Actuators

CT4XXXX0

V1.1

F.A.Q.

ingenium

Bes*

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1. What kind of elements can be control with BES actuators?

With all the actuators that have relay outputs any item requiring a contact for your operation, i.e., to open and close a relay can be controlled. Some elements that can be controlled are: lights, fan-coil, termovalves, blinds, on/off of engines, etc.

2. All Bes actuators are multifunction?

Yes, but with some remarks.

All Bes actuators have the possibility to configure your outputs as binary, blinds, fan-coil or electrovalve to control different devices. Obviously, the maximum number of devices that can control depends on the number of the actuator outputs and can be consulted in the programming manual of this family of devices, in the comparative table of the second paragraph of itself (http://besknx.com/pdf/MP_CT4XXXX0_es.pdf).

There are two types of actuators that cannot be fully considered multifunction, these are the 4E4SL-K (CT454420) and the 7SZ-K (CT430720). The outputs of the first one are intended to control low power loads, especially for LEDs, while 7SZ-K is designed to control ventilation grilles. The connection of other loads to the outputs of these devices may damage the device.

3. All the actuators are programmed with the same catalog?

Yes, all references of actuators are programmed through the ETS with the same programming catalog, available on the website of Bes, under each device (http://besknx.com/files/CT4XXXX0.zip). The hardware type is selected using parameters on the general tab of the catalog.

4. Can I connect 64 devices on the same bus line?

No. The concept of 64 devices per line applies only to devices that consume 5 mA. It should, therefore, be considered the consumption of every device as a determining factor when it comes to the sizing of the lines of a project and the corresponding use of line couplers and power supplies.

On Bes datasheets, it is introduced the concept of *BUS device* such as a hypothetical device with a consumption of 5 mA. To every device is indicated to how many devices are equivalent. So, if one consumes 10 mA must be considered as 2 when making 64 devices estimating per line.

5. What is the cutting power outputs of Bes actuators?

All the Bes actuators that have outputs have a cutting power of 16 A, with the exception of the aforementioned 4E4SL-K and 7SZ-K, whose outputs are not for relays. Reference 6E6S-30A-K (CT41630) offers relays with 30 A cutting power.

6. What can I do if I need to control a load whose consumption is greater than the cutting power established in the datasheet of the actuators?

If you need to connect loads with greater cutting power consumption, must insert a contactor between the actuator output and load, so that the actuator works on the contactor and not directly over the load, which will damage the device.

7. What kind of grilles can be controlled with 7SZ-K?

Either 12V and 24V grilles can be controlled, and in combination, without having to select the working voltage of the grille through potentiometers or parameters.

8. The inputs are configurable?

Yes, all the Bes actuators that have outputs can be configured as switches or push-buttons (with short and long press). There are different options for each of them so you can choose what the device sends to the KNX bus by acting on these inputs.

9. Bes actuators inputs are linked to the outputs of the same actuator?

No, inputs of the actuators are not linked to the outputs. From them any element connected to the KNX bus, not necessarily in the outputs of the same device, can be controlled.

10. How many inputs communication objects are there?

For both inputs configuration will have, at most, two communication objects. In switch mode you can choose to work with one or two communication objects and the edge in which you want to send the data through each of them. In button mode, there are always two communication objects: one for long and another for short press.

11. Why on some occasions I must press twice the push-button or switch connected to input to act on an output?

Because the light is controlled from more of one input and the actuator has not been programmed properly, not being synchronized the inputs.

12. How are entries synchronized to control a light from more than one push-button or switch?

To control an element from different inputs so that you commute correctly from any of them, the group address of notification of the status must be linked with all the inputs from where the light is controlled. Thus, if the input is configured to switch, the submitted value will be opposite to the value sent before if the last action was from the same input or the opposite value of the received by the bus if it acted on another. It must be borne in mind that to make this work correctly you must have the write flag enabled in the corresponding communication objects.

13. Bes actuators have scenes?

Yes, Bes actuators can execute scenes saved in his memory and the ability to record a new value on them by using the communication object number 254, which is enabled when setting up a scene.

14. Do all actuators have arithmetic logic unit (ALU)?

Yes, all references available in the actuautors catalog have ALU which has 8 operations arithmetic logic and 8 timers or counters.

15. Is it possible to connect LED lights to the relay output of an actuator?

Yes, it is possible to connect LED lights to the output of the actuators, but it must be taken into account that this type of lights, although they have low consumption, they have an important peak-current at startup by which can cause problems if it is exceed the cutting power of the relay.

16. Can be different phases or three-phase loads to the outputs of the Bes actuators connected?

Yes, the actuator connection terminals have the sufficient distance between each output to ensure no problem arise. For instance, with electric arcs, in case three-phase load is used.

