Room Controller-K

GW669900

V1.0

Programming manual

ingenium*

Bes

www.besknx.com

Índice

1 General description

Complete solution for the control of a hotel room. It has outputs that allow control from lighting regulation, on/off of LED and/or conventional lighting, fan coil, valves to a total on/off of the room. It also has inputs for the control and management of all outputs, as well as inputs for a card reader, technical alarm probes and door and window magnetic detectors.

The device is compatible with all KNX devices, thus being able to achieve a more complete solution if the project requires it.

2 Programming

2.1   ETS database characteristics

Catalog: Bes (manufacturer) / Bes KNX - Room Controller (name).

Catalog version: 1.0

Maximum number of communication objects: 256.

Maximum number of assignments: 256.

The functionality of the device is configured in the parameters tab.

2.2   Individual address assignment

This device has a programming button located on the front of the device to set the individual KNX address.

A red LED next to the programming button illuminates when the button is manually pressed or when the device is remotely forced into programming mode.

The LED turns off automatically if the ETS has assigned an individual address correctly, if the programming button is manually pressed again or if it is turned off directly by the diagnostic functions.

2.3   General parameters

In the General tab, you can configure the type of each output (Output configuration), each input (Input configuration) and the number of logical units or timers/counters (Advanced functions) required for the project.

-.-.- **Room controller > General > Outputs configuration**

General	
Outputs configuration	
Inputs configuration	
Advanced functions	

Output 1: 30A relay output

Output 1 - General ON/OFF   ◉ Disable ◯ Enable

Output 2 and Output 3: dimmer channels

Output 2 - First dimmer channel   ◉ Disable ◯ Enable

Output 3 - Second dimmer channel   ◉ Disable ◯ Enable

From Output 4 to Output 7: 6A relay outputs

Output 4 - Shutter/Blind or binary   ◉ Disable ◯ Enable

Output 5 - Shutter/Blind or binary   ◉ Disable ◯ Enable

Output 6 - Shutter/Blind or binary   ◉ Disable ◯ Enable

Output 7 - Shutter/Blind or binary   ◉ Disable ◯ Enable

From Output 8 to Output 14: TRIAC outputs

Output 8 - Binary output   ◉ Disable ◯ Enable

Output 9 - Binary output   ◉ Disable ◯ Enable

Output 10 - Binary output   ◉ Disable ◯ Enable

Output 11 - Binary output   ◉ Disable ◯ Enable

Output 12 - Binary output   ◉ Disable ◯ Enable

Output 13 - Binary output   ◉ Disable ◯ Enable

Output 14 - Binary output   ◉ Disable ◯ Enable

From Output 15 to Output 17: 6A relay outputs

Output 15 - Fan coil or binary   ◉ Disable ◯ Enable

Output 16 - Fan coil or binary   ◉ Disable ◯ Enable

Output 17 - Fan coil or binary   ◉ Disable ◯ Enable

Output 18 - Valve or binary   ◉ Disable ◯ Enable

Output 19 - Valve or binary   ◉ Disable ◯ Enable

Objetos de Comunicación | Canales | Parámetros

2.3.1   Output configuration

For each output, there is at least one parameter to enable it. By enabling this parameter, the communication objects and the rest of the parameters necessary to configure the output will appear.

There are outputs that have two possible functionalities, for example, outputs from number 4 to 7, which can function as blind control or binary output control. In this case, and after enabling the output, a new parameter will be displayed to select its function.

From Output 4 to Output 7: 6A relay outputs

Output 4 - Shutter/Blind or binary   ◯ Disable ◉ Enable

Output function   ◯ Shutter/blind ◉ Binary

2.3.2   Input configuration

The configuration of inputs is similar to outputs one. It must first be enabled and then, it will show the parameter where to select whether it is an input in switch or push-button mode.

This is applicable for the first thirteen entries. For the last four, the only option is to use them as a switch, since they are designed for connecting conventional sensors to them.

2.3.3   Advanced functions

In advanced functions, you can choose the number of logic gates and/or timers required for the project from a total of 4 for each type.

2.4   Output 1 – General ON/OFF

2.4.1   Parameters

Output 1 is a 30A relay for switching the general voltage of the room. In its parameters, you can configure the operating mode (normally open or closed), the status when voltage is recovered and the enabling of the scenes associated with this output. In addition, the staircase switch mode can be enabled, which will automatically disconnect the output after a certain time.

