

Capacitive pushbuttons and thermostats

# Cubik Serie / TRMD-K

V1.1

## F.A.Q.



[www.besknx.com](http://www.besknx.com)

## 1. What the Cubik series consist of?

Cubik series consist of different capacitive pushbuttons and/or thermostats. There are different references based on the number of tactile areas, if the device has or not display or LED indicators to represent the values of measured temperature and/or set point and if needed, humidity measurement. There are also two specific references for hotel room door pushbutton with signaling modes DND (do not disturb) and MUR (make up room) and push for the bell.

## 2. Which material are Bes push buttons and thermostats made?

All the devices from Cubik series have a front glass of 2 mm thickness which means into a smart and sophisticated design.

## 3. What is the total thickness of the Cubik push buttons and thermostats?

In the case of the pushbuttons with touch areas and thermostats without display, they have a thickness of glass of 2 mm plus a rear of 4 mm.

In case of TRMD-K and Cubik-VHD, they have the same glass thickness of 2 mm plus a rear of 9 mm.

## 4. Can the icons or the glass color be customized?

There are three levels of customization in the Cubik series:

- Basic: only glass color can be chosen, black and white, and there is no possibility of customization.
- Design: either the glass color or icons can be customized. The design is specified at the time of making the order of devices.
- Capriccio: it has the same characteristics as Design line, but also the glass is fixed to the frame by means of a magnet system. This makes possible to replace only the glass in case of wanting a design glass change.

There are only the following exceptions:

- TRMD-K (DS42XX00): not available in Capriccio option.
- Cubik-VH (PL221X00): only available in the Design option.
- Cubik-VHD (PLX22X00): not available in Capriccio option.

You can order your custom designs with our web application: [www.cubik.besknx.com](http://www.cubik.besknx.com)

## 5. Do all references have internal thermostat?

Yes, all have internal thermostat except the buttons for hotel room door, Cubik-VH (PL221X00) and Cubik-HDV (PLX22X00).

## 6. Is there any reference with chronothermostats integrated on the device?

Yes, TRMD-K (DS42XX00) has option to set up to 16 chronothermostats from the screen of the device.

## 7. Which ETS catalogue is used to programme the devices?

ETS catalogue for programming the devices can be found on the Bes website under the description of each device. All devices with capacitive buttons, TRMD-K and the Cubik-VH thermostat are programmed with the same programming catalogue (*Cubik*). On it, it has to be selected the type of device on the General tab. Cubik-T thermostat and hotel room door device, Cubik-VH and Cubik-VHD, have an own programming catalogue also available on Bes website.

If you can't find any of these catalogues, contact Bes technical department at [tec@besknx.com](mailto:tec@besknx.com)

## 8. Is the relative humidity measured?

Yes, devices with internal thermostat, measure the humidity except the Cubik-T and TRMD-K, which only provide for temperature measurement. Those who have relative humidity measurement also have the ability to set alarms based on limits established by parameters.

## 9. Is dew point measurement available?

Dew point measurement is available on those devices which also have internal thermostat, they can measure of relative humidity, allowing the configuration of alarms based on limits established by parameters.

## 10. Is there LEDs indicators on the pushbuttons?

Yes, Cubik series devices that have touch areas have a LED under the touch area (all except references Cubik-T, Cubik-TH, SR59XX100, and SR59X3X00).

## 11. Can I change the LED color?

No, in the current versions LED under each capacitive area is always white.

## 12. Is each LED associated with its capacitive area?

No, each LED has different communication objects, which means that you can turn on, turn off or make animations with it not only from the button of the corresponding area but also from any other device. It also allows the representation of a light status by linking the communication object of on/off LED in the group address of the element controlled.

### **13. LED brightness is annoying, what can be done?**

Bes pushbuttons brightness can be dimmed through the parameters by setting a percentage for each of them for switch on and another for switch off. They also have a night mode with two levels of brightness, also for turn on and off mode.

This night mode can be executed through a communication object designed for this purpose so that LEDs change levels of regulation. In fact, they can have a timed scene from Bes web servers where this change is sent to mode night when the user goes to sleep and another change to disable night mode at the time of waking up.

### **14. What can be represented with the Cubik-TL LED indicator?**

Cubik-TL display is used to represent the measured temperature by the internal thermostat and/or the setpoint temperature selected by the user. When the option of representing both temperatures is chosen, it is shown the measured temperature at standby, and when the temperature setting is changed, this is represented during the time set in the parameter for that purpose back, then, to represent the ambient temperature.

### **15. What is the TRMD-K screen for?**

On the screen is the ambient temperature, the set temperature and the operating modes of the thermostat. It also has a menu from which you can set thermostats up to 16, change the design and colors of the screen or the time and the day of the week.

### **16. Which air conditioning systems can be controlled with Bes Cubik series internal thermostat?**

With all those devices of the series that have internal thermostat, it is possible to control any air conditioning system (underfloor heating, water radiators, electric radiators, etc.) in a precise way thanks to its PI regulator.