17. Are there any actuators with manual control on the tap to check the outputs?

Yes, all references of DIN rail actuators are available with manual control, except 7SZ-K. On Bes actuators, manual control is performed through capacitive buttons with tactile áreas, which are indicated on the sticker or serigraph of them.

18. Can be loads powered at 110 Vac on the outputs of the actuators controlled?

Actuators outputs are relays free of potential, so the voltage controlled element does not affect the operation of the device. Important to take into account, is the consumption of the load, which can never be greater than the cutting power.

19. Can normally closed loads be controlled?

Yes, either normally open or normally closed loads can be controlled. To select this polarity there is a parameter on the configuration of binary outputs or thermovalve outputs, depending on which configuration is using. If normally closed type is selected, actuator will follow the reverse logic, i.e., will close the relay by sending a '0' to the appropriate communication object and open it doing the same with a '1'.

20. Can delays be set while acting on outputs or staircase timer?

Yes, in binary outputs of the actuator delays can be configured either at power-up or shutdown, independently or jointly, and staircase timer. Actuator has a communication object for each binary output to act on them with these delays or staircase timers.

The polarity of the controlled item, i.e., if it is normally open or closed, is taken into account also when staircase timer is executed.

21. Can actuator outputs be locked?

Yes, actuators outputs can be locked in all kind of configurations, so the device won't respond to the data received through the communication object. Once the output is unlocked, it can be chosen through a parameter to do an action on the output or to maintain the output status before locking the it, with no variation.

22. What kind of shutters can be controlled with actuators?

Bes actuators with relay outputs can control, every two outputs, one blind. Besides, the engine must always have limit switch previously set correctly. Used engines are three-wire: reference, up-phase and descent-phase. The up-phase always corresponds to odd outputs of the actuator and the descent with even outputs.

23. Are there different times for up movement and down movement on the actuators?

Yes, they have two independent parameters to establish the travel up and down time of the blinds. There is also a very important parameter that is the additional time; time during which the actuator maintains the relay closed after reaching the extreme positions of the shutters (0% and 100%) assuring the arrival to the ends, so the blind readjust itslef avoiding normal mibalances during the normal functioning of them. For this reason, it is recommended always to set some seconds as additional time, so the blind won't be damaged.

24. Can Bes actuators control blinds with slats?

Bes actuators with capacity for blind control can control blinds with slats but not of Gradhermetic type.

25. What type of fan-coil control can be done with these actuators?

Actuators with capacity for fan-coil control provides two modes of control by contacts: direct control, the relay closed is the one corresponding to the speed selected. On the contrary, called sequential or hierarchically mode not only activates the relay of the selected speed but also the lower speeds.

26. Who sets the speed of the fan-coil?

In the actuator parameters three speed limits are set as percentage (from 0 to 100%). Thermostats, like Cubik series from Bes, sent to the actuator the percentage which the speed of the fan-coil must be set according to the measured temperature and the set point through the first communication object available for each fan-coil (Control of fan-coil speed). If the actuator is set to automatic control in fan-coil mode, this will close and open the corresponding relay to set the speed on the basis of the data received by the communication object and the limits set by parameters on the ETS. If the actuator is in manual mode, speed will only change writing through the communication objects intended for this purpose. If the unit is in automatic mode and data are sent by these objects, the device becomes automatically to work in manual mode, ignoring the data received through the first communication object of each fan-coil.

27. Which modes are available for thermovalves control?

To control a thermovalve is available (all/nothing traditional) binary control and PWM mode. This last mode, has a parameter to set the period of the PWM cycle and an object to set the duty (the time within that cycle in which the relay is closed (normally open) or open (if it is normally closed)).

28. Do the actuators have anti-scale cycles for thermovalves?

Yes, on valve configuration can be enable the option that allows the execution of a number of opening and closing automatic cycles in order to avoid valve damage due to lime.

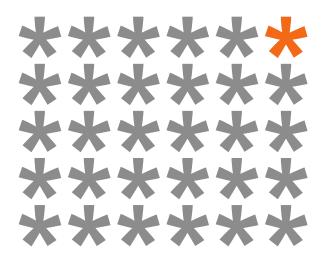## 29. When does the actuator notifies the change of its output status?

In case of working on binary or valve mode, the status of the outputs is notified at the most one second later after acting on the outputs through its corresponding communication object. In case of being working in fan-coil mode, speeds are notified at every change. Otherwise, on blinds mode, it can be chosen between notifying after reaching the desired position or continuously, every second, while they are moving.

30. How to control a 0-10V fan-coil?

You should use a 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. 0-10V fan-coils are not controlled by actuators.

31. 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.

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