Modifying these parameters can cause communication objects to appear or disappear.
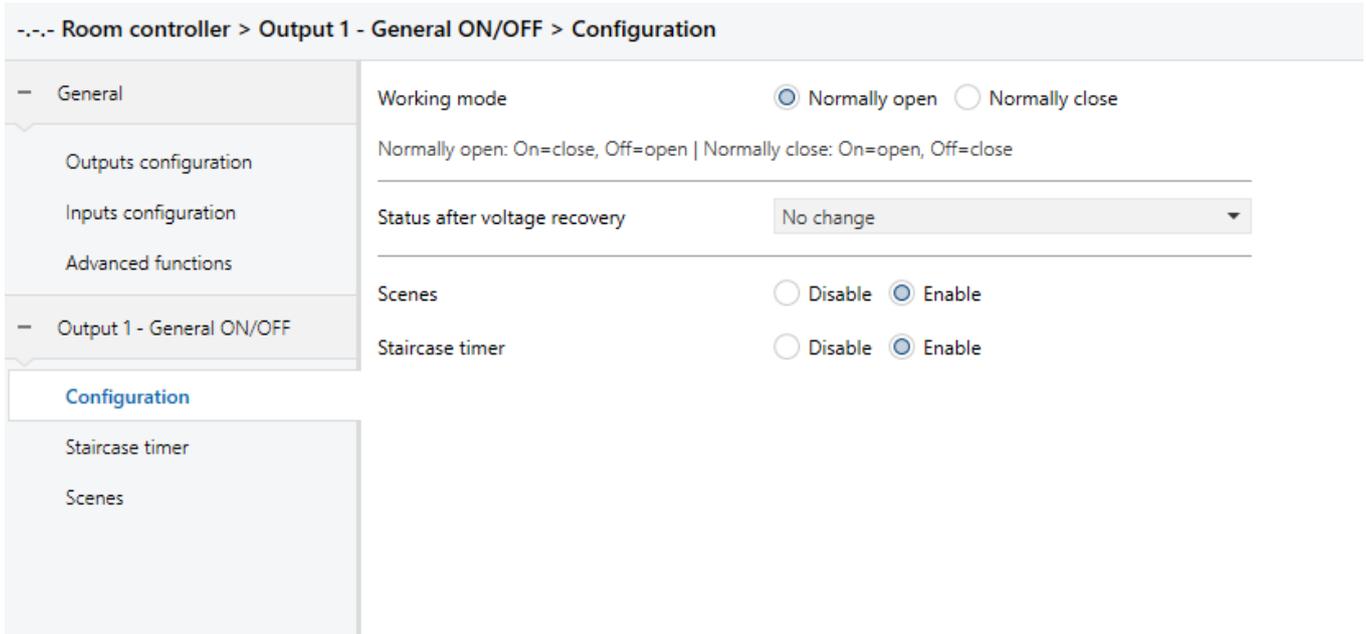
2.4.2   Communication objects

Number	Name	Function	Length	C	R	W	T	U	Data
0	Output 1 - Binary output	Switch on/off	1 bit	C	-	W	-	-	switch
1	Output 1 - Binary output	Switch on/off status	1 bit	C	R	-	T	-	switch
3	Output 1 - Binary output	Timer delay/staircase switch on/off	1 bit	C	-	W	-	-	switch
4	Output 1 - Binary output	Timer staircase value	2 bytes	C	R	W	T	-	time (s)

- Output 1 - Binary output | On / Off: 1 bit communication object to turn an output on and off. When a "1" is received through this object the output is activated. When a "0" is received the output is deactivated (This is the "normally open" mode operation. The "normally closed" mode is the opposite). In the configuration tab of each output you can select the value that an output should take when there is a power failure. You can choose between no changes, open output or close output.
- Output 1 - Binary output | On / Off (status): through this object the device transmits the output status or responds to a read telegram on it.
- Output 1 - Binary output | On / Off with delay / Stair delay: this object activates the output when a stair delay is set. It can also be deactivated if the manual switch-off of the staircase time delay option has been enabled through the corresponding parameter.
- Output 1 - Binary output | Staircase timer time: communication object that allows the modification of the staircase timer time.

2.4.3   Staircase timer

In the stair timing tab, the following configurable parameters will be displayed:

- Staircase time: time after which the output opens automatically after activation by the On / Off communication object with delay or staircase timing.
- Retriggerable: parameter that allows the restart of the timing in the event that a new output activation arrives through the communication object mentioned above.
- Allow manual OFF: allows the deactivation of the output before the staircase timing expires if the order comes through the relevant communication object.

-.-.- Room controller > Output 1 - General ON/OFF > Staircase timer

+ General	Staircase time 00:00:05 hh:mm:ss
− Output 1 - General ON/OFF	Retriggerable ○ No ○ Yes
	Allow manual OFF ○ No ○ Yes
Configuration	
Staircase timer	
Scenes	

2.4.4   Scenes

It is possible to choose up to 8 scenes associated with the output. All of them have the same configuration parameters, being:

- Number of scenes: total number of scenes that you want to configure for the output.
- Scene number: scene number from 1 to 64 that must be sent through the Scenes communication object to execute the scene.
- Output value: with this parameter it is established whether the output should be closed or opened when executing the scene.
- Delay: time from 0 seconds (instantaneous) to 4 min. And 15 s. which can be established as a time delay between the received order and the physical execution of the same on the relay.

-.-.- Room controller > Output 1 - General ON/OFF > Scenes

− General	Number of scenes 8 ▼
Outputs configuration	
Inputs configuration	Scene number 1
Advanced functions	Output value ○ Switch off ○ Switch on
	Delay 00:00:00 hh:mm:ss
− Output 1 - General ON/OFF	Scene number 2
Configuration	Output value ○ Switch off ○ Switch on
Staircase timer	Delay 00:00:00 hh:mm:ss
Scenes	Scene number 3

2.5   Output 2/3. Dimmers

2.5.1   Parameters

Outputs number 2 and 3 have similar parameters and are independent dimming outputs. In its general parameters are the following:

