is pressed. Two modes are selected: AUTO or MAN.
AUTO: the screen will display "AUTO", in addition to the corresponding bar graph to indicate current speed. Fan coil speed will be automatically determined by the controller, based on thermal demand.
MAN: the user forces the desired fan coil speed. The "AUTO" label is not displayed in this mode.

 Temperature setpoint

Temperature setpoint value may be increased or decreased within the maximum and minimum limits as configured in the device.

 Heat/Cool (optional pushbutton, depending on the model)

Switches the device operating mode between HEAT and COOL.

Energizing the device

The device can be configured to start up from the off position or in operation after a voltage drop.

The front panel LED indicator lights up red and then turns green. If it stays red it means there is an anomaly in the device; the device should be replaced.

During the first few seconds the screen will display some digits, which will subsequently disappear.

Operating modes

The device should be configured to operate on either of the two available operating modes. The operating mode is configured through parameter P11 in the configuration menu.

Operating mode configuration

1) Occupancy detection (keycard switch contact) based climate control:

In this operating mode, operation is enabled when the keycard switch input switches to the closed position. When this happens, the pushbuttons are enabled and the user may start the operation at any time. When the keycard switch input is open, the device pushbuttons remain blocked.

When the card is pulled out, the climate control system switches to Off or to the Economy mode, depending on the configuration of parameter P5. There is a programmable delay for the action to take place after the card has been pulled out. Parameter P6 is used to set the delay time.

2) Climate control + lighting (Lighting auxiliary):

In this operating mode, the controller may be switched on or off at any time through the front panel pushbuttons, since there is no keycard switch contact available to block the device. The keycard switch contact is in this case configured to operate as a lighting contact, which acts on the AUX output every time the input changes its state (refer to installation diagrams). This operating mode is only possible on 2 pipe systems.

Input and output operation

1) Keycard switch contact configured for a keycard switch:

This input is associated to terminals 1-2 in the device.

This operating mode is selected by configuring parameter P11 = CA.

o When the input is open (no card), the control system is switched off and the pushbuttons are blocked; this prevents the user from switching on the climate control when the room is not occupied.

o When the input switches to the closed position (the card is inserted), the pushbuttons are enabled so that the user may switch on the climate control. On 2 pipe systems, the AUX output activates during the preset time on parameter P24, and automatically deactivates when this time expires, unless P24 is set to 0 seconds. This output may be used for a courtesy light contact.

o When the input switches to the open position (the card is pulled out), the climate control automatically switches off after the preset time in parameter P6 expires and the pushbuttons become blocked. On 2 pipe systems, the AUX output activates and automatically deactivates after the preset time expires.

2) Keycard switch contact configured as a lighting auxiliary contact:

This input is associated to terminals 1-2 in the device.

This operating mode is set by configuring parameter P11 = LI. The device should be configured to operate in 2 pipe system mode (parameter P10 = 2P).

This input may be configured to operate either in Switch mode or Pushbutton mode through parameter P12.

o In the Switch mode, when the input changes to the closed position, the AUX output closes. When the input changes to the open position, the AUX output opens.

o In the Pushbutton mode, when a pulse is detected (the input closes and then opens), the AUX output changes its state.

3) Window contact:

This input is associated to terminals 3-4 in the device.

o When the input is closed, the climate control system operation is enabled.

o When the input changes to the open position, the climate control system switches off, temporarily leaving the room with no climate control. The screen displays the open window icon and the fan coil speed icon disappears.

o When the input changes to the closed position, the climate control system automatically reactivates; the open window icon disappears from the screen and the fan coil speed icon is displayed again.

4) Water temperature analog input:

This input is associated to terminals 5-6 in the device.

In order to use this input, parameter P7 should be configured as YES.

This input is used to detect the installation water temperature and automatically switch the device operating mode to HEAT or COOL:

o When CHILLED water is detected, the device switches to the COOL mode.

o When HOT water is detected, the device switches to the HEAT mode.

5) External temperature analog input:

This input is associated to terminals 7-8 in the device.

This input is used to connect a temperature sensor in order to operate the zone climate control without using the device front panel temperature.

To use this input, jumper J1 should be placed on position EXT. Jumper J1 is located next to terminals 7-8.

6) Front panel temperature sensor:

This sensor is used for the zone climate control.

Device configuration is by placing jumper J1 on position INT. Jumper J1 is located next to terminals 7-8.

The factory setting for jumper J1 is INT.

7) Fan coil speed relay outputs:

These outputs are associated to terminals 9-10-11-12 in the device.