### **17. Can PI, proportional and integral regulator values be set as wanted?**

Yes, the person in charge of developing the project can set P and I values. Anyway, to facilitate the configuration of the device, some default values depending on the air conditioning system used in the installation can be set.

### **18. Can different PI values be established, proportional and integrated, for each operating mode of the thermostat?**

Yes, it is possible to select PI values for heating mode and other values for the cool mode, which makes the temperature control very precise.

### **19. Can be thermostat being calibrated?**

Yes, the measured temperature can be calibrated by a parameter, although it is not usually necessary.

## 20. When are the different values measured by these Bes devices transmitted to the KNX bus?

The temperature can be transmitted cyclically, that is to say, periodically with the frequency selected by means of the corresponding parameter, before certain configurable change of temperature or both previous cases combined.

Humidity and dew point can be read or transmitted to the bus cyclically.

## 21. Can the speeds of a fan-coil be controlled from a single touch area?

Using one of the buttons together with a Bes actuator, you could control the fan-coil speeds manually by setting the input as a pushbutton and sending a '1' in the long or short press (as required) to lower the speed and a '0' in the opposite case. The communication objects of the input and the bit control of the fan-coil speeds would be linked to the same group address (this object is not available by default in Bes actuators, it needs to be selected in parameters tab).

## 22. What kind of modes do Bes' thermostats have?

Bes thermostats have:

- Heating mode: heating control.
- Cool mode: air conditioning control.
- Switching mode between cooling and heating: both modes are available at the same time and they are switched between them through the communication objects.
- Simultaneous cooling and heating mode: switches between cold and heat depending on the hysteresis automatically.

In addition, there are special HVAC modes: comfort, stand-by, economy and protection that change setpoints and can be selected as scenes. When enabling these special modes, when changing modes, the thermostat will recalculate the setpoint temperature to the closest special mode.

## 23. Can the ambient temperature be given by an external thermostat and used in the device controller?

Yes, it can be selected in parameters if the ambient temperature used to control the climate of the room is measured by the device itself or comes from an external thermostat, taking this measurement from the KNX bus.

## 24. Can the measured temperature by an external thermostat be shown in Cubik-TL display?

Yes. If you use the temperature which is measured by an external KNX thermostat and Cubik is configured to work in that way, you can show the temperature in the display LEDs.

## 25. Series devices thermostat Cubik can be displayed on the screens?

Yes, thermostats can be controlled from the touch screens as any KNX device. With Bes displays with integrated web server, the user may also have control of thermostats and, therefore, the air conditioning in your home from their mobile devices.

## 26. How can the set point temperature be changed?

The set point temperature is changed through communication objects designed for this purpose. There is an object with the standard KNX data type DPT 9.001 through which the set point can be set. In addition to this object, there are others that help to the selection of the set point in a relative way: two bit objects through which the set point temperature is raised or lowered with a step of 0.2 ° C with each '1' sent, and a 4-bit object to modify set point temperature continuously, analogous to the regulation of a light. This allows linking two buttons, one to raise and another to lower, acting on the short pulse on the object of bit communication and the long on the 4-bit.

## 27. What orders does the thermostat send to the KNX bus for climate control?

The thermostat can be configured to send through the communication object of its control output different data depending on what is required in the installation: bit, byte or PWM. For example, for a fan-coil control connected to the outputs of a Bes actuator, a byte DPT must be chosen since, with this, the percentage of speed at which the fan-coil is set will be sent in order to make up for the demand for air conditioning.

## 28. Could the contribution of cold or heat be reinforced?

Yes, there is an option to establish an additional communication object by which a '1' is sent when the system enters the demand and a '0' when this demand is covered, so that a second system can be activated if necessary.

## 29. Are the inputs configurable?

Yes, in Bes pushbuttons, inputs can be configured as switches or as pushbuttons (with long and short press). There are different options for each one of them so it can be chosen what sends the device to the KNX bus when acting on these inputs.

## 30. How many communication objects are available for the inputs?

For the two configurations of the inputs, a maximum of two communication objects are available. In switch mode, it can be chosen to work either with one or two communication objects and the flank on which wanted to send the data through each of them. In push mode, there are always two communication objects: one for long press and one for short press.

## 31. Why must the pushbutton or switch connected to the input sometimes be pressed twice to act on an output?

Because the light is being controlled from more than one input and the pushbutton has not been programmed correctly, so the inputs are not synchronized.

### **32. How are the pushbuttons synchronized to control a light from more than one pushbutton or switch?**

To control an element from different inputs so it commutes correctly from any of them, it must be linked the notification group address of the controlled output with all the entries from which it is controlled. Thus, if the input is configured to switch, the value sent will be the opposite to the previously sent if the last action was made from that same input or the opposite value from the one received through the bus if it was acted on another. It must be taken into account that in order to do this correctly, the writing flag activated in the corresponding communication objects must be activated.

### **33. Do all pushbuttons and thermostats have an arithmetic logic unit (ALU)?**

Yes, all the references of pushbuttons and thermostats available in the catalog have ALU that has 8 logical arithmetic operations and 8 timers or counters, except Cubik-T reference, which also has ALU but is simpler than the other references.