- Speed regulation time or fade time. It is the proportion of brightness that changes per unit of time (measured in seconds). The brightness changes gradually when sending a value for channel 1 or dimming communication objects. Typical value=10 (seconds). Very low values will make it difficult for the user to obtain the desired value while regulating the lamp.
- On mode and off mode: with this parameter it is configured whether before an on or off command by the bit size object, the regulator must turn on or off regulating with the regulation time established in the previous parameter or, by the Otherwise, it must be done instantly or immediately.
- Power on value: this parameter sets the value that the channel acquires when it goes from off to on.
- Upper regulation limit: it is the maximum regulation value (in percentage%) that the regulator can reach. The brightness level of the dimmer will stop at the upper limit when it receives telegrams for increasing the brightness level or for dimming telegrams. This parameter is only a hardware limitation. The user can regulate any value from 0 to 100% but the real brightness level will be adjusted internally according to the maximum and minimum values.
- Lower regulation limit: it is the minimum regulation value (in percentage%) that the dimmer can reach. The brightness level of the dimmer will stop at the minimum value when it receives dimmer telegrams or dimming telegrams) and can only be turned off by sending a "0" through the on / off or value objects direct. This parameter is only a hardware limitation. The user can regulate any value from 0 to 100% but the real brightness level will be adjusted internally according to the maximum and minimum values.
- Allow turning on with new value: if Yes is selected, the channel can be turned on by writing to the Channel X - Value communication object without previously having turned on said channel through the Channel X - On / Off object.
- Behavior when recovering voltage: using this parameter, the regulation level that the output should take when voltage is applied to the equipment is selected.
- Scenes: allows the enabling of scenes associated with the outputs.

2.5.2   Communication objects

The communication objects of these outputs are listed below:

Number	Name	Function	Lenght	C	R	W	T	U	Type
5	Output 2 - Dimmer	On/Off	1 bit	C	-	W	-	U	switch
6	Output 2 - Dimmer	Dimming	4 bit	C	-	W	-	U	dimming control
7	Output 2- Dimmer	Value	1 byte	C	-	W	-	U	percentage (0..100%)
8	Output 2 - Dimmer	On/Off status	1 bit	C	R	-	T	-	switch
9	Output 2 - Dimmer	Value status	1 byte	C	R	-	T	-	percentage (0..100%)

- Output X - Dimmer | On / Off: 1bit communication object to switch the regulation channel on and off. When a "1" is received through this object, the light turns on and takes on the last memorized brightness level (other than 0). When a "0" is received through this object, the light turns off. By default, the behavior of the light when it is turned on through this object is to take the value it had before turning off.
- Output X - Dimmer | Regular: 4-bit communication object for dimming control with buttons.
- Depending on the dimming steps set in the button, the telegrams will raise or lower the brightness level according to the set ramp speed. Pause telegrams to this object will stop dimming at the current brightness level. By default, the behavior when receiving a telegram to increase the brightness level when the light is off is to turn it on and start dimming. On the other hand, if the light is on, it cannot be switched off by means of dimming telegrams.
- Output X - Dimmer | Value: 1-byte communication object for precise control by directly selecting a brightness level. The brightness level will slowly increase or decrease depending on the set ramp speed. By default, the behavior when receiving a telegram with a brightness value other than 0

when the light is off is to turn it on and regulate it to the received level. Furthermore, if the light is on, it can be switched off by means of a telegram of value 0.

- Output X - Dimmer | On / Off (status): 1bit communication object for notification of the status (on/off) of the channel. When the light is off and you receive a power-on telegram or brightness value, a "1" is sent through this object. When the light is on and receives a shutdown telegram or a brightness value of 0%, a "0" is sent through this object.
- Output X - Dimmer | Value (status): 1-byte communication object for notification of the current brightness level. When it receives a new brightness value, or an increase / decrease telegram, the final brightness level is sent through this object.

2.5.3 Scenes

The configuration parameters available for scenes are as follows:

- Number of scenes: total number of scenes that you want to configure for the output.
- Scene number: scene number from 1 to 64 that must be sent through the Scenes communication object to execute the scene.
- Dimming level: This parameter establishes the regulation level of the output.
- Delay: time from 0 seconds (instantaneous) to 4 min. And 15 s. which can be established as a time delay between the received order and the physical execution of the same on the relay.

2.6 Output 4-7. Control of shutters and/or binary outputs

The outputs from numbers 4 to 7 correspond to configurable outputs for the control of two blinds independently or for the control of 4 binary outputs. The work mode will determine the number of free outputs, since two outputs are required to control a blind: one for the raising phase and the other for lowering.

2.6.1 Shutter control

2.6.1.1 Parameters

The configuration parameters for the blind mode of these outputs are listed below:

- Type: type of blind. It can be without slats or with slats.
- Rise time: blind rise time. In this parameter you must configure the time measured in seconds that it takes for the blind to rise completely.
- Down time: shutter down time. In this parameter, the time measured in seconds that it takes for the blind to be completely lowered must be configured.
- Slats: total time: total slat turning time.
- Slats: Number of steps: number of slat steps. A number between 1 and 10 can be selected.
- Direction change pause: waiting time when a direction change order is received and the blind is in motion.
- Additional time for adjustment: time that the equipment waits to open the output when the shutter reaches the extremes in order to adjust the rise and fall times and ensure the limit switch.
- Status feedback during the movement: continuous notification of the blind percentage every second while it is in motion before reaching the required position.
- Use movement direction feedback object: if activated, the device will notify the direction of movement each time it changes through the corresponding communication object.
- Behavior after power recovery: establishes the percentage to which the blind must be placed when the device is energized.
- Scenes: allows the enabling of the parameters for configuring the scenes associated with the output.