The device has three potential free relay type outputs available that share a singly common terminal; this terminal connects to the fan coil motor, which may have up to three speeds.

The climate control system automatically manages speed when the device is on the AUTO mode; speed is determined based on the difference between measured temperature and setpoint temperature. The user may at any time switch the device to the MANUAL mode by pressing the fan coil speed pushbuttons. Every time a pushbutton is pressed, a new speed is set in the device until the AUTO mode is selected again. The device screen displays the fan coil speed at all times, in addition to the AUTO text when the device is on this mode.

8) AUX output:

This output is associated to terminals 13-14 in the device.

This output may be used to actuate the HEAT valve on 4 pipe systems, or as a lighting auxiliary output on 2 pipe systems.

The output is automatically configured through parameter P10.

In the 4 pipe mode, the climate control algorithm automatically drives the output, its state depending on the heat demand of the system.

In the 2 pipe mode, the output may be used to operate a courtesy light; it automatically activates when a card is inserted or pulled out of the keycard switch, and it deactivates when the set time in parameter P24 expires. With P24 set to 0 seconds, the output stays active when the keycard switch input is active; this mode may be used to drive a main breaker for room lighting.

9) VALVE output:

This output is associated to terminals 15-16 in the device.

In the 2 pipe mode, the climate control algorithm automatically drives the output, its state depending on the cooling or heating demand based on the device operating mode.

In the 4 pipe mode, the climate control algorithm automatically drives the output, its state depending on the cooling demand of the system.

Technical features

Supply power
Operating voltage ....24Vca ±20%; 50/60Hz
24Vcc ±20%
Maximum rated current 110mA

Digital inputs
Open circuit voltage ....12Vdc ±0,2 V
Short circuit current .... 8 mA
Maximum open contact current .... <2 mA
Minimum closed contact current .... >5,5 mA

Temperature sensor inputs
Sensor type .... Resistive
Sensor characteristics .... Interchangeable NTC, 1%
10 kΩ a 25ºC (77ºF)
Ambient temperature measuring range .. +5ºC to +45ºC (+41ºF to 113ºF)
Water temperature measuring range ..... +10ºC to +50ºC (+50ºF to 122ºF)
Resolution 0,1ºC

Relay outputs
Contact type .... Potential free
Normally open
Maximum operating voltage ....250 V ca
Maximum current .... 5 A, resistive load (*1)
3 A, inductive load
(*1) Auxiliary output 3A

Device status
On/Stand-by .... Off/Green

Pushbuttons
+T / -T / Fan-Coil Speed / ON - OFF
WARM/COOL (5 pushbuttons model)

Temperature
Operating .... 0ºC to +50ºC (32ºF to 104ºF)
Storage .... -20ºC to +85ºC (-4ºF to +185ºF)

Humidity (no condensing)
Operating .... 10% to 90% RH to 50ºC
Storage .... 95% RH to 50ºC

Dimensions, weight and installation
Device dimensions (witout frame) .... 132x70x42 mm
Weight ....225 gr.
Flush mount back box .... Bticino 504 E (not included)
Frame ....Bticino Light series (not included)
Frame dimensions 140x86mm
Screw hole center distance 108mm
Plug-In connectors ....YES
Conductor cross sectional area ....0,5 mm2 to 2,5 mm2
Protection index IP20
Electrical safety .... Class III

Applicable product standard
Automatic electrical controls for household
and similar use .... EN 60730-1

CE Conformity
Low Voltage Directive LVD) 2006/95/EC
Electromagnetic Compatibility Directive 2004/108/EC

Standards
Safety .... EN 60730-1
Emissiones ....EN 61000-6-3
Immunity ....EN 61000-6-1

Product ordering numbers

e-Room Stand-Alone 4 Pushbuttons - 24Vca/Vcc RC.604505-000
e-Room Stand-Alone 5 Pushb. (HEAT/COOL) - 24Vca/Vcc RC.604505-100

The accessories with ref. nos. AC.000101-000 and AC.000101-001 provide the required supplementary isolation as defined in standard UNE-EN 60730-1. If a different accessory is used, an equivalent isolation level should be ensured.

Accesories

e-Temp, External temperature sensor, pure white AC.000101-000
e-Temp External temperature sensor, matt aluminium AC.000101-001
e-Sensor, Motion detector, pure white DP.100100-000
e-Sensor, Motion detector, matt aluminium DP.100100-001
Transformer 230 Vac/24 Vac AC.300000-000
Transformer 110 Vac/24 Vac AC.400000-000

The package of this product is considered as industrial packaging, intended for professional use only.