### **34. Can I run animations on the LEDs of the push buttons?**

There are parameters linked to the LEDs of the push buttons which allow making animations linking them with the pulsations on the touch areas, for example, turning on the LED a few seconds when pressing on the area. These animations are performed in the same way as in the outputs of an actuator, giving the option to set delays or stair timings on the corresponding LED.

### **35. Can I change the colors of the Cubik-VHD?**

Yes, either room number or background colors are configurable through parameters in the catalog. In addition, you can set a color when the room is occupied and a different one when it is unoccupied.

### **36. Can you display text on the Cubik-VHD screen?**

Yes, two lines of text can be displayed on the Cubik-VHD screen when someone enters into the room. This text will be displayed for a few configurable seconds through the corresponding parameter on the ETS or permanently if this parameter of time is equal to 0.

### **37. How to control a 0-10V fan-coil?**

You should use the thermostat in combination with a 0-10V dimmer (<https://besknx.com/website/productos/dm460400/>). The proportional control of the Cubik's internal thermostat allows you to have a precise control of the fancoil speed.

### **38. How to control a two stage fan-coil?**

These fan-coil machines are usually controlled by an actuator. Bes' actuators are developed to control 3 stage fan-coil machines but they can be easily programmed to control two stage ones. The most convenient way to proceed is configure step 1 between 0-50% and step 2 for 51-100%. This configuration must be done in actuator parameters.

### 39. Could I control an AC machine from Cubiks?

AC machines are usually controlled by gateways and the logic control is made by AC manufacturer. Of course, you can send to the gateway setpoint temperature or change the modes from a Cubik device.

### 40. How could I control 2 pipes fan-coil system with a single valve?

In this case, you should use ALU gates. The valve should be opened in case the system is demanding either cold or heat so you can use a OR gate whose output will be the percentage in which the system should work. If you need an on/off signal (bit) to open a close the valve, you can include a comparison gate where the input is the result of the previous OR gate and the output is 1 when the percentage is higher than 0 and 0 when there is no demand at all.

First gate:

1.1.8 Cubik > Advanced functions > Block 1 - ALU

General	Operation	OR
+ Buttons configuration	Number of inputs	2
+ Button 1 - Open/close (switch)	Input 1	<input checked="" type="radio"/> Communication object <input type="radio"/> Constant value
+ Button 2 - Open/close (switch)	Format	1 byte unsigned 0...100% (dpt 5.001)
+ LEDs configuration	Input 2	1 byte unsigned 0...100% (dpt 5.001)
+ LED 1	Output	1 byte unsigned 0...100% (dpt 5.001)
+ LED 2		
+ Thermostat configuration		
- Advanced functions		
Configuration		
Block 1 - ALU		
Block 2 - ALU		

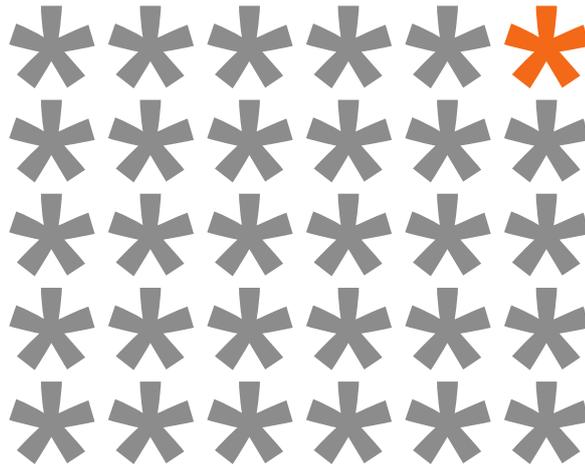
Second gate (if needed):

1.1.8 Cubik > Advanced functions > Block 2 - ALU

General	Operation	<
+ Buttons configuration	Input 1	<input type="radio"/> Communication object <input checked="" type="radio"/> Constant value
+ Button 1 - Open/close (switch)	Format	1 byte unsigned 0...100% (dpt 5.001)
+ Button 2 - Open/close (switch)	Value	0 %
+ LEDs configuration	Input 2	1 byte unsigned 0...100% (dpt 5.001)
+ LED 1	Output	1 bit
+ LED 2		
+ Thermostat configuration		
- Advanced functions		
Configuration		
Block 1 - ALU		
<b>Block 2 - ALU</b>		

Communication objects:

108	Thermostat - Controller	Heating output (continuous)	% HEAT mode	0/0/11	1 byte
110	Thermostat - Controller	Cooling output (continuous)	% COOL mode	0/0/10	1 byte
176	Block 1 - Logic	Output	% SYSTEM REQUEST	0/0/12	1 byte
177	Block 1 - Logic	Input 1	% COOL mode	0/0/10	1 byte
178	Block 1 - Logic	Input 2	% HEAT mode	0/0/11	1 byte
181	Block 1 - Logic	Enable/disable			1 bit
182	Block 2 - Logic	Output	OPEN/CLOSE VALVE	0/0/14	1 bit
184	Block 2 - Logic	Input 2	% SYSTEM REQUEST	0/0/12	1 byte
187	Block 2 - Logic	Enable/disable			1 bit



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