2.6.1.2 Communication objects

Name	Function	Length	C	R	W	T	U	Data
Output X/Y – Shutter/Blind	Move uo/down (= 0/1)	1 bit	C	-	W	-	-	up/down
Output X/Y – Shutter/Blind	Stop, step up/down (= 0/1)	1 bit	C	-	W	-	-	step

Output X/Y – Shutter/Blind	Position	1 byte	C	-	W	-	-	percentage (0..100%)
Output X/Y – Shutter/Blind	Position status	1 byte	C	R	-	T	-	percentage (0..100%)
Output X/Y – Shutter/Blind	Slats position	1 byte	C	-	W	-	-	percentage (0..100%)
Output X/Y – Shutter/Blind	Slats position status	1 byte	C	R	-	T	-	percentage (0..100%)

- Output X / Y - Shutter/Blind | Move up/down (= 0/1): 1 bit communication object to move the blind up or down. When a "1" is received through this object the louver moves down. When a "0" is received, the louver moves up. The odd outputs must be connected to the rising phases, while the even outputs must be connected to the falling phases. This order cannot be altered.
- Output X / Y - Shutter/Blind | Stop, step up/down (= 0/1): 1-bit communication object for step slat movement or shutter stop.
- Output X / Y - Shutter/Blind | Position: 1-byte communication object to position the blind to a value directly. When a value is sent through this object, the shutter moves to the received position, 0 being fully closed and 255 (100%) being fully open.
- Output X / Y - Shutter/Blind | Position status: 1-byte communication object for notification of the position of the blind. When the shutter motor stops, it sends a notification through this object with the current position of the shutter, being 0 fully closed and 255 (100%), fully open. By default, the position of the blind is sent at the end of the movement. However, this option can be modified in the output channel configuration and request status notification every second.
- Output X / Y - Shutter/Blind | Slat position: 1-byte communication object to position the slats to a value directly. When a value is sent through this object, the slats move to the received position, 0 being fully closed and 255 (100%) being fully open.
- Output X / Y - Shutter/Blind | Slat position status: 1-byte communication object to position the slats to a value directly. When a value is sent through this object, the slats move to the received position, 0 being fully closed and 255 (100%) being fully open.

2.6.2 Scenes

The configuration parameters available for scenes are as follows:

- Number of scenes: total number of scenes that you want to configure for the output.
- Scene number: scene number from 1 to 64 that must be sent through the Scenes communication object to execute the scene.
- Opening level: This parameter sets the desired opening level for the blind.
- Delay: time from 0 seconds (instantaneous) to 4 min. And 15 s. which can be established as a time delay between the received order and the physical execution of the same on the relay.

2.6.3 Binary mode

These outputs established as binary mode have communication objects and parameters analogous to those explained for the first output of the device.

2.7 Outputs 8-14. TRIAC outputs

These outputs are designed for loads whose control is more suitable by means of TRIAC such as LED luminaires that present a current peak when they are switched on that can cause damage to the relays.

These outputs have communication objects and parameters analogous to those explained for the first output of the device.

2.8 Outputs 15-17. Fan coil control or binary outputs

The operating mode of these outputs is selectable between fan coil control or binary outputs. If the first of these modes is selected, the three outputs will be used to control the air conditioning machine.

2.8.1 Fan coil control

2.8.1.1 Parameters

The configuration parameters of the fan coil outputs are listed below:

- Fan coil control type: it can be chosen between direct or sequential type. In the direct type only the relay corresponding to the selected speed is activated, while in the sequential type the relay of the selected speed and those corresponding to lower speeds are activated.
- Fan speed 1 threshold: (from 0 to 100%). If the fan coil control value is less than this threshold value, the fan coil outputs are deactivated. If the control value is higher, the first is activated. This operation corresponds to the automatic mode.

- Fan speed 2 threshold (From 0 to 100%). If the fan coil control value is less than this threshold value, the first output is activated. If the control value is greater, the first output is deactivated and the second is activated in the case of direct control. If the control is sequential, both will be activated. This operation corresponds to the automatic mode.
- Fan speed 3 threshold. (From 0 to 100%). If the fan coil control value is less than this threshold value, the second output is activated. If the control value is higher, the second output turns off and the third one turns on. This operation corresponds to the automatic mode.
- Hysteresis: percentage to indicate a margin for changing the speed change threshold or turning it on or off. This hysteresis corresponds to the error above and below the speed limits.
- Delay between speed switching: the waiting time between the activation and deactivation of the relays in speed changes is configured.
- Manual mode: allows the speed to be changed using the communication objects in manual mode.
- Type of manual mode control: allows you to choose whether you want a communication object with which to increase and decrease the speed incrementally or to have separate communication objects for each speed.
- Status after voltage recovery: status after power recovery. The speed at which you want the fan coil to start is set.

2.8.1.2 Communication objects

Name	Function	Length	C	R	W	T	U	Data	Name
85	Output 15/16/17 - Fan Coil	Fan speed control	1 byte	C	-	W	-	-	percentage (0..100%)
86	Output 15/16/17 - Fan Coil	Fan speed status	1 byte	C	R	-	T	-	percentage (0..100%)
88	Output 15/16/17 - Fan Coil	Auto/manual (=0/1)	1 bit	C	-	W	-	-	switch
89	Output 15/16/17 - Fan Coil	Auto/manual status (=0/1)	1 bit	C	R	-	T	-	switch

90	Output 15/16/17 - Fan Coil	Fan speed 1 (1=set/0=nothing)	1 bit	C	-	W	-	-	switch
91	Output 15/16/17 - Fan Coil	Fan speed 2 (1=set/0=nothing)	1 bit	C	-	W	-	-	switch
92	Output 15/16/17 - Fan Coil	Fan speed 3 (1=set/0=nothing)	1 bit	C	-	W	-	-	switch
93	Output 15/16/17 - Fan Coil	Fan speed 1 status	1 bit	C	R	-	T	-	switch
94	Output 15/16/17 - Fan Coil	Fan speed 2 status	1 bit	C	R	-	T	-	switch
95	Output 15/16/17 - Fan Coil	Fan speed 3 status	1 bit	C	R	-	T	-	switch
96	Output 15/16/17 - Fan Coil	Fan on/off status	1 bit	C	R	-	T	-	switch
97	Output 15/16/17 - Fan Coil	Fan speed increase/decrease	1 bit	C	-	W	-	-	up/down
97	Output 15/16/17 - Fan Coil	Fan speed off (1=set/0=nothing)	1 bit	C	-	W	-	-	switch

- Output 15/16/17 - Fan coil | Fan speed X (1=set / 0=nothing): 1 bit communication object to change the fan coil to the corresponding speed. When a "1" is received through this object, the fan coil switches to the corresponding speed. The other rates are disabled and a "0" is sent through their notification communication objects. Binary outputs
- Output 15/16/17 - Fan coil | Fan speed control: 1 byte communication object to select a speed directly. When a value is received through this object, the fan coil control compares it with the configured threshold level and activates the corresponding speed.
- Output 15/16/17 - Fan coil | Fan speed status: 1bit communication object for notification of the current speed. When a speed is selected, the status is sent through this object.
- Output 15/16/17 - Fan coil | Auto/manual (=0/1): 1 bit communication object to select fan coil mode. When a "1" is received through this object, the fan coil switches to manual mode and when it receives a "0" it switches to automatic mode.
- Output 15/16/17 - Fan coil | Auto/manual status (=0/1): 1bit communication object for notification of the fan coil mode. When a mode is selected, the fan coil status is sent through this object. A telegram with the value "1" is sent in the case of manual mode and a "0" in the case of automatic mode.
- Output 15/16/17 - Fan coil | On / Off status: 1 bit communication object for notification about the fan coil status. When the fan coil is off and receives an on telegram, it sends a "1" through this object. When the fan coil is on and receives a shutdown telegram, it sends a "0" through this object.
- Output 15/16/17 - Fan coil | Shutdown (1=set, 0=nothing): 1 bit communication object for fan coil shutdown selection. When a "1" is received through this object, the fan coil turns off and when it receives a "0" it does not change its status.

2.8.2   Binary mode

These outputs established as binary mode have communication objects and parameters analogous to those explained for the first output of the device.

2.9   Output 18/19. Valve or binary output control

2.9.1   Valve control

2.9.1.1   Parameters

The configuration parameters for the control of solenoid valves with outputs 18 and 19 are explained below, suitable for controlling two valves independently. In addition, the device has two connections for each output, one for normally closed valves and the other for normally open valves.

- Type of control: it can be on / off or PWM type. If the PWM type is chosen, a parameter will appear to select a time period and a 1-byte communication object to write a percentage. This percentage applied to the period of time will be the time that the valve will be open, and the rest will be closed.
- Status after recovering voltage: establishes the status of the output after energizing the equipment.
- Valve protection: when this option is activated, the valve will carry out a protection cycle after the time indicated in the parameter for this purpose. This prevents the valve from being damaged by lime build-up.

2.9.1.2   Communication objects

Name	Function	Length	C	R	W	T	U	Data
Output 18/19 - Valve	Open/close (=0/1)	1 bit	C	-	W	-	-	switch
Output 18/19 - Valve	Open/close status (=0/1)	1 bit	C	R	-	T	-	switch

- Outlet 18/19 - Valve | Open / close (= 0/1): 1 bit communication object for selection of valve status. When a "1" is received through this object, the valve opens and when it receives a "0" the valve closes.

- Outlet 18/19 - Valve | Open / close (= 0/1) (status): 1-bit communication object for status notification. With each change, the status of the thermovalve is automatically sent through this object.

2.9.2   Binary mode

These outputs established as binary mode have communication objects and parameters analogous to those explained for the first output of the device.

2.10 Inputs

All inputs have analogous parameters, so the two available operating modes will be explained: switch mode and push-button mode.

2.10.1 Switch mode

2.10.1.1 Parameters

When the working mode of an input is defined as a switch, the following parameters can be configured:

- Number of objects: can be chosen between one object or two. If 2 objects are selected, the following options can be chosen for both object 1 and object 2. In addition, a new communication object corresponding to the second object will appear.
- Button response: can be chosen between open, closed or toggle between rising edge and falling edge. If the up/down option is selected, a value must be chosen for the action when pressing and another for the action when the touch area is released.
- Action: it is the action desired to take on the output. The options are on/off, send value or execute a scene. If the action is to execute a scene, a new menu will appear to write the number of the scene to execute and if it is in activated or learning mode. Likewise, if the sending of a value is chosen, the type of data to be sent will be displayed.
- Value: value to send. The parameters to choose will depend on the action chosen in the previous parameter.

2.10.1.2 Communication objects

The communication objects change depending on the selected parameters. However, for each input, a maximum of two communication objects are available with the relevant communication and transmission flags.

It should be noted that, in the case of inputs for switching (1 bit), the write flag can be activated or deactivated if it is required that the last data of the input be refreshed with another value coming, for example, from another input (example of traditional crossing) or not.

2.10.2 Pushbutton mode

2.10.2.1 Parameters

When the working mode of an input is defined as short / long press, the following parameters can be configured for each type of press:

- No action: When acting on the input, no action will be taken on the output
- On/off: switch mode. The output value must be chosen when acting on the input: open, closed or toggle open / closed.
- Send value: send value. The output will send the value written in the box. You can also configure the format of the data entered.
- Dimming: regulation. The output will regulate as indicated: ascending (more luminosity), descending (less luminosity) or regulate alternately up and down. Said regulation will be carried out with an interval that will be established in the "step" box.
- Blind control. The response of the blinds can be movement or stop / slat steps. And its direction up, down or combined up/down.
- Scenes: activate scenes or put them in learning mode. The number of the scene to be executed will be chosen, which will be between 1 and 64.

The pulse time must be configured for a long press.

2.10.2.2 Communication objects

The communication objects change depending on the selected parameters. In any case, for each input, there are two communication objects with the relevant communication and transmission flags: one for the short press and the other for the long press.

It should be noted that, in the case of inputs for switching (1 bit), the write flag can be activated or deactivated if it is required that the last data of the input be refreshed with another value coming, for example, from another input (example of traditional crossing) or not.

2.11 Advanced functions

In the case of inhabiting the advanced functions of the device in the General section, a new section appears in the menu on the left:

In this menu you can choose what arithmetic-logic blocks or timer/counter blocks you want to enable.

Name	Logic Block X	
Values	Enable / disable	
Description	Allows to enable or disable each block of the logic unit	
Name	timer / counter Block	
Values	Enable / disable	
Description	Allows to enable or disable each block of the timers / counters	

2.11.1 Bloque Aritmético-Lógico (ALU)

Operation	AND ▾
Number of inputs	2 ▾
Input 1	○ Communication object ● Constant value
Format	1 bit ▾
Value	1 ▲▼
Input 2	1 bit ▾
Output	1 bit ▾

Name	Operation
Values	AND, NAND, OR, NOR, XOR, XNOR, NOT, BUFFER, ==, != , <, >, <= , >= , + , - , *, / .

Description	Allows to select the logic operation, arithmetic operation or comparative operation that you desire to do between the followings:

Logic operations:

- AND: Logical product
- NAND: Logical product denied
- OR: Logical sum
- NOR: logical sum denied
- XOR: exclusive logical sum
- XNOR: exclusive logical sum denied
- NOT: Negation
- BUFFER: It stores at the output the input value

Comparative operations:

- == : equality
- != : inequality
- < : smaller than
- > : bigger than
- <= : smaller or equal to
- >= : bigger or equal to

Arithmetic operations:

- + : sum
- - : subtraction
- * : multiplication
- / : division

| Name	Number of inputs
Values	From 2 to 4
Description	It allows to select the number of inputs. Depending on the operation to make you can choose two or more inputs.
Name	input 1
Values	Communication object / Constant
Description	Through this parameter the input 1 type is decided. It can be a constant value or it can receive a value through a communication object
Name	Format
Values	1 bit, 1 byte without sign (dpt 5.001), 1 byte without sign (dpt 5.010), 1 byte with sign (6.*), 2 bytes without sign (dpt 7,*), 2 bytes with sign (dpt 8,*), 2 bytes floating point (dpt 9,*).
Description	It allows to select through a drop-down menu the size and the format of the input 1. Depending on the type of operation it allows some formats or others.
Name	Inputs 2/3/4
Values	1 bit, 1 byte without sign (dpt 5.001), 1 byte without sign (dpt 5.010), 1 byte with sign (6.*), 2 bytes without sign (dpt 7,*), 2 bytes with sign (dpt 8,*), 2 bytes floating point (dpt 9,*).
Description	It allows to select through a drop-down menu the size and the format of the other inputs. Depending on the type of operation it allows some formats or others. This inputs can only receive values through communication objects.
Name	Output

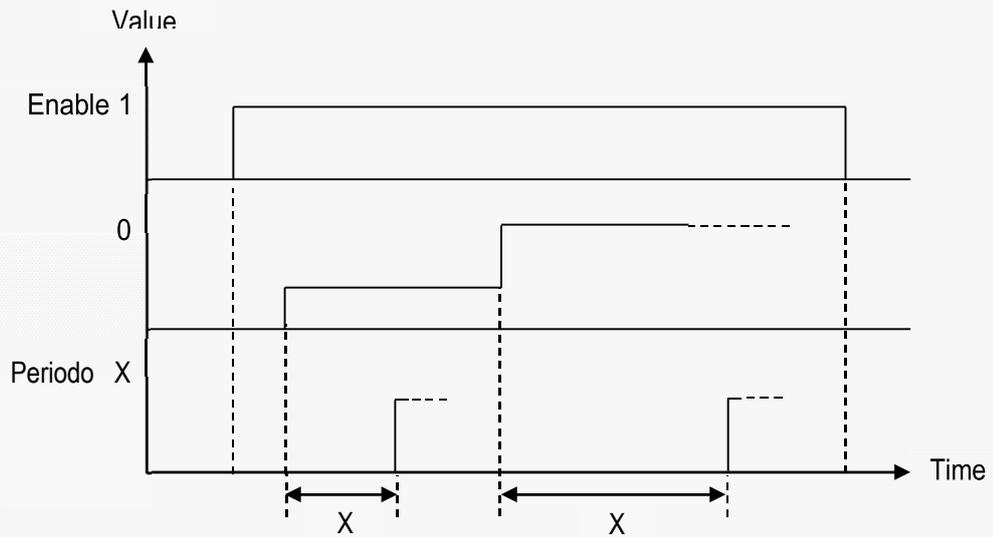|	
Values	1 bit, 1 byte without sign (dpt 5.001), 1 byte without sign (dpt 5.010), 1 byte with sign (6.*), 2 bytes without sign (dpt 7,*), 2 bytes with sign (dpt 8,*), 2 bytes floating point (dpt 9,*).
Description	It allows to select through a drop-down menu the size and the format of the input object. Depending on the type of operation it allows some formats or others. It receives the values of his communication object.

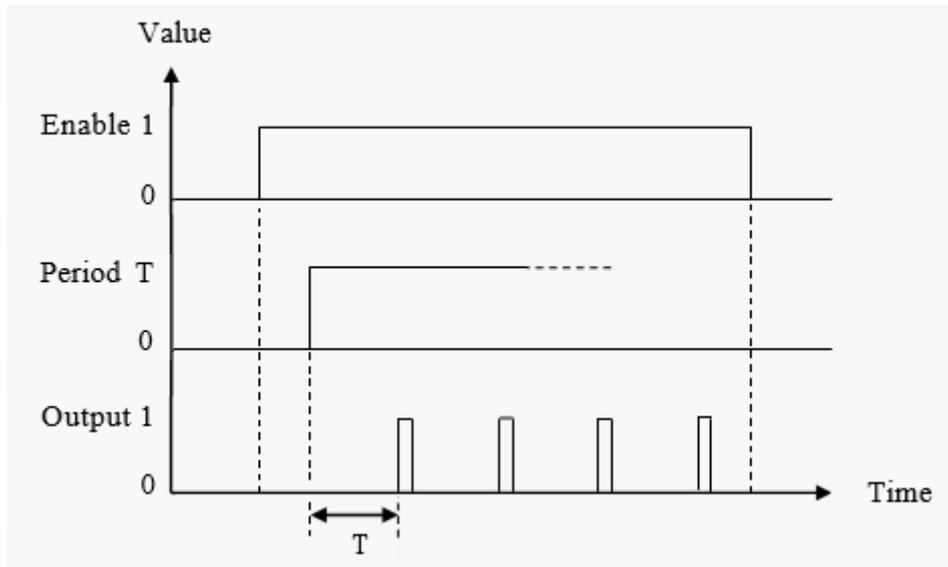## 2.11.2 Timer/Counter block

Name	Timer type
Values	PWM, Limit o Cycle
Description	PWM: It sends a signal modulated in pulse width according to the period and the work cycle.
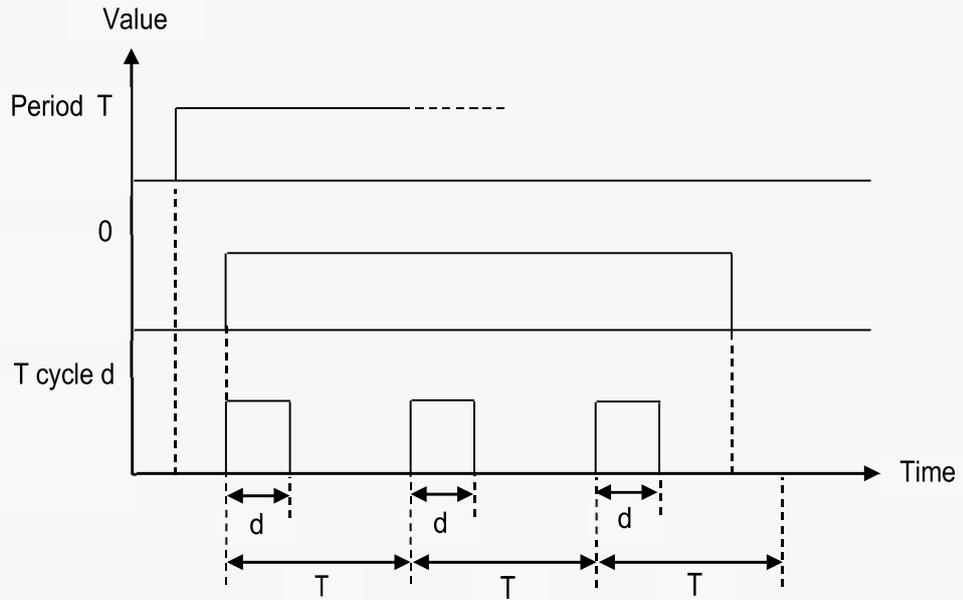
Límit: Sends a "1" bit telegram to the bus when a limit value is exceeded

Cycle: Sends a "1" bit telegram to the bus each time the limit value is exceded cyclically

| Name	Time period
Values	Communication object / Constant value
Description	It is the counter time of the timer. It can be configured as a constant value or as a value received through the bus with one of the followings formats of the communication object:
	1 byte (dpt 5.010): Value from 0 to 255 (x 100 ms)
	2 bytes (7.004): Value from 0 to 6553500 ms
	2 bytes floating point (9.010): Value from 0 to 670760 s
Name	Work cycle
Values	1 byte (dpt 5.010), 2 bytes (7.004) or 2 bytes floating point (9.010)
Description	Only visible if the type of timer selected is PWM. It is the time that the generated signal is in high level ("1") inside the period of time. The value is received by the bus with one of the following formats of communication objects:
	1 byte (dpt 5.010): Value from 0 to 255 (x 100 ms)
	2 bytes (7.004): Value from 0 to 6553500 ms
	2 bytes floating point (9.010): Value from 0 to 670760 s

| Name	Event type
Values	Rising edge, falling edge, 1 o 0.
Description	It is the change that the counter must detect in the "event" object to increase his count
Name	Limit value
Values	From 0 to 65535
Description	Is the chosen value as a threshold for the counting.
Name	Output behavior
Values	Send "1" when it reaches the limit, send the count value (dpt 5.010), sent count value (dpt 7.001)
Description	This parameter allows to choose the format and the value of the counter output. The output can send "1" when it reaches the limit value of the count or send the count value each time it receives an event

3 Installation
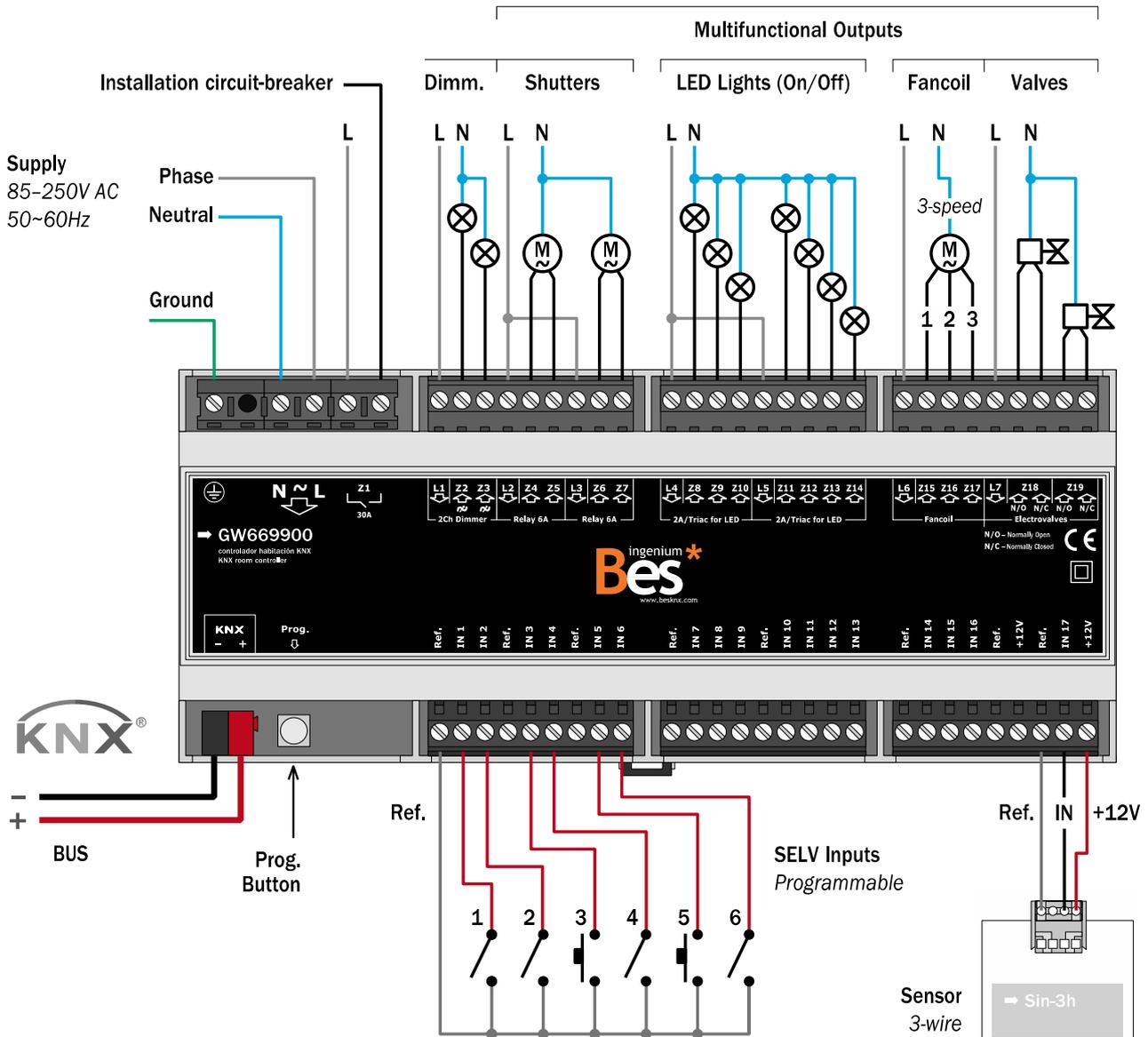
Alimente las líneas de bajo voltaje (bus y entradas) en conductos separados de la alimentación a 230 V y las salidas, con el objetivo de asegurar que existe el suficiente aislamiento y evitar así interferencias.

No conecte el voltaje principal de 230 V o cualquier otro voltaje externo a ningún punto del bus ni a las entradas.
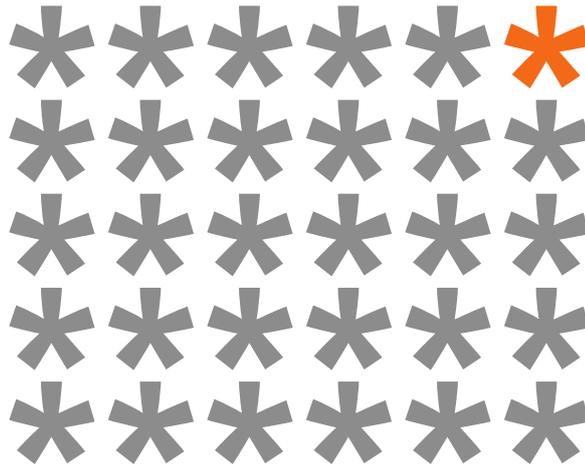
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